

**REGULATION 1
GENERAL PROVISIONS AND DEFINITIONS**

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REGULATION 1
GENERAL PROVISIONS AND DEFINITIONS

(Adopted September 5, 1979)

1-100 GENERAL

1-101 Description: The general provisions and definitions included in Regulation 1 shall apply to all other District Rules and Regulations. Definitions which are included in any other District Rule or Regulation are specific to that Rule or Regulation and shall not apply to any other Rule or Regulation.

1-102 More than One Emission Standard: Where a person is subject to more than one emission standard for the same air contaminant, the more stringent shall apply.

1-103 Violations Not Authorized: Nothing in District Rules or Regulations is intended to permit any practice in violation of any statute, ordinance, Rule or Regulation.

1-104 Circumvention Not Permitted: A person shall not undertake or authorize any practice intended or designed to evade or circumvent District Rules or Regulations.

1-105 Regulations Not Intended to Apply to Workroom Atmosphere: District Regulations are not intended to apply to the air quality requirements for the workroom atmosphere necessary to protect an employee's health from contaminants emitted by the source; nor are they concerned with the occupational health factors in an employer-employee relationship.

1-106 Separation of Emissions: Where air contaminants from a single source are emitted through two or more emission points, the total quantity of air contaminants thus emitted shall not exceed the quantity allowable through a single emission point.

1-107 Combination of Emissions: Where air contaminants from two or more sources are combined prior to emission and there are no adequate and reliable means to establish the nature, extent and quantity of emission from each source, District Regulations shall be applied to the combined emission as if it originated in a single source. Such emissions shall be subject to the most stringent limitations and requirements of District Regulations applicable to any of the sources whose air contaminants are so combined.

1-108 Metric Governs: Units of weight and measure shall be expressed in the international system (SI) of metric units in District regulations. For convenience, pressure is expressed as bar. English units, which appear in parentheses, are approximations to be used for guidance only.

1-109 Severability: If any District Rule or Regulation, or portion thereof, is adjudged by a court of competent jurisdiction to be unconstitutional or otherwise invalid, such judgment shall be limited to that Rule, Regulation or portion thereof, and not otherwise affect or invalidate the remainder of District Rules and Regulations.

1-110 Exclusions: District Regulations shall not apply to the following:

- 110.1 Engines used to propel motor vehicles, and defined by the Vehicle Code of the State of California.
- 110.2 Any internal combustion engine used solely as an emergency standby source of power.
- 110.3 Aircraft.
- 110.4 Fires from residential heating and residential cooking.
- 110.5 Except as limited by Regulation 5, emissions arising from agriculture operations necessary for the growing of crops or the raising of fowl or animals, open outdoor fires, other than for the disposal of waste propellants, explosives or pyrotechnics by manufacturing facilities; recreational fires and outdoor cooking fires.
- 110.6 Any emission point which is not an intended opening and from which no significant quantities of air contaminants are emitted.
- 110.7 Smoke generators intentionally operated to train observers in appraising the shade of emissions.

110.8 Air contaminants, where purposely emitted for the sole purpose of a specific beneficial use, and where essentially all of the air contaminants are confined to the area in which such beneficial use is obtained. The quantity and nature of the air contaminants, and the proportion of air contaminants used in relation to amounts of other materials involved in the beneficial use of air contaminants, shall conform to accepted practice in type of use employed.

(Renumbered Mar. 17, 1982; Amended Dec. 19, 1990, Nov. 3, 1993)

1-111 **Deleted, October 7, 1998**

1-112 **Breakdown:** The APCO may refrain from enforcing the provisions of District regulations for excesses of emissions resulting from the breakdown of air pollution abatement equipment or operating equipment provided such emissions do not interfere with the attainment or maintenance of any national or California ambient air quality standard and further provided that the persons responsible for such emissions comply with the administrative requirements of Section 1-431 and 432.

(Amended March 17, 1982)

1-113 **Discretionary Enforcement, Breakdown:** If excessive emissions resulting from the breakdown of air pollution abatement equipment or operating equipment persist until the end of a production run or up to 24 hours, whichever is sooner, a violation of District regulations shall be deemed to have occurred. However, the APCO may elect to take no enforcement action if the person responsible for the emissions shows that appropriate corrective measures have been taken and that emissions are either in compliance or that the equipment has been shut down either before the next production run or within 24 hours, whichever is sooner.

1-114 **Exemption, Uncombined Water:** Where the presence of uncombined water is the only reason for the failure of a visible emission to meet District limitations, those limitations shall not apply. The burden of proof to establish the application of this section shall be upon the person seeking to come within its provisions.

1-115 **Exemption, Modification to Meet Emission Standards:** When permits are necessary for modifying an existing source in order to comply with emission regulations such modifications shall not subject the existing source to emission standards for new or modified plants as set forth in Section 2-2-301 or 2-2-302 or 2-2-303 of Regulation 2, Permits.

(Amended December 17, 1980)

1-200 **DEFINITIONS**

1-201 **Air Contaminant or Air Pollutant:** Any material which, when emitted, causes or tends to cause the degradation of air quality. Such material includes, but is not limited to, smoke, charred paper, dust, soot, grime, carbon, fumes, gases, odors, particulate matter, acids or any combination thereof.

1-202 **Air Pollution Control Equipment:** Any equipment, the operation of which has as its primary purpose a significant reduction in either the emission of air contaminants or the effects of such emissions.

1-203 **APCO:** The Air Pollution Control Officer of the Bay area Air Quality Management District or the designee thereof.

1-204 **ARB:** The Air Resources Board of the State of California.

1-205 **Atmosphere:** The air that surrounds the earth, excluding the general volume of gases contained within any building or structure if the APCO determines that emissions within such building or structure do not escape to the outside air.

(Amended March 17, 1982)

1-206 **BAR: 100,000 pascals (100,000 N/m²).**

1-207 **Best Modern Practices** The minimization of emissions from equipment and operations by the employment of modern maintenance and operating practices used by superior operators of like equipment and which may be reasonably applied under the circumstances.

1-208 **Breakdown (malfunction):** Any unforeseeable failure or malfunction of any air pollution control equipment or operating equipment which causes a violation of any

emission standard or limitation prescribed by District, California or federal rules, regulations or laws, where such failure or malfunction:

208.1 is not the result of intent, neglect, or disregard of any air pollution control law, rule or regulation;

208.2 is not the result of improper maintenance;

208.3 does not constitute a nuisance;

208.4 is not an excessively recurrent breakdown of the same equipment.

1-209 Commenced: Where a person has undertaken a continuous program of construction, reconstruction or modification, or a person has entered into a contractual obligation to undertake and complete, within a reasonable time, a continuous program of construction, reconstruction or modification.

1-210 Construction: Fabrication, erection or installation of a plant

1-211 Discharge: To permit, let, suffer or allow an emission.

1-212 District: The Bay Area Air Quality Management District.

1-213 Emission or Emissions: A gas or liquid stream containing one or more air contaminants. The verb form, emit, means the act of discharging an emission into the atmosphere.

1-214 Emission Point: The location (place in horizontal plane and vertical elevation) at which an emission enters the atmosphere.

1-215 Facility: Any property, real or personal, which may incorporate one or more plants all being operated or maintained by a person as part of an identifiable business on contiguous or adjacent property, and shall include, but not be limited to manufacturing plants, refineries, power generating plants, ore processing plants, construction material processing plants, automobile assembly plants, foundries and waste processing sites.

1-216 Fixed Capital Cost: The capital needed to provide all the depreciable components of a plant.

1-217 Modification: Any physical change in existing plant or change in the method of operation which results or may result in either an increase in emission of any air pollutant subject to District control, or the emission of any such air pollutant not previously emitted. The following shall not be regarded as physical changes or changes in the method of operation:

217.1 Routine maintenance, repair or replacement with identical or equivalent equipment.

217.2 Increased production rate or increased hours of operation where there is no increase in fixed capital cost, unless such production and hours are limited by permit conditions.

1-218 Opacity: The decrease in the transmission of light through a gas stream, as indicated by the expression $(1-P/P_0)$ where P_0 is the radiant power initially directed at the emission being measured, and P is the radiant power received after passing through the emission. (Amended May 21, 1980)

1-219 Operation: Any physical action resulting in a change in the location, form, or physical properties of a material, or any chemical action resulting in a change of the chemical composition, or chemical or physical properties of a material. The following are given as examples, without limiting the generality of the foregoing: heat transfer, calcination, double decomposition, fermentation, pyrolysis, electrolysis, combustion, material handling, evaporation, mixing, absorption, filtration, screening and fluidization.

219.1 Heat transfer operation means any operation which (a) involves the combustion of fuel for the principal purpose of utilizing the heat of combustion-product gases by the transfer of such heat to the process material; and (b) does not transfer a significant portion of heat by direct contact between the combustion-product gases and the process material.

219.2 Incineration operation means any operation in which combustion is carried on for the principal purpose, or with the principal result, of oxidizing a liquid or solid waste material to reduce its bulk or facilitate disposal or both of such.

219.3 Salvage operation means any operation in which combustion is carried out for the primary purpose or result of salvaging metals, where the principal metal to

be salvaged is not melted. Other metals present in small quantities may be melted.

219.4 General operation means any operation other than those defined in Sections 219.1, 219.2 or 219.3.

- 1-220 **Operating Day:** 24 hours from midnight to midnight.
- 1-221 **Person:** Any natural person, corporation, government agency, public officer, association, joint venture, partnership or any combination of such or such entities as are included in Section 39047, California Health and Safety Code.
- 1-222 **Plant:** The machinery and equipment, including tanks, necessary to carry out an operation.
- 1-223 **ppmv:** Parts per million by volume.
- 1-224 **Reconstruction:** Replacement of the components of an existing plant to such an extent that the fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable, entirely new plant.
- 1-225 **Sampling Point:** The location in a Type A emission point where the measurements of flow volume and contaminant concentrations can be made which are representative of the actual flow volume and contaminant concentrations.
- 1-226 **Sea Level Atmospheric Pressure:** 1.01 bar or 101 kilo pascals (14.7 psia).
- 1-227 **Source:** Any operation that produces and/or emits air pollutants.
- 1-228 **Standard Conditions:** A sea level atmospheric pressure and a temperature of 21 degrees Celsius (70 degrees Fahrenheit).
- 1-229 **Standard Dry Cubic Meter:** One m³ of gas free of water vapor and at standard conditions.
- 1-230 **Type A Emission Point:** An emission point, having sufficiently regular geometry so that both flow volume and contaminant concentrations can be measured and where the nature and extent of air contaminants do not change substantially between a sampling point and the emission point.
- 1-231 **Type B Emission Point:** An emission point other than a type A emission point.
- 1-232 **Visible Emissions:** Emissions which are visually perceived by an observer. Restrictions on visible emissions in District Regulations are expressed as numbers on the Ringelmann Chart as published by the United States Bureau of Mines. Emissions may not be as dark or darker than the designated number on the Ringelmann Chart, or cannot be of such opacity as to obscure a trained observer's view to an equivalent or greater degree. Where the presence of uncombined water is the only reason for the failure of an emission to meet District limitations, those limitations shall not apply (see Section 1-114).
- 1-233 **Organic Compound:** Any compound of carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate. (Adopted March 17, 1982)
- 1-234 **Organic Compound, Non-Precursor:** Methylene chloride 1,1,1, trichloroethane, 1,1,2 trichlorotrifluoroethane (CFC-113), trichlorofluoromethane (CFC-11), dichlorodifluoromethane (CFC-12), dichlorotetrafluoroethane (CFC-114), and chloropentafluoroethane (CFC-115). In addition, any compound designated as having a negligible contribution to photochemical reactivity by the U.S. Environmental Protection Agency as published in the Federal Register shall be considered a Non-Precursor Organic Compound. (Adopted March 17, 1982, Amended Sept. 2, 1998)
- 1-235 **Organic Compound, Precursor:** Any organic compound as defined in 1-233 excepting the non-precursor organic compounds, 1-234. (Adopted March 17, 1982)
- 1-236 **Volatile Organic Compound (VOC):** Any organic compound, as described in Section 1-233, which would be emitted during use, processing, application, curing or drying of a solvent, surface coating, or other material. (Adopted October 19, 1983)
- 1-237 **Reduced Sulfur Compounds:** All organic and inorganic sulfide compounds and mercaptans. (Adopted October 19, 1983)
- 1-238 **Parametric Monitor:** Any monitoring device or system required by District permit condition or regulation to monitor the operational parameters of either a source or an

abatement device. Parametric monitors may record temperature, gauge pressure, flowrate, pH, hydrocarbon breakthrough, or other factors. (Adopted Sept. 2, 1998)

1-239 Continuous Emission Monitor: Any monitoring device or system, required by Regulation 1-520 and 521. (Adopted Sept. 2, 1998)

1-240 Abatement Device: Any equipment or process whose principal process is to reduce the amount of one or more pollutants from the source. (Adopted October 7, 1998)

1-400 ADMINISTRATIVE REQUIREMENTS

1-401 Violation Notice: A notice of violation or citation shall be issued by the District for all violations of District regulations and shall be delivered to persons alleged to be in violation of District regulations. The notice shall identify the nature of the violation, the rule or regulation violated, and the date or dates on which said violation occurred.

1-402 Status of Violation Notices During Variance Proceedings: Except as provided below, where a person has applied for a variance, no notices shall be issued during the period between the date of filing for the variance application and the date of decision by the Hearing Board for violations covered by the variance application. However, during the period between the date of the filing for a variance and the date of the decision by the Hearing Board, evidence of additional violations shall be collected and duly recorded. Where the variance is denied, evidence of violations collected between the filing date and decision date shall be reviewed and a notice of violation issued for violations occurring during that period shall be served upon said person. Where the variance is granted, no notice of violation shall be issued for violations occurring during that period except in extraordinary circumstances as determined by the APCO.

402.1 Notwithstanding the foregoing, when the Hearing Board's proceedings on a variance application will require more than one day of hearing time, any party to the proceeding may request, or the Hearing Board on its own motion may require, that the provisions of this Section 1-402 shall not apply to any violations occurring during the course of the variance proceeding unless and until the applicant has satisfied the good cause standard for the granting of an interim variance, as provided in Health and Safety Code Section 42351. In the event that a variance is eventually granted in such a case, the Air Pollution Control Officer may rescind any notices of violation issued during the course of the variance proceeding. (Adopted October 21, 1992)

1-410 Registration: A person responsible for the emission of air contaminants shall register with the District on forms provided by the APCO, and shall thereafter provide any information requested by the APCO regarding such emissions to the District on an annual basis. Plants or facilities requiring annual operating permits are exempt from registration.

1-411 Permits May Be Needed: Registration with the District shall not relieve a person from the requirements of Regulation 2, Permits, where applicable.

1-412 Address For Service: A person registered with the District may be served notices, including notices of hearings before the Hearing Board, by certified mail addressed to the address contained in the registration form on file with the District.

1-420 Emission Source Data: Upon the request of the APCO, a person responsible for the emission of air contaminants shall provide the District with any data concerning emissions from any operation under such person's control. The data shall be in such form as prescribed by the APCO, who may require that such data be certified by a registered professional engineer.

1-430 Breakdown Procedures: The APCO shall establish written procedures to insure that all reported breakdown occurrences are handled uniformly to final disposition.

1-431 Breakdown Report: A person seeking relief pursuant to Section 1-112 shall notify the APCO of the breakdown condition immediately, with due regard for public safety, including the hazard of fire and explosion. Such notification shall include the time, specific location, equipment involved and to the extent possible the cause of the breakdown.

- 1-432 Written Breakdown Report:** Within 30 days of the occurrence of a breakdown, the person responsible shall submit a written report to the APCO including the following:
- 432.1 Sufficient information to enable the APCO to determine whether or not a breakdown occurred and the cause of the breakdown;
 - 432.2 A summary of the corrective action taken following the breakdown;
 - 432.3 Present status of the breakdown, and
 - 432.4 A summary of actions taken to insure that such breakdowns will not occur in the future.
- 1-433 Determination of Breakdown:** Following the report made pursuant to Section 1-431, the APCO shall promptly investigate to determine whether the occurrence reported constitutes a breakdown. The determination may be made based upon information developed by the investigation, or upon the basis of such information in addition to information reported in the written report made pursuant to Section 1-432. If the APCO determines that the occurrence does not constitute a breakdown, appropriate enforcement action may be taken.
- 1-434 Administrative Violation, Breakdown:** Any person who knowingly files falsely, or without probable cause, a claim for relief pursuant to Section 1-112 shall be presumed to be in violation of these regulations. The burden of proof of establishing that a breakdown has occurred shall be upon the person who requests the breakdown relief.
- 1-440 Right of Access to Premises:** The person responsible for emissions shall provide to the APCO reasonable access to any facility or equipment therein which is subject to the permit requirements of the District and which may cause or control or record such emissions for the purpose of investigating compliance with District regulations or California law. Such access shall be granted with due consideration for the safety of District employees and minimum interference with the operations of the facility.
- 1-441 Right of Access to Information:** The APCO may request in writing from a person responsible for emissions from any source: plans, specifications, records, samples or other information which will disclose the nature, extent, quantity or degree of air contaminants which are or may be emitted by the source. Such information may include, but is not limited to, process charts, in-stack monitoring data and operating logs which relate to emissions. If the person feels that trade secrets are unreasonably being requested by the APCO, the person may appeal directly to the Board of Directors.
- 441.1 When copies of monitoring charts are requested, the APCO may require that such charts immediately be properly identified and labeled in the presence of a District representative.
 - 441.2 When samples relating to emissions are requested, the APCO may require that such samples be obtained in the presence of a District representative.
 - 441.3 Information requested by the APCO shall be provided as soon as reasonable possible, but in any event within 30 days from the date of receipt of the request.
- 1-500 MONITORING AND RECORDS**
- 1-501 Sampling Facilities:** A person responsible for the emission of air contaminants for which emission limits have been established by these regulations shall, upon the request of the APCO, provide such sampling and testing facilities, exclusive of instruments and sensing devices, as may be necessary for the determination of the nature and quantity of such air contaminants.
- 1-502 Sampling at Type B Emission Points:** Emissions from a Type B emission point shall be measured at the place and by procedures which show the highest measurement of air contaminants.
- 1-510 Area Monitoring:** Persons subject to or seeking to come within the provisions of the area monitoring requirements of these regulations shall install, calibrate, operate, site and maintain all monitoring equipment in order to monitor continuously the concentration of the specified air pollutant. Such persons shall install suitable

instruments, and meteorological stations to monitor continuously and record weather conditions if required by the APCO or the terms of the regulations.

1-520 Continuous Emission Monitoring: Persons responsible for the emissions from the following sources shall install monitors for the following air pollutants or analog thereof:

- 520.1 NO_x, CO₂, or O₂, from steam generators with a rated heat input of 264 GJ's (250 million BTU) or more per hour; and opacity from steam generators with a rated heat input of 264 GJ's (250 million BTU) or more per hour which are permitted for discretionary combustion of a non-gaseous fuel. Firing of non-gaseous fuel permitted under the "test-firing" provisions of District rules is not considered to be "discretionary."
- 520.2 NO_x from all new nitric acid plants, and existing plants having a production capacity in excess of 272 metric tons (300 T) per days as 100% nitric acid.
- 520.3 SO₂ from sulfuric acid plants.
- 520.4 SO₂ from sulfur recovery plants emitting more than 45 KG (100 lbs.) per day of SO₂.
- 520.5 SO₂ and opacity from the catalyst regenerators of fluid catalytic crackers.
- 520.6 SO₂ and opacity from fluid cokers with a fresh feed rate greater than 1600 m³ (10,000 bbls) per day.
- 520.7 SO₂ from fossil fuel fired steam generators with a heat input of 264 GJ's (250 million BTU) or more per hour with a use factor of at least 30% and utilizing flue gas desulfurizing units, and
- 520.8 Monitors as required by Regulations 10, 12 and Section 2-1-403 of Regulation 2. (Amended March 17, 1982; October 7, 1998)

1-521 Monitoring May Be Required: The APCO may require the installation of suitable instruments to monitor continuously the nature, quantity and opacity of any air pollutant controlled by District regulations where there is a reason to believe such emissions are in potential violation of such regulations.

1-522 Continuous Emission Monitoring and Recordkeeping Procedures: Persons responsible for installing continuous emission monitors pursuant to District regulations shall comply with the following:

- 522.1 Plans and specifications for monitoring selection and placement shall be submitted to the APCO for prior approval.
- 522.2 Installation scheduling shall be completed as specified in Volume V, Manual of Procedures (MOP).
- 522.3 Continuous emission monitors and their components shall be performance tested as specified in Volume V, MOP.
- 522.4 Continuous emission monitor periods of inoperation greater than 24 continuous hours shall be reported by the following working day, followed by notification of resumption of monitoring. Adequate proof of expeditious repair shall be furnished to the APCO for downtime in excess of fifteen consecutive days.
- 522.5 Monitors shall be calibrated daily except for velocity sensing instruments which shall be calibrated monthly.
- 522.6 Continuous emission monitors and their components shall be maintained to be accurate to within twenty percent when compared to the field accuracy test procedures of Volume V, MOP, or 10% of the applicable emission standard, or 5% of span in the absence of an emission standard.
- 522.7 Any indicated excess of any emission standard to which the source is required to conform, as indicated by the monitor, shall be reported to the APCO within 96 hours after such occurrence. The report shall include the nature, extent, cause and corrective action taken.
- 522.8 Monitoring data shall be submitted on a monthly basis in a format specified by the APCO. Reports shall be submitted within 30 days of the close of the month reported on.
- 522.9 Records shall be maintained for a period of at least two years and shall be made available to the APCO on request. They shall include:
 - 1) Occurrence and duration of any startup, shutdown or malfunction.
 - 2) Tests, calibrations, adjustments and maintenance.

3) Emission measurements.

522.10 Monitors required by Sections 1-521 or 2-1-403 shall meet the requirements specified by the APCO. (Adopted March 17, 1982, Amended Sept. 2, 1998)

1-523 Parametric Monitoring and Recordkeeping Procedures: Persons responsible for installing parametric monitors pursuant to District permit conditions or regulations shall comply with the following:

523.1 Parametric monitor periods of inoperation greater than 24 continuous hours shall be reported by the following working day, followed by notification of resumption of monitoring to the Compliance and Enforcement Division.

523.2 Parametric monitor periods of inoperation shall not exceed 15 consecutive days per incident or 30 calendar days per consecutive 12-month period.

523.3 Any violation of permit conditions or District regulations to which the source is required to conform, as indicated by the monitor, shall be reported to the APCO within 96 hours after such occurrence. The report shall include the nature, extent, cause and corrective action taken.

523.4 Records shall be maintained for a period of at least two years and shall be made available to the APCO on request. They shall include:

- 1) Dates and duration of monitoring system periods of inoperation.
- 2) Tests, calibrations, adjustments and maintenance.

(Adopted September 2, 1998)

1-530 Area Monitoring Downtime: Area monitoring downtime caused by instrument malfunction, where such downtime exceeds a continuous 24-hour period, shall be reported to the APCO within the next normal working day after discovery of the malfunction. Downtime due to maintenance or repair which is expected to exceed 5 days' duration shall be reported to the APCO prior to the commencement of such maintenance or repairs.

(Amended March 17, 1982)

1-540 Area Monitoring Data Examination: At intervals of no greater than seven days, data recorded by the instruments required pursuant to Section 1-510 shall be examined by the persons responsible for the instruments to determine compliance with District Regulations.

(Amended March 17, 1982)

1-542 Area Concentration Excesses: Excesses of air pollutant levels over limits prescribed in District regulations recorded on instruments required pursuant to Section 1-510 shall be reported to the APCO within the next normal working day following the examination of data made pursuant to Section 1-540.

1-543 Record Maintenance for Two Years: Monitoring records of the equipment required by Section 1-510 shall be kept for a period of two years and shall be made available to the APCO upon request.

(Amended March 17, 1982)

1-544 Monthly Summary: The person responsible for emissions being monitored pursuant to Section 1-510 shall provide in such form as prescribed by the APCO a summary of data obtained during each calendar month, as specified in the Manual of Procedures.

(Amended March 17, 1982)

**REGULATION 2
PERMITS
RULE 1
GENERAL REQUIREMENTS**

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REGULATION 2
PERMITS
RULE 1
GENERAL REQUIREMENTS

(Adopted January 1, 1980)

2-1-100 GENERAL

2-1-101 Description: The purpose of Regulation 2 is to provide an orderly procedure for the review of new sources of air pollution, and of the modification and operation of existing sources, and of associated air pollution control devices, through the issuance of authorities to construct and permits to operate. The applicability of Regulation 2, Rule 1 is illustrated by Figure 2-1-101, Permit/Exemption Flow Chart. An applicant may choose to obtain a permit to operate for a source that is exempt from permit requirements. In that case, the affected source is deemed to be subject to the requirements of Section 2-1-302 until such time as an application for return to exempt status is approved.

(Amended 7/17/91; 6/7/95; 5/17/00; 12/21/04)

2-1-102 Applicability to Other Rules in Regulation 2: The provisions of this Rule, including the definitions, shall apply to the other Rules of this Regulation, where applicable, unless superseded by specific provisions in those other Rules.

(Amended November 3, 1993)

2-1-103 Exemption, Source not Subject to any District Rule: Any source that is not already exempt from the requirements of Section 2-1-301 and 302 as set forth in Sections 2-1-105 to 2-1-128, is exempt from Section 2-1-301 and 302 if the source meets all of the following criteria:

- 103.1 The source is not in a source category subject to any of the provisions of Regulation 6⁽¹⁾, Regulation 8⁽²⁾ excluding Rules 1 through 4, or Regulations 9 through 12; and
- 103.2 The source is not subject to any of the provisions of Sections 2-1-316 through 319; and
- 103.3 Actual emissions of precursor organic compounds (POC), non-precursor organic compounds (NPOC), nitrogen oxides (NO_x), sulfur dioxide (SO₂), PM_{2.5}, PM₁₀ and carbon monoxide (CO) from the source are each (i) less than 10 pounds per highest day; or (ii) if greater than 10 pounds per highest day, total emissions are less than 150 pounds per year, per pollutant; and
- 103.4 The source is not an ozone generator (a piece of equipment designed to generate ozone) emitting 1 lb/day or more of ozone.

Note 1: Typically, any source may be subject to Regulation 6, Particulate Matter and Visible Emissions. For the purposes of this section, Regulation 6 applicability shall be limited to the following types of sources that emit PM_{2.5} and PM₁₀: combustion source; material handling/processing; sand, gravel or rock processing; cement, concrete and asphaltic concrete production; tub grinder; or similar PM_{2.5} and PM₁₀-emitting sources, as deemed by the APCO.

Note 2: If an exemption in a Regulation 8 Rule indicates that the source is subject to Regulation 8, Rules 1 through 4, then the source must comply with all applicable provisions of Regulation 8, Rules 1 through 4, to qualify for this exemption.

(Adopted 6/7/95; Amended 5/17/00; 12/21/04)

2-1-104 Deleted October 7, 1998

2-1-105 Exemption, Registered Statewide Portable Equipment: Equipment that complies with all applicable requirements of and is registered under the Statewide Portable Equipment Registration Program (California Code of Regulations Title 13, Division 3, Chapter 3, Article 5) is exempt from the requirements of Sections 2-1-301 and 302. If the equipment ceases to qualify for this exemption for any reason (for example, if it remains at any fixed location for more than twelve months or otherwise ceases to be portable as defined by the Program), the equipment shall be subject to the requirements of Regulation 2 as if it were a new source.

(Adopted 6/7/95; Amended 10/7/98; 5/17/00)

2-1-106 Limited Exemption, Accelerated Permitting Program: Unless subject to any of the provisions of Sections 2-1-316 through 319, any new source or modification or alteration of an existing source is exempt from the Authority to Construct requirements of Section 2-1-301 if it has received a temporary Permit to Operate under the Accelerated Permitting Program set forth in Section 2-1-302.2.

(Adopted 6/7/95; Amended 10/7/98; 5/17/00; 6/15/05; 12/19/12)

2-1-109 Deleted June 7, 1995

2-1-110 Deleted June 7, 1995

2-1-111 Deleted June 7, 1995

2-1-112 Deleted June 7, 1995

2-1-113 Exemption, Sources and Operations:

113.1 The following sources and operations are exempt from the requirements of Sections 2-1-301 and 302, in accordance with the California Health and Safety Code:

- 1.1 Single and multiple family dwellings used solely for residential purposes.
- 1.2 Agricultural sources (as defined in Section 2-1-239) with actual emissions of each regulated air pollutant, excluding fugitive dust and greenhouse gases, less than 50 tons per year. Agricultural sources engaged in composing and other similar biomass processing that primarily process green materials or animal waste products derived from agricultural operations shall not become ineligible for this exemption for processing material from non-agricultural operations as long as the facility processes less than 500 tons per year of such material from non-agricultural operations.
- 1.3 Any vehicle. Equipment temporarily or permanently attached to a vehicle is not considered to be a part of that vehicle unless the combination is a vehicle as defined in the Vehicle Code. Specialty vehicles may include temporarily or permanently attached equipment including, but are not limited to, the following: oil well production service unit; special construction equipment; and special mobile equipment.
- 1.4 Tank vehicles with vapor recovery systems subject to state certification, in accordance with the Health and Safety Code.

113.2 The following sources and operations are exempt from the requirements of Sections 2-1-301 and 302:

- 2.1 Road construction, widening and rerouting.
- 2.2 Restaurants, cafeterias and other retail establishments for the purpose of preparing food for human consumption.
- 2.3 Structural changes which do not change the quality, nature or quantity of air contaminant emissions.

- 2.4 Any abatement device which is used solely to abate equipment that does not require an Authority to Construct or Permit to Operate.
- 2.5 Architectural and industrial maintenance coating operations that are exclusively subject to Regulation 8, Rules 3 or 48, because coatings are applied to stationary structures, their appurtenances, to mobile homes, to pavements, or to curbs. This does not apply to coatings applied by the manufacturer prior to installation, nor to the coating of components removed from such structures and equipment.
- 2.6 Portable abatement equipment exclusively used to comply with the tank degassing or vacuum truck control requirements of Regulation 8, Rules 5, 40 or 53.
- 2.7 Equipment that transports, holds or stores California Public Utilities Commission regulated natural gas, excluding drivers.
- 2.8 Deleted May 17, 2000
- 2.9 Deleted May 17, 2000
- 2.10 Deleted May 17, 2000
- 2.11 Teaching laboratories used exclusively for classroom experimentation and/or demonstration.
- 2.12 Laboratories located in a building where the total laboratory floor space within the building is less than 25,000 square feet, or the total number of fume hoods within the building is less than 50, provided that Responsible Laboratory Management Practices, as defined in Section 2-1-224, are used. Buildings connected by passageways and/or corridors shall be considered as separate buildings, provided that structural integrity could be maintained in the absence of the passageways and/or corridors and the buildings have their own separate and independently operating HVAC and fire suppression systems. For the purposes of this subsection, teaching laboratories that are exempt per Section 2-1-113.2.11 are not included in the floor space or fume hood totals. In addition, laboratory units for which the owner or operator of the source can demonstrate that toxic air contaminant emissions would not occur, except under accidental or upset conditions, are not included in the floor space or fume hood totals.
- 2.13 Maintenance operations on natural gas pipelines and associated equipment, provided that emissions from such operations consist solely of residual natural gas that is vented after the equipment is isolated or shut down.
- 2.14 [Deleted 12/19/2012]
- 2.15 Asbestos and asbestos containing material renovation or removal conducted in compliance with Regulation 11, Rule 2 and Regulation 3.
- 2.16 Closed landfills that have less than 1,000,000 tons of decomposable solid waste in place and that do not have an operating landfill gas collection system.
- 2.17 Closed landfills that have not accepted waste for at least 30 years and that never had a landfill gas collection system.
- 2.18 Construction of a building or structure that is not itself a source requiring a permit.
- 2.19 Vacuum trucks subject to Regulation 8, Rule 53 and processing regulated material as defined in that rule.

(Adopted 10/19/83; Amended 7/17/91; 6/7/95; 5/17/00; 11/15/00; 5/2/01; 7/19/06; 4/18/12; 12/06/17)

2-1-114 Exemption, Combustion Equipment: The following equipment is exempt from the requirements of Sections 2-1-301 and 302, only if the source does not emit pollutants other than combustion products, and those combustion products are not caused by the combustion of a pollutant generated from another source, and the source does not require permitting pursuant to Section 2-1-319.

114.1 Boilers, Heaters, Steam Generators, Duct Burners, and Similar Combustion Equipment:

- 1.1 Any of the above equipment with less than 1 million BTU per hour rated heat input.
- 1.2 Any of the above equipment with less than 10 million BTU per hour rated heat input if fired exclusively with natural gas (including compressed natural gas), liquefied petroleum gas (e.g. propane, butane, isobutane, propylene, butylenes, and their mixtures), or any combination thereof.

114.2 Internal Combustion Engines and Gas Turbines:

- 2.1 Internal combustion (IC) engines and gas turbines with a maximum output rating less than or equal to 50 bhp.
- 2.2 Internal combustion (IC) engines and gas turbines used solely for instructional purposes at research, teaching, or educational facilities.
- 2.3 Portable internal combustion engines which are at a location for less than 72 consecutive hours.
- 2.4 Any engine mounted on, within, or incorporated into any vehicle, train, ship, boat, or barge used to provide propulsion for the vehicle, train, ship, boat, or barge.
- 2.5 Any engine mounted on, within, or incorporated into any vehicle, train, ship, boat, or barge used to provide propulsion for the vehicle, train, ship, boat, or barge and which is also used to supply mechanical or electrical power to ancillary equipment (e.g., crane, drill, winch, etc.) which is affixed to or is a part of the vehicle, train, ship, boat, or barge.

(Adopted 10/19/83; Amended 7/17/91; 6/7/95; 5/17/00; 8/1/01, 12/06/17)

2-1-115 Exemption, Particulate Sources at Quarries, Mineral Processing and Biomass Facilities: The following potential PM_{2.5} and PM₁₀ sources are exempt from the requirements of sections 2-1-301 and 302, provided that the source does not require permitting pursuant to Section 2-1-319.

115.1 Sources located at quarrying; mineral or ore handling or processing; concrete production; asphaltic concrete production; marine bulk transfer stations; concrete or asphaltic concrete recycling; vehicle shredding; glass manufacturing; handling or processing of cement, coke, lime, flyash, fertilizer, or catalyst; or other similar facility which meets one of the following:

- 1.1 Mixer and other ancillary sources at concrete or aggregate product production facilities with a maximum rated production capacity less than 15 cubic yards (yd³) per hour;
- 1.2 Other source at a facility with a maximum throughput less than 5000 tons per year;
- 1.3 Operating, loading and unloading a crusher or grinder which processes exclusively material with a moisture content greater than or equal to 20 percent by weight;
- 1.4 Operating, loading and unloading the following sources which process exclusively material with a moisture content greater than or equal to 5 percent by weight:

- 1.4.1 Screen or other size classification;
- 1.4.2 Conveyor, screw, auger, stacker or bucket elevator;
- 1.4.3 Grizzly, or other material loading or unloading;
- 1.4.4 Storage silos;
- 1.4.5 Storage or weigh hopper/bin system.
- 1.5 Haul or access roads;
- 1.6 Drilling or blasting.
- 115.2 Sources located at biomass recycling, composting, landfill, POTW, or related facilities, including, but not limited to, the following:
 - 2.1 Tub grinder powered by a motor with a maximum output rating less than 10 horsepower;
 - 2.2 Hogger, shredder or similar source powered by a motor with a maximum output rating less than 25 horsepower;
 - 2.3 Other biomass processing/handling sources at a facility with a total throughput less than 500 tons per year.

(Amended 6/7/95; 5/17/00)

2-1-116 Exemption, Furnaces, Ovens and Kilns: The following equipment is exempt from the requirements of Sections 2-1-301 and 302, provided that the source does not require permitting pursuant to Section 2-1-319.

- 116.1 Porcelain enameling furnaces, porcelain enameling drying ovens, vitreous enameling furnaces or vitreous enameling drying ovens.
- 116.2 Crucible furnaces, pot furnaces, induction furnaces, cupolas, electric arc furnaces, reverberatories, or blast furnaces with a capacity of 1000 lbs or less each.
- 116.3 Crucible furnaces, pot furnaces, or induction furnaces for sweating or distilling that process 100 tons per year of all metals or less.
- 116.4 Drying or heat-treating ovens with less than 10 million BTU per hour capacity provided that a) the oven does not emit pollutants other than combustion products and b) the oven is fired exclusively with natural gas (including compressed natural gas), liquefied petroleum gas (e.g. propane, butane, isobutane, propylene, butylenes, and their mixtures), or any combination thereof.
- 116.5 Ovens used exclusively for the curing of plastics which are concurrently being vacuum held to a mold, or for the softening and annealing of plastics.
- 116.6 Ovens used exclusively for the curing of vinyl plastisols by the closed mold curing process.
- 116.7 Ovens used exclusively for curing potting materials or castings made with epoxy resins.
- 116.8 Kilns used for firing ceramic ware, heated exclusively by natural gas, liquefied petroleum gas, electricity or any combination thereof.
- 116.9 Parts cleaning, bake-off, and similar ovens that meet both of the following:
 - 9.1 Oven is equipped with a secondary combustion chamber or abated by a fume incinerator; and
 - 9.2 Internal oven volume is 1 cubic yard or less.
- 116.10 Electric ovens used exclusively for curing or heat-treating where no significant off-gassing or evaporation of any air contaminants occurs.

(Adopted 10/19/83; Amended 7/17/91; 6/7/95; 5/17/00)

2-1-117 Exemption, Food and Agricultural Equipment: The following equipment is exempt from the requirements of Sections 2-1-301 and 302, provided that the source does not require permitting pursuant to Section 2-1-319.

- 117.1 Smokehouses or barbecue units in which the maximum horizontal inside cross sectional area does not exceed 20 square feet.
- 117.2 Equipment at facilities other than restaurants, cafeterias or other retail operations, which is used to dry, cook, fry, bake, or grill less than 1000 tons per year of food products.
- 117.3 Any oven with a total production of yeast leavened bakery products of less than 10,000 pounds per operating day, averaged over any period of seven consecutive days, and which is heated either electrically or exclusively by natural gas firing with a maximum capacity of less than 10 million BTU per hour.
- 117.4 Equipment used exclusively to grind, blend, package, or store tea, cocoa, spices, or coffee.
- 117.5 Equipment used to dry, mill, grind, blend, or package less than 1000 tons per year of dry food products such as seeds, grains, corn, meal, flour, sugar, and starch.
- 117.6 Equipment used to convey, transfer, clean, or separate less than 1000 tons per year of dry food products or waste from food production operations.
- 117.7 Storage equipment or facilities containing dry food products; which are not vented to the outside atmosphere, or which handle less than 1000 tons per year.
- 117.8 Coffee, cocoa and nut roasters with a roasting capacity of less than 15 pounds of beans or nuts per hour; and any stoners or coolers operated in conjunction with these roasters.
- 117.9 Containers, reservoirs, tanks, or loading equipment used exclusively for the storage or loading of beer, wine or other alcoholic beverages.
- 117.10 Fermentation tanks for beer or wine. Fermentation tanks used for the commercial production of yeast for sale are not exempt.
- 117.11 Brewing operations at facilities producing less than 3 million gallons per year of beer.
- 117.12 Fruit sulfuring operations at facilities producing less than 10 tons per year of sulfured fruits and vegetables.

(Adopted 10/19/83; Amended 4/16/86; 7/1791; 6/7/95; 5/17/00)

2-1-118 Exemption, Surface Preparation and Cleaning Equipment: The following equipment is exempt from the requirements of Sections 2-1-301 and 302, provided that the source does not require permitting pursuant to Section 2-1-319.

- 118.1 Permanent abrasive blasting source, as defined by Regulation 12, Rule 4, that has a confined volume less than 100 cubic feet (ft³) and is abated by a particulate filter.
- 118.2 Blast cleaning equipment using a suspension of abrasive in water.
- 118.3 Portable abrasive blasting equipment used on a temporary basis within the District.
- 118.4 Equipment, including solvent cold cleaners using an unheated solvent mixture for surface preparation, cleaning, wipe cleaning, fluxing or stripping by use of solutions with a VOC content less than or equal to 50 grams per liter (0.42 lb/gal).
- 118.5 Equipment using a heated solvent mixture for steam cleaning, surface preparation, fluxing, stripping, wipe cleaning, washing or drying products, provided that a) only solutions containing less than 2.5 percent VOC (wt) are used; and b) any combustion sources used in the process are exempt under Section 2-1-114.

- 118.6 Equipment or operations which use unheated solvent and which contain less than 1 gallon of solvent or have a liquid surface area of less than 1 ft². This exemption does not apply to solvent stations at semiconductor manufacturing operation fabrication areas or aerospace stripping operations.
- 118.7 Deleted December 21, 2004
- 118.8 Batch solvent recycling equipment where all of the following apply:
 - 8.1 Recovered solvent is used primarily on site (more than 50% by volume); and
 - 8.2 Maximum heat input (HHV) is less than 1 million BTU per hour; and
 - 8.3 Batch capacity is less than 150 gallons.
- 118.9 Wipe cleaning at a facility that meets one of the following:
 - 9.1 net cleanup solvent usage less than 20 gallons per year from all wipe cleaning operations; or
 - 9.2 emission to the atmosphere of less than 150 pounds per year of uncontrolled VOC from all wipe cleaning operations.

At a facility with total wipe cleaning emissions greater than 150 lb/yr, wipe cleaning operations may be grouped per Section 2-1-401.4.
- 118.10 Any solvent cleaning or surface preparation source which employs only non-refillable hand held aerosol cans.
- 118.11 Spray gun cleaning performed in compliance with Regulation 8, provided the cleaning is associated with a source, such as a spray booth, subject to the requirements of Section 2-1-301 and 302.

(Adopted 10/19/83; Amended 4/16/86; 8/2/89; 7/17/91; 6/7/95; 5/17/00; 12/21/04)

2-1-119 Exemption, Surface Coating and Printing Equipment: The following equipment and operations are exempt from the requirements of Sections 2-1-301 and 302, provided that the source does not require permitting pursuant to Section 2-1-319.

- 119.1 Any powder coating operation, or radiation cured coating operation where ultraviolet or electron beam energy is used to initiate a reaction to form a polymer network.
- 119.2 Any coating, adhesive, dipping, laminating, screening, masking, electrodeposition, resist application, or similar source or operation at any facility that is not operated or conducted as part of a graphic arts operation, which:
 - 2.1 Consumes a total of less than 30 gallons of coating, adhesive, laminate or resist per year on a facility wide basis, or emits less than 150 pounds per year of uncontrolled VOC on a facility wide basis, resulting from the application of these materials; or
 - 2.2 Uses exclusively materials that contain less than one percent VOC (wt).

At a facility with emissions from these sources or operations of greater than 150 lb/yr, these sources or operations may be grouped per Section 2-1-401.3.
- 119.3 Any coating source which employs only non-refillable hand held aerosol cans.
- 119.4 An oven associated with an exempt coating source, provided that the oven is electrically heated, or the oven is fired exclusively with natural gas, liquefied petroleum gas (e.g. propane, butane, isobutane, propylene, butylenes, and their mixtures) and the maximum firing rate is less than 10 million BTU per hour.
- 119.5 Any graphic arts operation that emits less than 400 pounds of uncontrolled VOC emissions per month on a facility-wide basis.

(Adopted 10/19/83; Amended 4/16/86; 7/17/91; 6/7/95; 5/17/00; 12/21/04; 11/19/08)

2-1-120 Exemption, Dry Cleaning Equipment: Any dry cleaning facility which uses (gross consumption) less than 200 gallons of petroleum solvent or any other non-halogenated solvent in any single year is exempt from the requirements of Sections 2-1-301 and 302, provided that the source does not require permitting pursuant to Section 2-1-319; the facility is in compliance with the registration requirement in Regulation 8, Rule 17, Section 404; and the equipment does not use solvent that contains perchloroethylene or more than 1% by weight of any other halogenated compound.

(Adopted 10/19/83; Amended 7/17/91; 6/7/95; 5/17/00; 3/4/09)

2-1-121 Exemption, Material Working and Handling Equipment: The following equipment is exempt from the requirements of Sections 2-1-301 and 302, provided that the source does not require permitting pursuant to Section 2-1-319.

- 121.1 Equipment used for buffing, carving, cutting, drilling, grinding, machining, planing, routing, sanding, sawing, shredding, stamping or turning of wood, ceramic artwork, ceramic precision parts, leather, metals, plastics, rubber, fiberboard, masonry, glass, silicon, semiconductor wafers, carbon or graphite, provided that organic emissions from the use of coolant, lubricant, or cutting oil are 5 ton/yr or less.
- 121.2 Equipment used for pressing or storing sawdust, wood chips or wood shavings.
- 121.3 Equipment used exclusively to mill or grind coatings and molding compounds in a paste form provided the solution contains less than one percent VOC (wt).
- 121.4 Tumblers used for the cleaning or deburring of metal products without abrasive blasting.
- 121.5 Batch mixers with a rated working capacity of 55 gallons or less.
- 121.6 Mixing equipment provided no material in powder form is added and mixture contains less than one percent VOC (wt).
- 121.7 Equipment used exclusively for the mixing and blending of materials at ambient temperature to make water based adhesives.
- 121.8 Equipment used exclusively for the mixing and packaging of lubricants or greases.
- 121.9 Presses used exclusively for extruding metals, minerals, plastics or wood.
- 121.10 Presses used for the curing of rubber products and plastic products. The use of mold release products or lubricants is not exempt unless the VOC content of these materials is less than or equal to 1 percent, by weight, or unless the total facility-wide uncontrolled VOC emissions from the use of these materials are less than 150 lb/yr.
- 121.11 Platen presses used for laminating.
- 121.12 Roll mills or calendars for rubber or plastics.
- 121.13 Equipment used exclusively for forging, pressing, rolling, stamping or drawing metals or for heating metals immediately prior to forging, pressing, rolling, stamping or drawing, provided that: (1) maximum fuel use rate is less than 10 million BTU/hr; (2) no lubricant with an initial boiling point less than 400°F is used; and (3) organic emissions are 5 ton/yr or less.
- 121.14 Atmosphere generators used in connection with metal heat treating processes.
- 121.15 Equipment used exclusively for the sintering of glass or metals.
- 121.16 Equipment used exclusively for the melting or applying of wax containing less than one percent VOC (wt).

- 121.17 Equipment used exclusively for conveying and storing plastic pellets.
- 121.18 Solid waste transfer stations that receive or load out a total of all material less than 50 tons/day.
- 121.19 Inactive solid waste disposal sites which do not have an operating landfill gas collection system.

(Adopted 10/19/83; Amended 7/17/91; 6/7/95; 5/17/00)

2-1-122 Exemption, Casting and Molding Equipment: The following equipment is exempt from the requirements of Sections 2-1-301 and 302, provided that the source does not require permitting pursuant to Section 2-1-319.

- 122.1 Molds used for the casting of metals.
- 122.2 Foundry sand mold forming equipment to which no heat is applied, except processes utilizing organic binders yielding in excess of 0.25% free phenol by weight of sand.
- 122.3 Shell core and shell-mold manufacturing machines.
- 122.4 Equipment used for extrusion, compression molding and injection molding of plastics. The use of mold release products or lubricants is not exempt unless the VOC content of these materials is less than or equal to 1 percent, by weight, or unless the total facility-wide uncontrolled VOC emissions from the use of these materials are less than 150 lb/yr.
- 122.5 Die casting machines.

(Adopted 10/19/83; Amended 7/17/91; 6/7/95; 5/17/00)

2-1-123 Exemption, Liquid Storage and Loading Equipment: The following equipment is exempt from the requirements of Sections 2-1-301 and 302, provided that the source does not require permitting pursuant to Section 2-1-319.

- 123.1 Storage tanks and storage vessels having a capacity of less than 260 gallons.
- 123.2 Tanks, vessels and pumping equipment used exclusively for the storage or dispensing of any aqueous solution which contains less than 1 percent (wt) organic compounds. Tanks and vessels storing the following materials are not exempt.
 - 2.1 Sulfuric acid with an acid strength of more than 99.0% by weight.
 - 2.2 Phosphoric acid with an acid strength of more than 99.0% by weight.
 - 2.3 Nitric acid with an acid strength of more than 70.0% by weight.
 - 2.4 Hydrochloric acid with an acid strength of more than 30.0% by weight.
 - 2.5 Hydrofluoric acid with an acid strength of more than 30.0% by weight.
 - 2.6 More than one liquid phase, where the top phase contains more than one percent VOC (wt).
- 123.3 Containers, reservoirs, tanks or loading equipment used exclusively for:
 - 3.1 Storage or loading of liquefied gases.
 - 3.2 Storage or loading of organic liquids or mixtures containing organic liquids; where the initial boiling point of the organics is greater than 302°F and exceeds the actual storage temperature by at least 180°F. This exemption does not apply to the storage or loading of asphalt or asphalt emulsion with a sulfur content equal to or greater than 0.5 wt%.
 - 3.3 The storage or loading of petroleum oils with an ASTM D-93 (PMCC) flash point of 130°F or higher, when stored or loaded at a temperature at least 36°F below the flash point.
 - 3.4 The storage or loading of lubricating oils.
 - 3.5 The storage of fuel oils with a gravity of 40 API or lower and having a capacity of 10,000 gallons or less.

- 3.6 The storage or loading of liquid soaps, liquid detergents, tallow, or vegetable oils, waxes or wax emulsions.
- 3.7 The storage of asphalt or asphalt emulsion with a sulfur content of less than 0.5 wt%. This does not include the storage of asphalt cutback with hydrocarbons having an initial boiling point of less than 302°F.
- 3.8 The storage of wine, beer or other alcoholic beverages.
- 3.9 The storage of organic salts or solids in an aqueous solution or suspension, provided that no liquid hydrocarbon layer forms on top of the aqueous phase.
- 3.10 The storage or loading of fuel oils with a gravity of 25 API or lower.
- 3.11 The storage and/or transfer of an asphalt-water emulsion heated to 150°F or less.
- 123.4 Tank seal replacement. For any tank subject to Regulation 8, Rule 5, any new seal must comply with the applicable provisions of Regulation 8, Rule 5, and the District must receive written notification of the tank source number and seal type at least three days prior to the installation.

(Adopted 10/19/83; Amended 7/11/84; 7/17/91; 6/7/95; 5/17/00)

2-1-124 Exemption, Semiconductor Manufacturing: Semiconductor fabrication area(s) at a facility which complies with all of the following are exempt from the requirements of Sections 2-1-301 and 302, provided that the source does not require permitting pursuant to Section 2-1-319.

- 124.1 Net solvent usage is less than 20 gallons of VOC per year on a facility wide basis; or uncontrolled VOC emissions to the atmosphere resulting from the usage of solvent are less than 150 pounds per year of VOC on a facility wide basis, and
- 124.2 Maskant and/or coating usage is less than 30 gallons per year, on a facility wide basis; or uncontrolled VOC emissions from the application of maskant and coatings are less than 150 pounds per year on a facility wide basis.

(Adopted 10/19/83; Amended 1/9/85; 4/16/86; 7/17/91; 6/7/95; 10/20/99; 5/17/00)

2-1-125 Exemption, Printed Circuit Board Manufacturing Equipment: The following equipment is exempt from the requirements of Sections 2-1-301 and 302, provided that the source does not require permitting pursuant to Section 2-1-319.

- 125.1 Equipment used exclusively for:
 - 1.1 Plating of printed circuit boards.
 - 1.2 Buffing, polishing, carving, cutting, drilling, machining, routing, sanding, sawing, surface grinding or turning of printed circuit boards.
 - 1.3 Soldering. This section does not exempt fluxing and finger cleaning (see Section 2-1-118.4).

(Adopted 10/19/83; Amended 7/17/91; 6/7/95; 5/17/00)

2-1-126 Exemption, Testing Equipment: The following equipment is exempt from the requirements of Sections 2-1-301 and 302, provided that the source does not require permitting pursuant to Section 2-1-319.

- 126.1 Equipment used for hydraulic or hydrostatic testing.
- 126.2 Bench scale laboratory equipment or processes used exclusively for chemical or physical analyses or experimentation, quality assurance and quality control testing, research and development, or similar bench scale equipment, excluding pilot plants.
- 126.3 Equipment used for inspection of metal products.

(Adopted 10/19/83; Amended 7/17/91; 6/7/95; 5/17/00)

2-1-127 Exemption, Chemical Processing Equipment: The following equipment is exempt from the requirements of Sections 2-1-301 and 302, provided that the source does not require permitting pursuant to Section 2-1-319.

- 127.1 Equipment used exclusively for the dyeing or stripping (bleaching) of textiles provided that only solutions containing less than one percent VOC (wt) are used.
- 127.2 Photographic process equipment by which an image is reproduced upon material sensitized to radiant energy.
- 127.3 Containers, reservoirs, or tanks used exclusively for electrolytic plating with, or electrolytic polishing of, or electrolytic stripping of the following metals: aluminum, brass, bronze, cadmium, copper, iron, nickel, tin, zinc and precious metals.
- 127.4 Containers, reservoirs, or tanks used exclusively for etching (not chemical milling), except where ammonia or ammonium-based etchants are used.

(Adopted 10/19/83; Amended 7/17/91; 6/7/95; 5/17/00)

2-1-128 Exemption, Miscellaneous Equipment: The following equipment is exempt from the requirements of Sections 2-1-301 and 302, provided that the source does not require permitting pursuant to Section 2-1-319.

- 128.1 Comfort air conditioning or comfort ventilating systems which are not designed to remove air contaminants generated by or released from specific units of equipment.
- 128.2 Refrigeration units except those used as, or in conjunction with, air pollution control equipment.
- 128.3 Vacuum producing devices in laboratory operations which are used exclusively in connection with other equipment which is exempted by this Rule, and vacuum producing devices which do not remove or convey air contaminants from another source.
- 128.4 Water cooling towers and water cooling ponds not used for evaporative cooling of process water, or not used for evaporative cooling of water from barometric jets or from barometric condensers.
- 128.5 Natural draft hoods, natural draft stacks or natural draft ventilators.
- 128.6 Vacuum cleaning system used exclusively for industrial commercial or residential housekeeping purposes.
- 128.7 Equipment used to liquefy or separate oxygen, nitrogen or the rare gases from the air.
- 128.8 Equipment used exclusively to compress or hold dry natural gas, excluding drivers.
- 128.9 Equipment used exclusively for bonding lining to brake shoes.
- 128.10 Equipment used exclusively for the manufacture of water emulsions of waxes, greases or oils.
- 128.11 Brazing, soldering or welding equipment.
- 128.12 Pharmaceutical manufacturing equipment with annual VOC emissions less than 150 pounds per source. Material working and handling equipment such as mills, grinders, blenders, granulators, tablet presses, capsule fillers, packagers, and conveyors are only exempt if the source also processes less than 100 tons per year of pharmaceutical products.
- 128.13 Equipment used exclusively to blend or package cosmetics.
- 128.14 Any wastewater (oil-water) separator, as defined in Regulation 8, Rule 8, which processes less than 200 gallons per day of waste water containing organic liquids.

- 128.15 Exploratory drilling activities for methane recovery at waste disposal sites, for natural gas or for oil. Production wells for the above operations are not exempt.
- 128.16 Passive aeration of soil, only if:
 - 16.1 The duration of the passive aeration operation will not exceed three months, and
 - 16.2 The soil is not being used as a cover material at a landfill.
- 128.17 Ozone generators which produce less than 1 pound per day of ozone.
- 128.18 Any source or operation which exclusively uses consumer products regulated by the California Air Resources Board (California Code of Regulations Title 17, Article 2, Sections 94507-94517).
- 128.19 Any source or operation deemed by the APCO to be equivalent to a source or operation which is expressly exempted by Sections 2-1-113 through 128.
- 128.20 Wastewater pumping stations where no treatment is performed, excluding any drivers.
- 128.21 Modification, replacement, or addition of components that have only fugitive emissions during routine operation (e.g. valves, flanges, pumps, compressors, relief valves, process drains) at existing permitted equipment at petroleum refineries, chemical plants, bulk terminals or bulk plants, provided that:
 - 21.1 the modification, replacement or addition of the components will not result in any increase in emissions of any source at the facility (other than the fugitive emissions from the components being modified, replaced or added) in such a manner as to result in a modification of such source as defined in Section 2-1-234 (e.g., through debottlenecking of a source);
 - 21.2 the total allowable fugitive emissions from all additional components installed pursuant to this exemption at a given process unit during any consecutive twelve month period do not exceed 10 lb/day (or, for components that are not associated with a process unit, the total allowable fugitive emissions from all additional components installed at the facility that are not associated with a process unit during any twelve-month period do not exceed 10 lb/day), based on the maximum fugitive emissions rate allowed under District regulations;
 - 21.3 the components installed satisfy the "typical control technology" listed in the BACT/TBACT Workbook;
 - 21.4 the components meet applicable requirements of Regulation 8 rules; and
 - 21.5 fugitive emissions from the components are included when calculating emissions from the equipment on which the components are installed for purposes of applying District regulations to that equipment (e.g., BACT and offsets requirements).
- 128.22 Fuel cells that use phosphoric acid, molten carbonate, proton exchange membrane, solid oxide or equivalent technologies.
- 128.23 Structure demolition that does not involve asbestos or asbestos containing materials.

(Adopted 10/19/83; Amended 7/16/86; 7/17/91; 6/7/95; 5/17/00; 11/15/00; 12/21/04)

2-1-129 Major Facility Review: Notwithstanding the exemptions listed in this section, every source exempted by this Rule shall be included in any application for a synthetic minor or major facility review permit required by Regulation 2, Rule 6.

(Adopted 12/3/93; Amended 2/1/95; 5/17/00)

2-1-130 Effect of Explanatory Notes: The explanatory notes that are included in italics following certain provisions in Regulation 2 are intended to help readers better understand the regulatory context of these provisions. They are not intended to be binding as regulatory requirements. Where such notes are provided, it is the text of the regulatory provision itself, and not the text of the notes, that establishes the binding legal requirements of the provision.

2-1-200 DEFINITIONS

2-1-201 [Deleted December 19, 2012]

2-1-202 Complete Application: An application that contains all of the information required under Regulation 2-1-402.

(Amended 7/17/91; 11/20/91; 5/17/00; 12/21/04)

2-1-203 Fugitive Emissions: Fugitive emissions are all emissions from unintended openings in process equipment, emissions occurring from miscellaneous activities relating to the operation of a facility, and those emissions which could not reasonably pass through a stack, chimney, vent or other functionally equivalent opening.

(Adopted October 19, 1983)

2-1-204 [Deleted December 19, 2012]

2-1-205 [Deleted December 19, 2012]

2-1-206 [Deleted December 19, 2012]

2-1-207 Organic Compound, Non-Precursor (NPOC): The following are considered non-precursor organic compounds:

methane; ethane; methylene chloride (dichloromethane); 1,1,1-trichloroethane (methyl chloroform); 1,1,2-trichloro-1,2,2-trifluoroethane (CFC-113); trichlorofluoromethane (CFC-11); dichlorodifluoromethane (CFC-12); chlorodifluoromethane (HCFC-22); trifluoromethane (HFC-23); 1,2-dichloro 1,1,2,2-tetrafluoroethane (CFC-114); chloropentafluoroethane (CFC-115); 1,1,1-trifluoro 2,2-dichloroethane (HFC-123); 1,1,1,2-tetrafluoroethane (HFC-134a); 1,1-dichloro 1-fluoroethane (HCFC-141b); 1-chloro 1,1-difluoroethane (HCFC-142b); 2-chloro-1,1,1,2-tetrafluoroethane (HCFC-124); pentafluoroethane (HFC-125); 1,1,2,2-tetrafluoroethane (HFC-134); 1,1,1-trifluoroethane (HFC-143a); 1,1-difluoroethane (HFC-152a); parachlorobenzotrifluoride (PCBTF); cyclic, branched, or linear completely methylated siloxanes; acetone; perchloroethylene (tetrachloroethylene); 3,3-dichloro-1,1,1,2,2-pentafluoropropane (HCFC-225ca); 1,3-dichloro-1,1,2,2,3-pentafluoropropane (HCFC-225cb); 1,1,1,2,3,4,4,5,5,5-decafluoropentane (HFC 43-10mee); difluoromethane (HFC-32); ethylfluoride (HFC-161); 1,1,1,3,3,3-hexafluoropropane (HFC-236fa); 1,1,2,2,3-pentafluoropropane (HFC-245ca); 1,1,2,3,3-pentafluoropropane (HFC-245ea); 1,1,1,2,3-pentafluoropropane (HFC-245eb); 1,1,1,3,3-pentafluoropropane (HFC-245fa); 1,1,1,2,3,3-hexafluoropropane (HFC-236ea); 1,1,1,3,3-pentafluorobutane (HFC-365mfc); chlorofluoromethane (HCFC-31); 1-chloro-1-fluoroethane (HCFC-151a); 1,2-dichloro-1,1,2-trifluoroethane (HCFC-123a); 1,1,1,2,2,3,3,4,4-nonafluoro-4-methoxy-butane (C₄F₉OCH₃ or HFE-7100); 2-(difluoromethoxymethyl)-1,1,1,2,3,3,3-heptafluoropropane ((CF₃)₂CF₂OCH₃); 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluorobutane (C₄F₉OC₂H₅ or HFE-7200); 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane ((CF₃)₂CF₂OC₂H₅); methyl acetate, 1,1,1,2,2,3,3-

heptafluoro-3-methoxy-propane (n-C₃F₇OCH₃, HFE-7000), 3-ethoxy-1,1,1,2,3,4,4,5,5,6,6-dodecafluoro-2-(trifluoromethyl) hexane (HFE-7500), 1,1,1,2,3,3,3-heptafluoropropane (HFC 227ea), methyl formate (HCOOCH₃), (1) 1,1,1,2,2,3,4,5,5,5-decafluoro-3-methoxy-4-trifluoromethyl-pentane (HFE-7300); propylene carbonate; dimethyl carbonate; and perfluorocarbon compounds which fall into these classes:

- (i) Cyclic, branched, or linear, completely fluorinated alkanes;
- (ii) Cyclic, branched, or linear, completely fluorinated ethers with no unsaturations;
- (iii) Cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations; and
- (iv) Sulfur containing perfluorocarbons with no unsaturations and with sulfur bonds only to carbon and fluorine.

In addition, any compound designated as having a negligible contribution to photochemical reactivity by the U.S. Environmental Protection Agency as published in the Federal Register shall be considered a Non-Precursor Organic Compound.

(Amended 7/17/91; 6/15/94)

2-1-208 Organic Compound, Precursor (POC): Any organic compound as defined in Regulation 1-233, excepting the non-precursor organic compounds as defined in Section 2-1-207.

(Adopted 3/17/82; Amended 7/17/91)

2-1-209 [Deleted December 19, 2012]

2-1-210 Start-Up Period: The period of time between initial operation and the issuance or denial of a permit to operate of a source or facility.

(Adopted October 19, 1983)

2-1-211 CEQA: The California Environmental Quality Act, Public Resources Code Section 21000 *et seq.*

(Adopted July 17, 1991)

2-1-212 EIR: Environmental Impact Report, as defined in Public Resources Code Section 21061.

(Adopted 7/17/91; Amended 5/17/00)

2-1-213 Facility: Any source, building, structure or installation that emits or may emit any air pollutant; or any aggregation of such sources, buildings, structures or installations that are (i) located on one or more contiguous or adjacent properties; (ii) are under common ownership or control; and (iii) are considered to be in the same major industrial grouping (identified by the first two digits of the applicable code in *The Standard Industrial Classification Manual*). For purposes of this definition:

213.1 A Support Facility as defined in Section 2-1-242 is considered to be in the same major industrial grouping as the facility it supports, regardless of what code may nominally apply under *The Standard Industrial Classification Manual*.

213.2 A source is considered to be under control of the owner or operator of a facility if it is owned, operated or maintained by an agent or contractor acting on behalf of the facility owner or operator, unless it remains at the facility for less than 12 consecutive months (or, in the case of multiple temporary sources that are used in succession at the facility to serve the same function at the same facility source, the total time period that all such temporary sources remain at the facility is less than 12 consecutive months).

(Adopted 11/3/93; Amended 12/21/04; 12/06/17)

- 2-1-214 Federally Enforceable:** All limitations and conditions that are enforceable by the Administrator of the U. S. EPA, including but not limited to (i) requirements developed pursuant to 40 CFR Parts 60 (NSPS), 61 (NESHAPS), 63 (HAP), 70 (State Operating Permit Programs) and 72 (Permits Regulation, Acid Rain); (ii) requirements contained in the State Implementation Plan (SIP) that are applicable to the District; (iii) District regulations approved pursuant to 40 CFR Part 51, Subpart I (NSR); (iv) requirements in any operating permit issued under an EPA-approved program that is a part of the SIP and expressly requires adherence to any permit issued under such program, including requirements of any District permit condition (excluding conditions that are not enforceable by the Administrator of the U.S. EPA); and (v) requirements in federal consent decrees that are enforceable by the Administrator of the U.S. EPA.
(Adopted November 3, 1993)
- 2-1-215 Hazardous Air Pollutant (HAP):** Any pollutant that is listed pursuant to Section 112(b) of the federal Clean Air Act.
(Adopted 11/3/93; Amended 5/17/00)
- 2-1-216** [Deleted December 19, 2012]
- 2-1-217 Potential to Emit:** The maximum capacity of a source or facility to emit a pollutant based on its physical and operational design. Any physical or operational limitation on the capacity of the source or facility to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as a part of its design only if the limitation, or the effect it would have on emissions, is enforceable by the District or EPA (or both). A source or facility that exceeds an enforceable limitation is considered to have a potential to emit that is unconstrained by any such exceeded limit.
(Adopted 11/3/93; Amended 5/17/00)
- 2-1-218 Regulated Air Pollutant:** Except for purposes of major facility review in connection with Regulation 2, Rule 6, for which the definition in Section 2-6-222 applies, a regulated air pollutant is any air pollutant that is subject to a regulation.
(Adopted 11/3/93; Amended 5/17/00)
- 2-1-219** [Deleted December 19, 2012]
- 2-1-220** [Deleted December 19, 2012]
- 2-1-221 Source:** Any article, machine, equipment, operation, contrivance or related groupings of such which may produce and/or emit air pollutants.
(Adopted June 7, 1995)
- 2-1-222 Toxic Air Contaminant (TAC):** An air pollutant that may cause or contribute to an increase in mortality or in serious illness or that may pose a present or potential hazard to human health. For the purposes of this rule, TACs consist of the substances listed in Table 2-5-1 of Regulation 2, Rule 5.
(Adopted 6/7/95; Amended 5/17/00; 6/15/05)
- 2-1-223 Year, Month and Day:** Unless otherwise specified by regulation or by permit condition, a year shall be any rolling 12-month period, a month shall be a calendar month, and a day shall be a calendar day.
(Adopted June 7, 1995)
- 2-1-224 Responsible Laboratory Management Practices:** For the purposes of meeting the laboratory exemption of Section 2-1-113.2.12, Responsible Laboratory Management Practices include all of the following measures for minimizing the emissions of toxic air contaminants:
- 224.1 Open container procedures involving materials that contain volatile toxic air contaminants (TACs) shall be avoided where feasible.

- 224.2 Open container storage of volatile hazardous chemical wastes shall be avoided.
- 224.3 Training for laboratory employees handling hazardous materials shall include information about minimizing the emissions of volatile TACs. These employees shall be directed to avoid open container procedures involving volatile TACs where feasible, and to avoid open container storage of hazardous chemical waste.
- 224.4 Fume hoods shall be posted with notices reminding employees to avoid open container procedures using volatile TACs where feasible. Laboratories shall be inspected periodically, but not less than annually, to confirm that these notices are present.
- 224.5 Laboratory fume hoods shall be monitored periodically to assure proper face velocity.
- 224.6 Evaporation of any hazardous chemical waste containing TACs as a means of disposal shall be expressly forbidden.

(Adopted June 7, 1995)

2-1-225 [Deleted December 19, 2012]

2-1-226 **Statewide Portable Equipment Registration Program:** A uniform system for statewide registration and regulation of portable internal combustion and associated equipment, implemented by the Air Resources Board pursuant to Section 41750 et seq. of the Health and Safety Code.

(Adopted October 7, 1998)

2-1-227 **Substantial Use:** Substantial use of an Authority to Construct consists of one or more of the following: purchase or acquisition of the equipment that constitutes the source; ongoing construction activities other than grading or installation of utilities or foundations; a contract or commitment to complete construction of the source within two years.

(Adopted October 7, 1998)

2-1-228 **Particulate Matter (PM):** Any airborne finely divided solid or liquid material with an aerodynamic diameter smaller than 100 microns.

(Adopted October 7, 1998)

2-1-229 **PM₁₀:** Particulate matter with aerodynamic diameter smaller than or equal to a nominal 10 microns. PM₁₀ emissions shall include gaseous emissions from a source or activity that condense to form particulate matter at ambient temperatures.

(Adopted October 7, 1998)

2-1-230 **Functionally Equivalent:** Performing the same, or equivalent, function as the object of comparison. A functionally equivalent replacement source performs the same function for the process as the source being replaced, although emissions and other characteristics may differ. A replacement that performs additional functions is not considered to be functionally equivalent.

(Adopted October 7, 1998)

2-1-231 **Semiconductor Fabrication Area:** A physically identifiable area in a semiconductor manufacturing facility where one or more specific operations in the fabrication of semiconductors or related solid state devices occurs and the equipment used to perform those operations. The semiconductor fabrication area shall not include crystal growth, circuit separation, or encapsulation. All semiconductor fabrication equipment may be grouped into a single fabrication area, or multiple fabrication areas may be established to correspond to product lines or clean room environments.

(Adopted October 20, 1999)

- 2-1-232 New Source:** Any source that has not been in existence before, including any source that meets at least one of the following criteria (except sources that lose a permit exemption or exclusion in accordance with Regulation 2-1-424):
- 232.1 Any source constructed or proposed to be constructed after March 7, 1979, but which never had a valid District authority to construct or permit to operate.
 - 232.2 Any source which was not in operation for a period of one year or more and did not hold a valid District permit to operate during this period of non-operation, occurring after March 7, 1979.
 - 232.3 Any relocation of an existing source to a non-contiguous property, unless such relocation is authorized under a permit to operate at multiple locations pursuant to Section 2-1-413.
 - 232.4 Any replacement of a source, including an identical replacement of a source, occurring after March 7, 1979, regardless of when the original source was constructed.
 - 232.5 Any replacement of an identifiable source within a group of sources permitted together under a single source number for the purpose of District permitting convenience.
 - 232.6 "Rebricking" of a glass furnace where changes to the furnace design result in a change in heat generation or absorption.

(Adopted May 17, 2000; Amended 12/06/17)

- 2-1-233 Alter:** To make any physical change, change in the method of operation, or other similar change at an existing source that may affect air pollutant emissions and that does not qualify as a modification under the criteria set forth in Section 2-1-234. The APCO may impose permit conditions in an authority to construct or permit to operate for an alteration to ensure that the change authorized by the authority to construct or permit to operate will not result in a modification under Section 2-1-234. Other forms of the word alter, including altered and alteration, shall be defined based on the meaning of the root word "alter".

(Adopted 5/17/00; Amended 11/15/00)

- 2-1-234 Modify:** To make any physical change, change in method of operation, change in throughput or production, or other similar change at an existing source, that results in an increase in emissions that is either of the following:

- 234.1 Increase in Potential To Emit: An increase in the source's daily or annual potential to emit, determined according to the definition in Section 2-1-217 and the following requirements.

- 1.1 Any legally enforceable limitation on a source's operations that has the effect of limiting emissions may be taken into account in determining a source's potential to emit, as provided for in Section 2-2-217. Such limits may include direct limitations on the source's emissions and surrogate limits on operating conditions such as production rate or capacity that have the effect of limiting emissions. An hourly emissions limit may be multiplied by 24 to determine daily potential to emit and a daily emissions limit may be multiplied by 365 to determine annual potential to emit, unless the source cannot operate at its full permitted limit for 24 hours per day or 365 days per year or there is some other reason why short-term permit limits do not accurately represent longer-term potential to emit. A permit limit that applies to combined emissions from multiple sources does not establish an individual source's potential to emit, unless the limit

imposes an effective, legally enforceable limitation specifically on the emissions from the individual source.

- 1.2 For sources whose emissions are not limited by any legally enforceable limitation (or that cannot physically operate to the full extent of such limitation), the source's potential to emit shall be determined by the source's actual physical ability to emit air pollution. A source's potential to emit shall be determined by the most relevant and reliable technical information available regarding the source's operation, which may include design information, engineering specifications, or other information. A source's potential to emit shall take into account any limitation on the effective capacity of the source as a result of the capacity of any upstream or downstream process that acts as a "bottleneck" (i.e., a limit on the ability of the source to operate at maximum capacity).
- 1.3 For emissions toxic air contaminants and hazardous air pollutants, a change is not a modification unless the increase in the source's potential to emit results in an increase in cancer risk (as defined in Regulation 2-5-206) greater than 1.0 in a million (10^{-6}) or an increase in chronic hazard index (as defined in Regulation 2-5-208) greater than 0.20. An increase in emissions of less than the trigger levels specified in Table 2-5-1 in Regulation 2, Rule 5 shall be presumed not to cause an increase in cancer risk of greater than 1.0 in a million or an increase in chronic hazard index of greater than 0.20.

234.2 Increase Over Actual Emissions Baseline: An increase that is a "major modification" under either of the following definitions:

- 2.1 Non-Attainment NSR Pollutants: For NO_x, VOC, PM_{2.5}, and SO₂, a "major modification" as defined in 40 C.F.R. section 51.165(a)(1)(v);
- 2.2 Other Federal NSR Pollutants: For other pollutants, a "major modification" as defined in 40 C.F.R. section 52.21(b)(2)(i).

The following provisions shall apply for purposes of implementing and applying this Subsection 234.2:

- 2.3 For purposes of determining whether an increase in emissions constitutes a "major modification" under Subsections 234.2.1 and/or 234.2.2, the definitions in 40 C.F.R. sections 51.165(a)(1)(i)-(xlvi) and 52.21(b)(1)-(52), and the applicability provisions in 40 C.F.R. sections 51.165(a)(2)(ii)(A)-(F) and 52.21(a)(2)(ii)-(iv), are incorporated by reference and shall be used in implementing and applying this Subsection 234.2. The term "Administrator" as used in these provisions shall be interpreted to mean the Administrator of the U.S. Environmental Protection Agency in 40 C.F.R. sections 52.21(b)(3), (b)(17), (b)(37)(i), (b)(43), (b)(48)(ii)(c), and (b)(49)-(51), and in all referenced provisions in 40 C.F.R. section 51.165; and it shall be interpreted to mean the APCO in all other provisions.
- 2.4 For any project at a "major stationary source" as defined in 40 C.F.R. sections 51.165(a)(1)(iv) or 52.21(b)(1) that (i) does not result in an increase in potential to emit as specified in subsections 234.1.1 through 234.1.3, and (ii) does not constitute a "major modification" under the definitions in subsections 234.2.1 and 234.2.2 above based on the calculation methods specified in 40 C.F.R. sections 51.165(a)(1)(xxviii)(B)(1)-(3) and 52.21(b)(41)(ii)(a)-(c), the

owner/operator of such project shall comply with the documentation, monitoring, recordkeeping, and reporting requirements set forth in 40 C.F.R. sections 51.165(a)(6)(i)-(vi) and 52.21(r)(6)(i)-(vi) for each pollutant for which there is a reasonable possibility that the project may result in a significant emissions increase within the meaning of 40 C.F.R. sections 51.165(a)(6)(vi) and 52.21(r)(6)(vi).

2.5 The owner/operator of any project that is required to maintain any documentation pursuant to Subsection 234.2.4 above shall make such documentation available for review upon request by the APCO, EPA, or any member of the public on the same terms as applicable under the requirements contained in 40 C.F.R. section 70.4(b)(3)(viii).

Other forms of the word modify, including modified and modification, shall be defined based on the meaning of the root word "modify".

(Adopted 5/17/00; Amended 11/15/00; 6/15/05; 12/06/17)

2-1-235 [Deleted, December 19, 2012]

2-1-236 [Deleted, December 19, 2012]

2-1-237 **BACT/TBACT Workbook:** District guidelines setting forth emission limitations and/or control technologies constituting BACT and TBACT for a number of source types or categories.

(Adopted June 15, 2005)

2-1-238 **Clean Air Act:** The federal Clean Air Act, as amended in 1990, including the implementing regulations.

(Adopted June 15, 2005)

2-1-239 **Agricultural Source:** A source of air pollution, or group of such sources located on the same property or on contiguous properties under common ownership or control, used in the production of crops or the raising of fowl or animals; but excluding any source or group of sources at a facility that maintains domesticated animals in corrals, pens, or other restricted areas for commercial purposes, and feeds them by means other than grazing, in numbers equal to or exceeding any of the following thresholds on any day: 1,000 milk-producing dairy cows; 3,500 beef cattle; 7,500 calves, heifers, or other cattle; 100,000 turkeys; 650,000 chickens other than laying hens; 650,000 laying hens; 3,000 swine; 15,000 sheep, lambs, or goats; 2,500 horses; 650,000 ducks; or 30,000 rabbits or other animals.

(Adopted July 19, 2006; Amended 12/06/17)

2-1-240 **Graphic Arts Operation:** Any gravure, flexographic printing, digital printing, screen printing, letterpress, and lithographic printing operation; any associated coating laminating, and adhesive operation to produce a printed product; and the use of solvents for any surface preparation and cleanup for any operation stated above.

(Adopted November 19, 2008)

2-1-241 **PM_{2.5}:** Particulate matter with aerodynamic diameter smaller than or equal to a nominal 2.5 microns. PM_{2.5} emissions shall include gaseous emissions from a source or activity that condense to form particulate matter at ambient temperatures.

2-1-242 **Support Facility:** A facility that conveys, stores, or otherwise significantly assists in the production of the principal product of another facility. Per Section 2-1-213, a support facility is considered part of the principal facility that it supports for permitting purposes under Regulation 2.

2-1-300 **STANDARDS**

2-1-301 Authority to Construct: Any person who, after July, 1972, puts in place, builds, erects, installs, modifies, modernizes, alters or replaces any article, machine, equipment or other contrivance, the use of which may cause, reduce or control the emission of air contaminants, shall first secure written authorization from the APCO in the form of an authority to construct. Routine repairs, maintenance, or cyclic maintenance that includes replacement of components with identical components is not considered to be an alteration, modification or replacement for the purpose of this Section unless the APCO determines the changes to be non-routine. The use or operation of the source shall initiate the start-up period in accordance with Section 2-1-411.

(Amended 3/17/82; 10/19/83; 7/17/91; 5/17/00)

2-1-302 Permit to Operate: Before any person, as described in Section 2-1-401, uses or operates any article, machine, equipment or other contrivance, the use of which may cause, reduce or control the emission of air contaminants, such person shall first secure written authorization from the APCO in the form of a permit to operate.

302.1 Permit to Operate, MFR: Any facility subject to the requirements of Regulation 2, Rule 6, Major Facility Review, shall comply with the permitting requirements included in that Rule in addition to securing a permit to operate under this Rule.

302.2 Permit to Operate, Accelerated Permitting Program: Unless subject to any of the provisions of Sections 2-1-316 through 319, a temporary permit to operate may be obtained to authorize operation of a new source or a modification or alteration of an existing source under this Section pending full review for the following categories of operation:

2.1 A new source or a modification of an existing source if the following conditions are satisfied:

1.1 The source will not have the potential to emit POC, NPOC, NOx, SO₂, PM_{2.5}, PM₁₀, or CO in an amount of 10 pounds or more on any day, determined without taking into account the effect of any abatement device or equipment; or the source has been pre-certified under Section 2-1-415; and

1.2 The source will not have the potential to emit toxic air contaminants in an amount that exceeds any of the trigger levels set forth in Table 2-5-1 of Regulation 2, Rule 5, determined without taking into account the effect of any abatement device or equipment; and

1.3 The source is not subject to the public notice requirements of Section 2-1-412.

2.2 An abatement device that is a replacement for an existing abatement device, provided that the replacement will not increase the potential to emit any regulated air pollutant from the abatement device and the source(s) whose emissions it abates.

2.3 An alteration of an existing source, as defined in Section 2-1-233. An applicant seeking a permit for a new, modified or altered source that is in any of the preceding categories may apply for a temporary permit to operate under the Accelerated Permitting Program by submitting (i) a permit application form and source data form(s) properly filled out with all required information; (ii) payment of applicable fees (the minimum permit fee required to install and operate each source); (iii) a statement explaining which of the categories in subsections 2.1 through 2.3 above the source is in; (iv) a

certification that the source meets all of the requirements of that category; (v) a certification that the source is not subject to Sections 2-1-316 through 2-1-319; and (vi) a certification that the applicant has reviewed all applicable New Source Performance Standards and has determined that the application will comply. The APCO shall issue a temporary Permit to Operate promptly upon determining that the application contains all of the elements required by (i)-(vi) of the preceding sentence. The owner or operator of the source may begin construction or operation of the source, or of the modification or alteration of the source, immediately upon receipt of the temporary Permit to Operate. The APCO shall complete a full review of the application and take final action in accordance with Section 2-1-408 within the time period provided for in that section. Any applicable offset requirements under Regulation 2, Rule 2, Sections 302 and 303 shall be satisfied before final permit issuance. The temporary Permit to Operate shall cease to be effective upon final action by the APCO under Section 2-1-408 (or if the permit application is canceled or withdrawn prior to such final action). During periods that the source is operating under the temporary Permit to Operate, the operator shall keep records sufficient to demonstrate that emissions do not exceed applicable qualifying levels for the Accelerated Permitting Program as set forth in subsections 2.1 through 2.3 above.

- 302.3 Permit to Operate, Temporary Operation: A temporary permit may be obtained to allow an operator to test equipment, processes, or new formulations. A temporary permit may also be obtained for a temporary source which replaces critical equipment during scheduled maintenance. The APCO may issue a non-renewable temporary Permit to Operate a temporary operation at any source, subject to the following:
- 3.1 The proposed operation will comply with all requirements of Regulation 1 and Regulations 5 through 12.
 - 3.2 The permit shall expire 3 months after issuance.
 - 3.3 The operator shall provide offsets, at a ratio of 1.15 to 1, for all increased emissions of NO_x, POC, SO₂, PM_{2.5}, and PM₁₀ resulting from the use of the temporary permit.
 - 3.4 The operator shall certify that the temporary operation is for one of the following purposes:
 - 4.1 Equipment testing
 - 4.2 Process testing, including new formulations
 - 4.3 Temporary replacement of an existing permitted source with an identical or functionally equivalent source
 - 3.5 The operator shall comply with the provisions of Regulation 2-2-301, except that the cost-effectiveness analysis shall consider the short duration of the operation.

(Amended 11/3/93; 6/7/95; 10/7/98; 11/15/00)

2-1-303 Fees: Persons subject to this Regulation shall pay the fees required, as set forth in Regulation 3.

2-1-304 Denial, Failure to Comply With Applicable Requirements: The APCO shall deny an authority to construct or a permit to operate if the APCO finds that the subject of the application would not or does not comply with any emission limitations or other regulations of the District (including but not limited to the BACT and offsets requirements in Regulations 2-2-301 through 2-2-303), or with applicable permit conditions or federal or California laws or regulations, or if any required fees have not

been paid. Such denial shall not be based solely on the type of construction or design of equipment.

(Amended March 17, 1982)

2-1-305 Conformance with Authority to Construct: A person shall not put in place, build, erect, install, modify, modernize, alter or replace any article, machine, equipment, or other contrivance for which an authority to construct has been issued except in a manner substantially in conformance with the authority to construct. If the APCO finds, prior to the issuance of a permit to operate, that the subject of the application was not built substantially in conformance with the authority to construct, the APCO shall deny the permit to operate.

(Amended December 21, 2004)

2-1-306 Mandated Reductions Not Applicable: Emission reductions resulting from requirements of federal, state or District laws, rules or regulations shall not be banked or allowed as emission offsets or emission reduction credits unless a complete application for such banking or emission reduction credits was filed with the District at least 90 days prior to the adoption date of such laws, rules or regulations. Only emission reduction credits exceeding the emission reductions required by measures described in the Air Quality Management Plan or required by permits or orders; and reductions achieved by measures not specified in the Air Quality Management Plan shall be banked or allowed as emission offsets or emission reduction credits.

(Amended 10/7/81; 7/17/91; 6/15/94)

2-1-307 Failure to Meet Permit Conditions: A person shall not operate any article, machine, equipment or other contrivance, for which an authority to construct or permit to operate has been issued, in violation of any permit condition imposed pursuant to Section 2-1-403.

(Adopted 3/17/82; Amended 7/17/91)

2-1-308 Fugitive Emissions: Fugitive emissions shall be included as emissions from a source or facility except as required under this Regulation.

(Adopted 10/19/83; Amended 7/17/91)

2-1-309 Canceled Application: The APCO may cancel an application for an authority to construct and a permit to operate if, within 90 days after the application was deemed incomplete, the applicant fails to furnish the requested information or pay all appropriate fees. The 90 day period may be extended for an additional 90 days upon receipt of a written request from the applicant and written approval thereof by the APCO. The APCO shall notify the applicant in writing of a cancellation, and the reasons therefore. A cancellation shall become effective 10 days after the applicant has been notified. The cancellation shall be without prejudice to any future applications.

(Adopted April 6, 1988)

2-1-310 Applicability of CEQA: Except for permit applications which will be reviewed as ministerial projects under Section 2-1-311 or which are exempt from CEQA pursuant to Section 2-1-312, all proposed new and modified sources for which an authority to construct must be obtained from the District shall be reviewed in accordance with the requirements of CEQA.

310.1 For those District permit applications which must be reviewed in accordance with the requirements of CEQA, the District will not normally be a Lead Agency under CEQA. Rather, pursuant to CEQA, the Lead Agency will normally be an agency with general governmental powers, such as a city or county, rather than a special purpose agency such as the District.

310.2 The issuance of an authority to construct and of a permit to operate for the same new or modified source or stationary source are considered to be parts of the same project for the purposes of CEQA.

310.3 The APCO shall not authorize, on an interim basis or otherwise, the installation or operation of any proposed new or modified source, the permitting of which is subject to the requirements of CEQA, until all of the requirements of CEQA have been satisfied.

(Adopted 7/17/91; Amended 10/21/92)

2-1-311 Ministerial Projects: An application for a proposed new or modified source or stationary source will be classified as ministerial and will accordingly be exempt from the CEQA requirement of Section 2-1-310 if the District's engineering evaluation and basis for approval or denial of the permit application for the project is limited to the criteria set forth in Section 2-1-428 of this rule and to the specific procedures, fixed standards and objective measurements set forth in the District's Permit Handbook and BACT/TBACT Workbook. The method for determining whether a given permit application will be classified as ministerial is set forth in Section 2-1-427.

(Adopted 7/17/91; Amended 10/7/98)

2-1-312 Other Categories of Exempt Projects: In addition to ministerial projects, the following categories of projects subject to permit review by the District will be exempt from the CEQA review, either because the category is exempted by the express terms of CEQA (subsections 2-1-312.1 through 312.9) or because the project has no potential for causing a significant adverse environmental impact (subsections 2-1-312.10 and 312.11). Any permit applicant wishing to qualify under any of the specific exemptions set forth in this Section 2-1-312 must include in its permit application CEQA-related information in accordance with subsection 2-1-426.1. In addition, the CEQA-related information submitted by any permit applicant wishing to qualify under subsection 2-1-312.11 must demonstrate to the satisfaction of the APCO that the proposed project has no potential for resulting in a significant environmental effect in connection with any of the environmental media or resources listed in Section II of Appendix I of the State CEQA Guidelines.

312.1 Applications to modify permit conditions for existing or permitted sources or facilities that do not involve any increases in emissions or physical modifications.

312.2 Permit applications to install air pollution control or abatement equipment.

312.3 Permit applications for projects undertaken for the sole purpose of bringing an existing facility into compliance with newly adopted regulatory requirements of the District or of any other local, state or federal agency.

312.4 Permit applications submitted by existing sources or facilities pursuant to a loss of a previously valid exemption from the District's permitting requirements.

312.5 Permit applications submitted pursuant to the requirements of an order for abatement issued by the District's Hearing Board or of a judicial enforcement order.

312.6 Permit applications relating exclusively to the repair, maintenance or minor alteration of existing facilities, equipment or sources involving negligible or no expansion of use beyond that previously existing.

312.7 Permit applications for the replacement or reconstruction of existing sources or facilities where the new source or facility will be located on the same site as the source or facility replaced and will have substantially the same purpose and capacity as the source or facility replaced.

- 312.8 Permit applications for cogeneration facilities which meet the criteria of Section 15329 of the State CEQA Guidelines.
- 312.9 Any other project which is exempt from CEQA review pursuant to the State CEQA Guidelines.
- 312.10 Applications to deposit emission reductions in the emissions bank pursuant to Regulation 2, Rule 4 or Regulation 2, Rule 9.
- 312.11 Permit applications for a proposed new or modified source or sources or for process changes which will satisfy the "No Net Emission Increase" provisions of District Regulation 2, Rule 2, and for which there is no possibility that the project may have any significant environmental effect in connection with any environmental media or resources other than air quality. Examples of such projects include, but are not necessarily limited to, the following:
 - 11.1 Projects at an existing stationary source for which there will be no net increase in the emissions of air contaminants from the stationary source and for which there will be no other significant environmental effect;
 - 11.2 A proposed new source or stationary source for which full offsets are provided in accordance with Regulation 2, Rule 2, and for which there will be no other significant environmental effect;
 - 11.3 A proposed new source or stationary source at a small facility for which full offsets are provided from a small facility bank established by the APCO pursuant to Regulation 2-4-414, and for which there will be no other significant environmental effect;
 - 11.4 Projects satisfying the "no net emission increase" provisions of District Regulation 2, Rule 2 for which there will be some increase in the emissions of any toxic air contaminant, but for which the District staff's health risk screening analysis shows that the project will not result in a cancer risk (as defined in Regulation 2-5-206) greater than 1.0 in a million (10^{-6}) and will not result in a chronic hazard index (as defined in Regulation 2-5-208) greater than 0.20, and for which there will be no other significant environmental effect.

(Adopted 7/17/91; Amended 5/17/00; 12/21/04; 6/15/05)

2-1-313 Projects Not Exempt From CEQA Review: Notwithstanding the exemptions from CEQA review set forth in Section 2-1-312, such exemptions shall not apply to any project covered by the categories set forth in subsections 2-1-312.1 through 312.9 where there is a reasonable possibility that the activity will have a significant effect on the environment due to unusual circumstances, or due to cumulative impacts of successive projects of the same type in the same place over time. Such projects shall be reviewed in accordance with the requirements of CEQA.

(Adopted 7/17/91; Amended 6/15/05)

2-1-314 Case-by-Case CEQA Determinations: Notwithstanding the requirement of Section 2-1-311, the District shall, for any permit applications which were deemed complete by the District on or before July 17, 1991, review said permit applications on a case-by-case basis in order to determine whether the District's evaluation of the permit application will involve any element of discretion. If as a result of this case-by-case-review, the District determines that the evaluation of the permit application will not involve any element of discretion on its part, then the application may be treated as a ministerial project so long as all of the following conditions are met:

- 314.1 The District makes a specific written finding to this effect as part of its determination that the permit application is complete;

314.2 The District will merely apply the law to the facts as presented in the permit application; and

314.3 The District's evaluation of the permit application and its decision regarding whether to issue the permit will be limited to the criteria set forth in Section 2-1-428.

(Adopted July 17, 1991)

2-1-315 Denial, Failure to Mitigate Significant Adverse Environmental Impacts: For any application for which the District is a Lead Agency under CEQA, where significant adverse environmental impacts have been identified in the District's review of, or in the course of the public comment period on, said application, the APCO shall deny an authority to construct to such new or modified stationary source, as proposed, unless:

315.1 The applicant agrees to implement or carry out such available alternatives or mitigation measures which would, to the extent feasible, avoid or substantially lessen any such significant adverse environmental impacts as a condition for issuance of an authority to construct; or

315.2 The APCO finds that any such available, feasible alternatives or mitigation measures are within the responsibility and jurisdiction of another public agency, and such measures have been adopted by such other agency, or can and should be adopted by such other agency; or

315.3 The APCO finds that there are no feasible alternatives or measures to substantially mitigate the unavoidable adverse environmental effects associated with the project, but that the benefits of the project outweigh such unavoidable adverse environmental effects, and the APCO states in writing the reasons and overriding considerations to support the issuance of the authority to construct based on the Final EIR and other information in the record notwithstanding the unavoidable adverse environmental effects associated with the project.

(Adopted November 20, 1991)

2-1-316 New or Modified Sources of Toxic Air Contaminants or Hazardous Air Pollutants: Notwithstanding any exemption contained in Section 2-1-103 or Section 114 through 128, any new or modified source meeting any of the following criteria shall be subject to the requirements of Regulation 2, Rule 1, Section 301 and/or 302.

316.1 If a new or modified source emits one or more toxic air contaminants in quantities that exceed the trigger levels listed in Table 2-5-1 of Regulation 2-5 and the source did not have a valid exemption from Regulation 2-1-302 when the source was constructed or modified, then the source shall be subject to the requirements of Sections 2-1-301 and 302, unless the owner or operator of the source can demonstrate to the satisfaction of the APCO that the source:

1.1 Will comply with the TBACT requirement of Regulation 2-5-301 (if applicable); and

1.2 Will comply with the project risk limits of Regulation 2-5-302 (if applicable).

316.2 If a new or modified source, or group of related sources in a proposed construction or modification will emit 2.5 or more tons per year of any single hazardous air pollutant or 6.25 or more tons per year of any combination of hazardous air pollutants, then the source or group of sources shall be subject to the requirements of Sections 2-1-301 and 302.

(Adopted 4/16/86; Amended 7/17/91; Renumbered and Amended 6/7/95; Amended 5/17/00; 6/15/05)

2-1-317 Public Nuisance Sources: Notwithstanding any exemption contained in Section 2-1-103 or Section 114 through 128, any new or modified source meeting any of the following criteria shall be subject to the requirements of Regulation 2, Rule 1, Section 301 and/or 302. If any exempt source receives two or more public nuisance violations, under Regulation 1, Section 301 or Section 41700 of the California Health & Safety Code, within any consecutive 180-day period, then the source shall be subject to the requirements of Section 2-1-301 and 302. Such a source will be treated as loss of exemption source under Section 2-1-414, and will be subject to the annual permit to operate fee specified in Regulation 3. This section does not apply to a source that is exempt per section 2-1-113.

(Adopted 6/7/95; Amended 5/17/00)

2-1-318 Hazardous Substances: Notwithstanding any exemption contained in Section 2-1-103 or Section 114 through 128, any new or modified source meeting any of the following criteria shall be subject to the requirements of Regulation 2, Rule 1, Section 301 and/or 302. If a new or modified source at a facility in one of the 28 categories listed in Section 169(1) of the Clean Air Act that emits 100 tons per year of any PSD Pollutant as defined in Section 2-2-223, or at a facility not listed in any such category that emits 250 tons per year or more of any PSD Pollutant as defined in Section 2-2-223, emits any of the following air contaminants in excess of the quantities listed below, then it is subject to the requirements of Sections 2-1-301 and 302.

318.1 0.6 ton per year of lead,

318.2 0.007 ton per year of asbestos (excepting demolition, renovation, and waste disposal),

318.3 0.0004 ton per year of beryllium,

318.4 0.1 ton per year of mercury,

318.5 1 ton per year of vinyl chloride,

318.6 3 tons per year of fluorides,

318.7 7 tons per year of sulfuric acid mist, and

318.8 10 tons per year of reduced sulfur compounds (including hydrogen sulfide).

(Adopted 10/19/83; Renumbered and Amended 6/7/95; Amended 5/17/00)

2-1-319 Source Expressly Subject to Permitting Requirements: Notwithstanding any exemption contained in Section 2-1-103 or Sections 2-1-114 through 2-1-128, any source meeting any of the following criteria shall be subject to the requirements of Section 2-1-302:

319.1 The emission rate of any regulated air pollutant (except greenhouse gases) from the source is greater than 5 tons per year, after abatement.

319.2 The source is subject to the requirements of Section 2-1-316, 317, or 318.

(Adopted May 17, 2000)

2-1-320 Compliance With Material Representations Made In Connection With Permit Applications: In addition to the explicit conditions contained in an authority to construct and/or permit to operate, the owner and operator of a source of air pollutant emissions shall construct and operate the source in conformance with any representations made or information submitted to the APCO in connection with the application for such authority to construct and/or permit to operate, provided such representations or information were material to the APCO's decision to issue the authority to construct and/or permit to operate. Construction or operation of the source not in conformance with such material representations or information shall be a violation of this Regulation.

2-1-321 Compliance With Provisions of State Implementation Plan and Other Requirements of Local, California and Federal Law: Issuance of an authority to

construct and/or permit to operate for a facility under this Rule shall not relieve the owner and operator of the facility from the responsibility to comply fully with all applicable provisions of the state implementation plan for California and all other requirements under local, California and federal law.

2-1-400 ADMINISTRATIVE REQUIREMENTS

2-1-401 Persons Affected: Any person who has been granted or requires an authority to construct shall secure a permit to operate. Any person who is not required to obtain an authority to construct and who is required to obtain a permit to operate shall secure a permit to operate. In addition, the following shall apply for a permit to operate for any source which is not subject to an exemption per Sections 2-1-103, 105, or 113 through 2-1-129:

- 401.1 On or before July 1, 1980, persons who operate a facility causing emissions of 2.5 tons per year or more of a regulated air pollutant.
- 401.2 On or before July 1, 1980, persons who operate gasoline terminals, bulk plants and facilities that dispense gasoline for sale or dispense more than 60,000 gallons of gasoline per year.
- 401.3 Persons who operate coating, adhesive, dipping, laminating, printing, screening, masking, electrodeposition, resist application, or similar source or equipment at any facility whose coating, adhesive, dipping, laminating, printing, screening, masking, electrodeposition, resist application, or similar source or equipment consume greater than 30 gallons of coating and emit 150 pounds of VOC per year or more on a facility wide basis, resulting from the applications of coatings. Upon request of the applicant, the APCO may group coating operations which individually emit less than 150 lb/yr into a single facility-wide source, or other convenient grouping.
- 401.4 Persons who operate surface preparation and cleaning equipment or operations which use unheated solvent solutions containing more than 10 percent VOC and which contain more than 1 gallon of solvent or have a liquid surface area of more than 1 ft.², including wipe cleaning operations with a net solvent usage greater than 20 gallons per year, and that emit 150 pounds of VOC per year or more, on a facility-wide basis. Upon request of the applicant, the APCO may group wipe cleaning operations into a single facility-wide source, or other convenient groupings.
- 401.5 Persons who plan to modify an existing source or install a new source which qualifies for the Accelerated Permitting Program in Section 2-1-106 shall first submit a complete permit application, in accordance with Section 2-1-302.2.
- 401.6 Persons who operate a source that is subject to either loss of exemption or exclusion per section 2-1-414 or 2-1-424.
- 401.7 Persons who operate a source constructed after July 1, 1972.
- 401.8 On or before July 1, 2005, any person who operates a crematorium for the cremation of human remains.

(Amended 4/16/86; 1/7/87; 7/17/91; 6/7/95; 10/7/98; 5/17/00; 12/21/04)

2-1-402 Applications: Every application for an authority to construct or a permit to operate shall be submitted to the APCO on the forms specified, and shall contain all of the following information:

- 402.1 Sufficient information for the APCO to determine the emissions from the sources that are the subject of the application, and to quantify emissions from

the sources of any emission reduction credits that will be relied upon as part of the application.

- 402.2 Any information requested by the APCO in order to determine the air quality impact from sources that are the subject of the application.
- 402.3 All applicable fees, as described in Regulation 3.
- 402.4 If the application is subject to the New Source Review requirements of Regulation 2, Rule 2, all information required under Section 2-2-401.
- 402.5 CEQA-related information that satisfies the requirements of Section 2-1-426.
- 402.6 A certification stating whether the source triggers the requirements of Section 2-1-412.
- 402.7 A specific designation of any information contained in the application that the applicant asserts is trade secret pursuant to Section 6254.7 of the Government Code. The applicant shall submit two copies of each page containing trade secret information. One copy shall be clearly labeled "Trade Secret," and each trade secret item shall be clearly marked. The second copy shall be clearly labeled "Public Copy," and each trade secret item shall be redacted. The applicant shall include, for each item which it asserts to be a trade secret, a statement signed by a responsible representative of the applicant identifying that portion of Government Code Section 6254.7(d) upon which the assertion is based and a brief statement setting forth the basis for this assertion.
- 402.8 Any other information requested by the APCO as necessary to determine whether the new, modified or altered source will comply with applicable regulatory requirements.

The application must contain sufficient information to enable the APCO to make a decision or a preliminary decision on the application and/or on any exemptions authorized by this Regulation. The APCO may consult with appropriate local and regional agencies to determine whether the application conforms with adopted plans and with local permit requirements.

2-1-403 Permit Conditions: Except as to permit applications reviewed in accordance with Section 2-1-311, the APCO may impose any permit condition that he deems reasonably necessary to insure compliance with federal or California law or District regulations. For any permit application which was reviewed as a ministerial project in accordance with Section 2-1-311, the APCO shall only impose permit conditions as set forth in the District's Permit Handbook for the type of source being permitted. The APCO may require the installation of devices for measurement or analysis of source emissions or ground-level concentrations of air contaminants.

(Amended 7/17/91; 10/7/98)

2-1-404 Changes in Throughput and Hours of Operation: After a permit to operate has been issued, in accordance with subsections 2-1-401.1 through 401.4, changes in hours of operation, fuels, process materials or throughput are allowed only if emissions resulting from such changes are not of such quantity as would cause denial of an authority to construct after an air quality permit analysis made pursuant to the provisions of Rule 2 of this Regulation. "Change" is the use of a process or fuel not used in the prior 12 months, or a throughput level higher than the highest level in the prior 12 months or total monthly operating hours higher than any month in the prior 12 months.

- 404.1 The holder of a permit to operate shall advise the APCO not more than 30 days after any changes in hours of operation, fuels, process materials or throughput which might increase emissions.

404.2 The APCO shall act to revoke the permit to operate of any person who fails to comply with the requirements of this Section.

(Amended July 17, 1991)

2-1-405 Posting of Permit to Operate: A copy of the permit to operate, including all relevant permit conditions, shall be accessible to personnel who operate the equipment for which the permit has been issued. These documents shall be included on site in the operator's manual, or shall be accessible to the operators electronically.

(Amended 5/17/00; 11/15/00)

2-1-406 Transfer: An authority to construct or a permit to operate shall not be transferable from one facility to another. An authority to construct or a permit to operate shall not be transferable from one person to another without obtaining written permission of the APCO.

2-1-407 Authority to Construct Expiration: An authority to construct shall expire two years after the date of issuance, unless the authority to construct has been renewed. Upon receipt of a written request and any required fees prior to the expiration of the authority to construct, the APCO shall renew the authority to construct in writing if the APCO determines that the renewal complies with this section and that the holder of the authority to construct is not violating any provision or condition of the authority. If the APCO does not act on such a request prior to expiration of the authority to construct, the authority shall remain in effect until the APCO has acted to approve or deny the renewal request (up to a maximum of an additional 12 months).

407.1 The following requirements shall apply to renewals:

1.1 Except as provided in Sections 2-1-407.2 and 407.3, an authority to construct may be renewed one time for an additional two years.

1.2 Except for renewals pursuant to Section 2-1-407.3, renewal is contingent upon meeting the current BACT and offset requirements of Regulation 2-2-301, 302 and 303.

1.3 Except as provided in Sections 2-1-407.2 and 407.3, an authority to construct that has been renewed shall expire four years after the date of original issuance.

407.2 If the authority to construct was issued pursuant to an environmental impact report (EIR) that explicitly covered a construction period longer than four years, the authority to construct shall, upon request by the applicant, be renewed for additional two-year terms throughout the construction period covered by the EIR.

407.3 If substantial use of the authority to construct has begun, either during the initial term or during a renewal term, the authority to construct shall, upon request by the applicant, be renewed for additional two-year terms until the permit to operate is issued, or, if a term of less than two years is requested, for such term as is requested.

(Amended 7/17/91; Amended 10/7/98; 6/1/05)

2-1-408 Action on Applications: Except for applications subject to Section 2-1-412, the publication and public notice requirements of Section 2-2-404 or Section 2-10-402, or to the provisions of Rule 6 of this Regulation, the APCO shall notify the applicant in writing of approval, approval with conditions, or denial of the application within 35 working days of receipt of a completed application, unless the time is extended with the written consent of the applicant.

408.1 Notwithstanding this 35-working-day limit, the APCO shall not take final action for any project for which an Environmental Impact Report or a Negative Declaration has been prepared until a Final EIR for that project has been

certified or a Negative Declaration for that project has been approved, and the APCO has considered the information in that Final EIR or Negative Declaration. For cases in which the 35 working-day time period has elapsed, the APCO shall take final action on the application within 30 days after the certification of the Final EIR or approval of the Negative Declaration, or after final resolution of any appeals from such certification or approval. This subsection shall not apply to any project that is exempt from the District's CEQA requirements pursuant to Section 2-1-311 or 2-1-312. Any substantive change to an application which occurs after the evaluation period has begun shall allow the APCO to start a new completeness review period, and to reset the 35 working-day limit after the application has been deemed complete.

(Amended 11/1/89; 7/17/91; 11/20/91; 11/3/93; 6/7/95; 10/7/98; 12/21/04; 7/19/06)

2-1-409 Regulations in Force Govern: The decision as to whether an authority to construct shall be granted or denied shall be based on federal, state and District BACT, offset, TBACT, and project risk regulations or standards in force on the date the application is declared by the APCO to be complete.

(Amended June 15, 2005)

2-1-410 Appeal: The following actions of the APCO may be appealed:

410.1 In accordance with Section 42302 of the Health and Safety Code an applicant for an authority to construct which has been denied may request, within 30 days after receipt of the written notice to deny, the Hearing Board of the District to hold a hearing on whether or not the authority to construct was properly denied.

410.2 In accordance with Section 42302.1 of the Health and Safety Code, within 30 days of any decision of the APCO, pertaining to the issuance of an authority to construct, any aggrieved person who, in person or through a representative, appeared, submitted written testimony, or otherwise participated in the action before the District may request the Hearing Board of the District to hold a public hearing to determine whether the authority to construct was properly issued or for an order modifying or reversing that decision. Such appeals shall be filed in writing and contain a summary of the issues to be raised. The Hearing Board shall consider the appeal at a public hearing within 30 days of the filing of the appeal. The Hearing Board may reverse or modify the decision of the APCO if it determines that the decision was erroneous.

410.3 In accordance with Section 40724.6(g) of the Health and Safety Code, a permit holder of a large confined animal facility may appeal any District determination or decision made under Regulation 2, Rule 10, in accordance with Section 2-1-410.2.

(Amended 7/17/91; 11/20/91; 5/17/00; 7/19/06)

2-1-411 Permit to Operate, Final Action: The APCO shall take final action to approve, approve with conditions, or disapprove a permit to operate a source subject to this rule within 90 days after the initial date of the start-up period of the new or modified source, unless such time period is extended with the written concurrence of the APCO and the applicant. An authority to construct authorizes operation of the source during the start-up period. All conditions, specific or implied, of the authority to construct are in effect during the entire start-up period.

411.1 Notwithstanding the above, final action taken on permits issued pursuant to Rule 6 of this Regulation shall be in accordance with the provisions of Section 2-6-410.

- 411.2 A permit approved under this section must be signed by the permit holder or by a person authorized to sign on behalf of the permit holder.

(Adopted 10/19/83; Amended 7/17/91; 11/3/93; 10/7/98; 12/21/04)

2-1-412 Public Notice, Schools: Prior to approving an application for an authority to construct or permit to operate for a new or modified source located within 1000 feet of the outer boundary of a K-12 schoolsite and which results in the increase in emissions of any substance into the ambient air which has been identified by the California Air Resources Board or the APCO as a toxic air contaminant or a hazardous air contaminant or which is on the list required to be prepared pursuant to subdivision (a) of Section 25532 or Section 44321 subsections (a) to (f) inclusive of the Health and Safety Code, the APCO shall:

- 412.1 Prepare a public notice in which the proposed new or modified source, and the proposed emissions, are fully described.
- 412.2 Distribute the notice, prepared in accordance with subsection 2-1-412.1 at the expense of the applicant, to the parents or guardians of children enrolled in any school within one-quarter mile of the source and to each address within a radius of 1000 feet of the source. This notice shall be distributed at least 30 days prior to the date final action on the application is to be taken by the APCO. The APCO shall review and consider all comments received during the 30 days after the notice is distributed, and shall include written responses to the comments in the permit application file prior to taking final action on the application.
- 412.3 Failure of any person to receive the notice shall not affect the validity of the authority to construct or permit to operate issued by the APCO, if the APCO or applicant responsible for giving the notice has made a good faith effort to follow the procedures for giving the notice prescribed by law.

(Adopted 11/1/89; Amended 10/7/98; 5/17/00)

2-1-413 Permits for Operation of Equipment at Multiple Locations Within the District: Any person required to obtain an authority to construct and/or permit to operate under Sections 2-1-301 and/or 302 for a source that may be operated at multiple locations within the District can apply for a single multiple-location permit that will allow the source to operate at more than one location in the District. The APCO shall issue the permit, upon payment of standard filing, initial and permit to operate fees as set forth in Regulation 3, if the source satisfies all of the following requirements:

- 413.1 The source will not emit more than 10 tons per year of any regulated air pollutant, including POC, CO, NO_x, PM_{2.5}, PM₁₀, NPOC or SO₂, but excluding greenhouse gases. For PM_{2.5} and PM₁₀, fugitive particulate emissions from haul road traffic shall not be counted toward the annual limit.
- 413.2 The source will comply with all applicable provisions of Regulation 2, Rule 5.
- 413.3 The source will not be operated within 1000 feet of the outer boundary of any K-12 school site, unless the applicable notice requirements of Health and Safety Code Section 42301.6 have been met.
- 413.4 Operation of the source will not cause a public nuisance per Regulation 1-301.
- 413.5 The operation must be exempt from CEQA, or must be covered by a chapter in the District's Permit Handbook.
- 413.6 The equipment will not cause a Synthetic Minor Facility to exceed a federally enforceable emission limit.

413.7 The source will not remain at the same facility for more than 12 consecutive months following initial operation (or, in the case a source that is used in seasonal operations that last less than 12 months, for more than the full length of a normal operating season). If multiple temporary sources are used in succession at the facility to serve the same function at the same facility source, the total time period that all such temporary sources remain at the facility is counted towards the 12-month (or operating season) limit.

If the source no longer satisfies any of these requirements, it shall be subject to the requirements of Regulation 2, Rules 1, 2, and 5, as if it were a new source.

(Adopted June 7, 1995; Amended 12/06/17)

2-1-414 Loss of Exemption, Public Nuisance: Any source subject to Section 2-1-317 shall be subject to permit conditions deemed necessary by the District to minimize the potential for future violations. If the owner/operator can demonstrate that the source has neither received a public nuisance violation nor received a confirmed complaint for a two year period after the permit was issued, then the owner/operator may submit a written petition to the APCO to remove the permit requirement. Such a petition is subject to APCO approval.

(Adopted June 7, 1995)

2-1-415 Source Pre-Certification Procedure: Any person may submit a written request to pre-certify a source as complying with applicable BACT requirements, for the purposes of qualifying the source for the Accelerated Permitting Program under Section 2-1-302.2.1.1. Such a request will be evaluated within 60 days of receipt of the information listed below. The APCO may also independently pre-certify a source. The APCO shall maintain a list of pre-certified equipment, and shall make this list available to industry through the Public Information & Education Division. A pre-certification request shall include all of the following:

415.1 A complete description of the source, including make, model number, rated capacity and emission calculations at maximum operating rate;

415.2 Applicable BACT requirements;

415.3 Proposed permit conditions governing operation of the source; and

415.4 Applicable fees, as described in Regulation 3, Section 323.

(Adopted June 7, 1995)

2-1-416 Temporary Amnesty for Unpermitted Sources: The APCO has the authority to declare an amnesty period, during which the District may waive all or part of the penalty fees, including late fees and retroactive permit fees, for sources that are currently operating without valid Permits to Operate.

(Adopted 6/7/95; 12/21/04)

2-1-420 Suspension: The APCO may suspend a permit if, within a reasonable time, the holder of the permit willfully fails or refuses to furnish requested information, analyses, plans or specifications relating to emissions from the source for which the permit was issued. The APCO shall serve notice in writing of a suspension, and the reasons therefor, on the holder of the permit. A suspension shall become effective 5 days after notice has been served.

2-1-421 Appeal from Suspension: Within 10 days after the receipt of the notice of suspension, the permit holder may request the Hearing Board to hold a hearing to determine whether or not the permit was properly suspended.

2-1-422 Revocation: The APCO may request the Hearing Board to hold a hearing to determine whether an authority to construct and/or permit to operate should be revoked if it is found that the holder of an authority to construct or permit to operate is

violating any applicable order, rule or regulation of the District, or is violating any provision or condition of the authority to construct or permit to operate.

(Amended May 17, 2000)

2-1-423 Hearings: Within 30 days after receipt of requests submitted pursuant to Sections 2-1-421 and 422, the Hearing Board shall hold a hearing as provided by Section 42308 of the California Health and Safety Code and may take action as authorized by Section 42309 of the California Health and Safety Code.

(Amended July 17, 1991)

2-1-424 Loss of Exemption or Exclusion: Any person who operates a source that does not require a District permit because of a regulatory exemption or exclusion, but which becomes subject to a District permit requirement because it loses its exemption or exclusion as a result of changes in federal, California or District laws or regulations, shall submit a complete permit application, as defined Section 2-1-202, for the subject source within 90 days of written notification by the APCO of the need for a permit. A person who holds a valid permit to operate for the subject source need not reapply.

(Adopted 4/16/86; Amended 6/7/95; 10/7/98; 7/19/06; 12/06/17)

2-1-425 Sources of Toxic Air Contaminants: Any person who does not hold a valid permit to operate in accordance with Section 2-1-401 and emits, in quantities determined to be appropriate by the APCO, any toxic air contaminant, shall within 90 days of written notice by the APCO of the need for a permit to operate, complete a permit application for the subject source, in accordance with the applicable requirements of Section 2-1-202 or Section 2-1-302.2.

(Amended June 7, 1995)

2-1-426 CEQA-Related Information Requirements: Unless a project for which an authority to construct is sought is exempt from the District's CEQA requirements pursuant to Section 2-1-311 or 2-1-312 of this Rule, applicants for authorities to construct shall provide, as part of a complete application, the following CEQA-related information:

426.1 A preliminary environmental study which shall describe the proposed project and discuss any potential significant adverse environmental impacts, alternatives to the project, and any necessary mitigation measures to minimize adverse impacts. The preliminary environmental study shall include all activities involved in the project and shall not be limited to those activities affecting air quality. In preparing the preliminary environmental study, the applicant may utilize the Environmental Information Form in Appendix H of the State CEQA Guidelines or an equivalent format specified by the APCO. (see also Appendix G, Significant Effects.) The preliminary environmental study shall list all other local, state and federal governmental agencies that require permits for the project and indicate any environmental documentation required by such agencies; or

426.2 When an agency other than the District is to be the Lead Agency under CEQA, either:

2.1 A Draft or Final Environmental Impact Report prepared by or under the supervision of the Lead Agency; or

2.2 A contract for the preparation of a Draft Environmental Impact Report executed by the Lead Agency together with the Initial Study prepared by the Lead Agency; or

2.3 A Negative Declaration prepared by the Lead Agency; or

2.4 A Notice of Preparation of a Draft EIR prepared by the Lead Agency;

2.5 A copy of the Initial Study prepared by the Lead Agency, or

- 2.6 A commitment in writing from another agency indicating that it has assumed the role of Lead Agency for the project in question.

(Adopted 11/20/91; Amended 10/7/98)

2-1-427 Procedure for Ministerial Evaluations: The District shall review each permit application prior to finding that it is complete in order to determine whether its evaluation of the permit application is covered by the specific procedures, fixed standards and objective measurements set forth in the District's Permit Handbook and BACT/TBACT Workbook. If the District determines that its evaluation of the permit application is covered by specific procedures, fixed standards and objective measurements set forth in the District's Permit Handbook and BACT/TBACT Workbook, the District's evaluation of that permit application will be classified as ministerial and the engineering evaluation of the permit application by the District will be limited to the use of said specific procedures, fixed standards and objective measurements. For such projects, the District will merely apply the law to the facts as presented in the permit application, and the District's decision regarding whether to issue the permit will be based only on the criteria set forth in Section 2-1-428 and in the District's Permit Handbook and BACT/TBACT Workbook.

(Adopted 11/20/91; Amended 10/7/98)

2-1-428 Criteria for Approval of Ministerial Permit Applications: If the District classifies a permit application as ministerial pursuant to Section 2-1-427, and as a result of its evaluation of that permit application, the District determines that all of the following criteria are met, the issuance by the District of an Authority to Construct for the proposed new or modified source will be a mandatory ministerial duty.

- 428.1 The proposed new or modified source will comply with all applicable provisions of the District's Rules and Regulations and with all applicable provisions of state and federal law and regulations which the District has the duty to enforce;
- 428.2 The emissions from the proposed project can be calculated using standardized emission factors from published governmental sources, District source test results, established formulas from published engineering and scientific handbooks, material safety data sheets or other similar published literature, manufacturer's warranties or other fixed standards as set forth in the District's Permit Handbook and BACT/TBACT Workbook;
- 428.3 Where Best Available Control Technology is required, BACT for the proposed new or modified source can be determined based on the latest edition of the ARB's BACT/LAER Clearinghouse, on the District's own compilations of BACT levels for specific types of sources as set forth in the District's Permit Handbook and BACT/TBACT Workbook or on a more stringent BACT level proposed by the project proponent; and
- 428.4 If the proposed new or modified source involves the shutdown of an existing source, the Reasonably Available Control Technology applicable to the source to be shut down can be determined from existing provisions of the District's Rules and Regulations or from the District's own compilations of BACT levels for specific types of sources as set forth in District's Permit Handbook and BACT/TBACT Workbook.
- 428.5 For proposed new and modified sources that are subject to Regulation 2, Rule 5, the project meets the project risk requirement of Regulation 2-5-302.
- 428-6 Where Best Available Control Technology for Toxics (TBACT) is required pursuant to Regulation 2-5-301, TBACT for the proposed new or modified source can be determined based on TBACT determinations in the District's

BACT/TBACT Workbook, an EPA MACT standard, a CARB ATCM, or a more stringent TBACT level proposed by the applicant that is applicable to the specific source type or source category being evaluated.

In addition, when the District has issued an authority to construct for a proposed new or modified source as a ministerial project, the issuance of the permit to operate for that source will also be a mandatory ministerial duty if the source will meet all the conditions imposed in connection with the issuance of the authority to construct and all applicable laws, rules and regulations enforced by the District.

(Adopted 11/20/91; Amended 10/7/98; 6/15/05)

2-1-429 Federal Emissions Statement: The owner or operator of any facility that emits or may emit oxides of nitrogen or volatile organic compounds shall provide the APCO with a written statement, in such form as the APCO prescribes, showing actual emissions of oxides of nitrogen and volatile organic compounds from that facility. At a minimum the emission statement shall contain all of the information contained in the Air Resources Board's Emission Inventory Turn Around Document as described in Instructions for the Emission Data System Review and Update Report. The statement shall also contain a certification by a responsible official of the company or facility that the information contained in the statement is accurate to the best knowledge of the individual certifying the statement. Effective November 1, 1994, the statement shall be submitted to the District each year with the annual permit renewal. The APCO may waive this requirement for any class or category of facilities that emit less than 25 tons per year of oxides of nitrogen and volatile organic compounds, each taken separately, if the District provides the Air Resources Board with emission inventories of facilities emitting greater than 10 tons per year of either oxides of nitrogen or volatile organic compounds based on the use of emission factors acceptable to the Air Resources Board and the U.S. Environmental Protection Agency (EPA). A current list of classes and categories of facilities for which this requirement has been waived by the APCO will be kept by the District and made available upon request. Also, for purposes of reporting emission data to the Air Resources Board and to the EPA, the District will provide calendar year and peak ambient ozone season data determined through weighted averaging of current and prior year (if available) company/facility reported certified information. This Section is required by the provisions of Section 182(a)(3)(B) of the Clean Air Act.

(Adopted 11/4/92; Amended 6/15/94; 6/7/95; 12/21/04)

2-1-430 Maintenance of the Permit Handbook and BACT/TBACT Workbook: The APCO shall publish and maintain the Permit Handbook and BACT/TBACT Workbook as needed to reflect the current procedure for review and issuance of permits, and the most recent determination of BACT/TBACT for a given source category.

(Adopted October 7, 1998)

2-1-431 Date of Completion: The APCO shall deem an application to be complete on the date that the information and fees required to complete the application were received by the District.

(Adopted May 17, 2000)

2-1-432 Determination of Complete Application: Except for an application which is subject to the publication and public comment requirements of Section 2-2-404, the APCO shall determine whether an application for an authority to construct is complete not later than 15 working days following receipt of the application, or after a longer time period agreed upon by both the applicant and the APCO. If the APCO determines that the application is not complete, the applicant shall be notified in writing of the decision, specifying the information that is required. Upon receipt of any resubmittal

of the application a new 15 working day period to determine completeness shall begin. For an application which is subject to the publication and public comment requirements of Section 2-2-404 or Section 2-10-402, the completeness review period(s) shall be 30 days. The application shall be deemed complete on the date of receipt of all information required for completeness. Upon determination that the application is complete, the APCO shall notify the applicant in writing. If applicable, such written notification shall include the District's determination that its evaluation of the application will be covered by the specific procedures, fixed standards and objective measurements set forth in the District's Permit Handbook and that the District's evaluation of that permit application will be classified as ministerial and will accordingly be exempt from CEQA review. Thereafter only information regarding offsets, or information to clarify, correct or otherwise supplement the information submitted in the application may be requested.

(Adopted 12/ 21/04; Amended 6/19/06)

2-1-500 MONITORING AND RECORDS

2-1-501 Monitors: Continuous emission monitors required pursuant to Section 2-1-403 shall comply with the provisions of Volume V of the Manual of Procedures.

(Adopted March 17, 1982)

2-1-502 Burden of Proof: Any person asserting that a source is exempt from the requirements of Regulation 2, Rule 1, Section 301 and/or 302, shall, upon the request of the APCO, provide substantial credible evidence proving to the APCO that the source meets all requirements necessary to qualify for the exemption.

(Adopted May 17, 2000)

2-1-600 MANUAL OF PROCEDURES

2-1-601 Engineering Permitting Procedures: The specific procedures for the engineering evaluation of particular types of sources as well as specific fixed standards and objective measurements upon which the District will rely in its evaluation of ministerial permit applications are set forth in the District's Permit Handbook and BACT/TBACT Workbook.

(Adopted 7/17/91; Amended 10/7/98)

2-1-602 CEQA Guidelines: The District's Guidelines for Environmental Processes under CEQA for those cases in which the District assumes the role of Lead Agency are set forth in Volume VII to the District's Manual of Procedures and in the Permit Handbook.

(Adopted 11/20/91; Amended 6/7/95)

2-1-603 Particulate Matter Measurements: PM_{2.5} and PM₁₀ shall be measured as prescribed in EPA Methods 201A and 202 (for measurements of emissions from specific sources) and in 40 C.F.R. Parts 50, 53 and 58 (for measurements of ambient concentrations). If such test methods cannot be used because the physical characteristics of the emissions being measured render such methods inappropriate (e.g., because of the emissions' high moisture content or high temperature), then another appropriate test method may be used upon prior written approval of the APCO and EPA.

(Adopted December 19, 2012)

2-1-604 Determining Compliance With Historical PM₁₀ and PM_{2.5} Emission Limits: For purposes of determining a source's compliance with any PM₁₀ or PM_{2.5} emission limit established as a permit condition pursuant to Regulation 2 prior to August 31, 2016,

the condensable portion of the source's PM₁₀ or PM_{2.5} emissions shall not be included, unless there is an affirmative indication that such condensable portion was intended to be included at the time the permit condition was adopted.

(Adopted December 19, 2012)

2-1-605 Finality of Historical PM₁₀ and PM_{2.5} Regulatory Determinations: Regulatory determinations regarding the applicability of or compliance with any of the requirements of Regulation 2 made before August 31, 2016, shall be final and shall not be invalid because they did not take into account the condensable portion of a source's PM_{2.5} or PM₁₀ emissions. Such historical determinations include (but are not limited to) prior determinations whether BACT and offsets requirements apply, prior determinations of the amount of a facility's cumulative increase, and prior determinations whether Title V permit requirements applied to a facility's operation. All such determinations made on or after August 31, 2016, shall include the condensable portion per the requirements of Sections 2-1-229 and 2-1-241, including (but not limited to) determinations regarding whether an existing facility's ongoing operations are subject to any applicable operating requirements such as Title V Major Facility Review requirements.

(Adopted December 19, 2012)

Regulation 2, Rule 1
Permit / Exemption Flow Chart

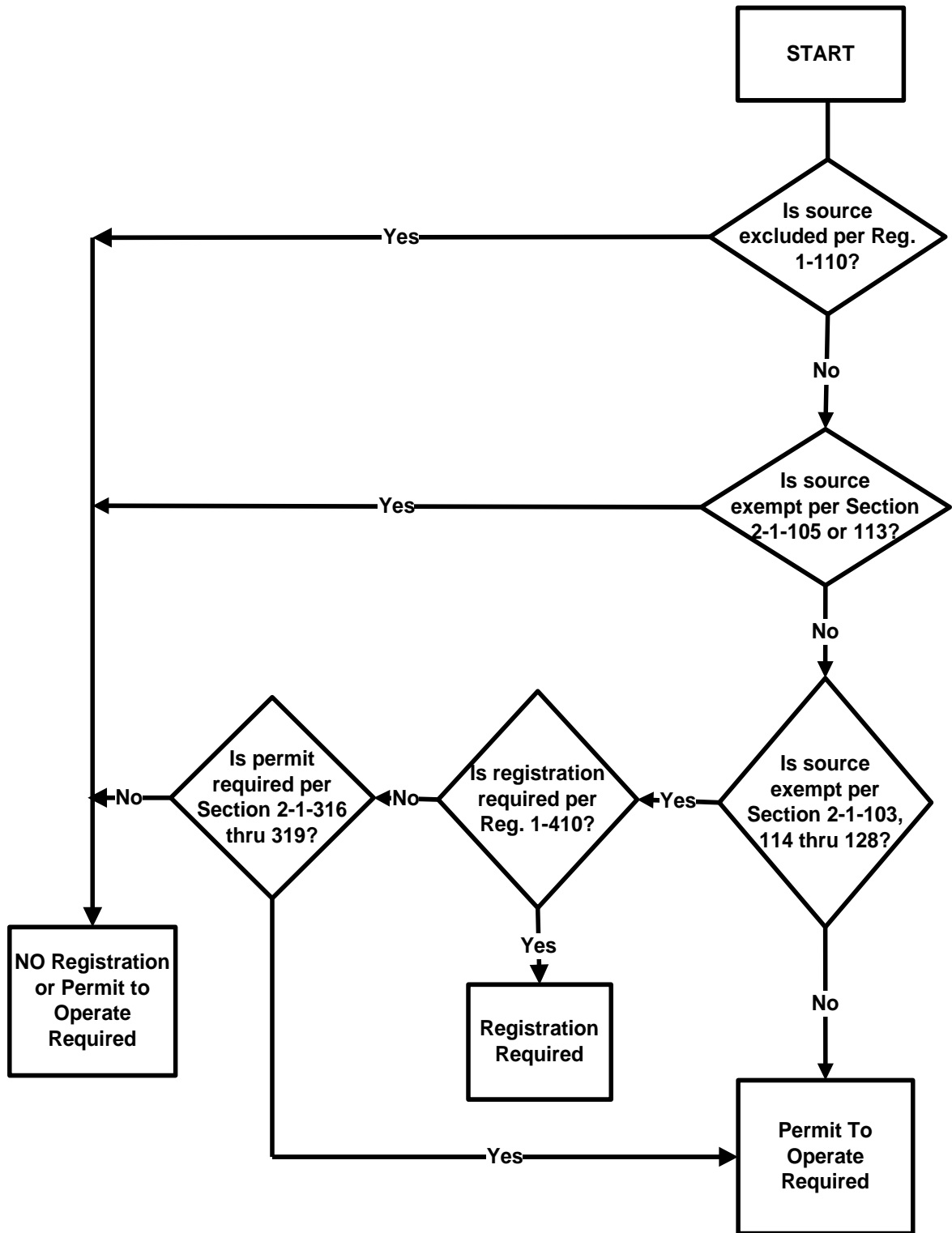


Figure 2-1-101

**REGULATION 2
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REGULATION 2
PERMITS
RULE 2
NEW SOURCE REVIEW

(Adopted December 19, 2012)

2-2-100 GENERAL

2-2-101 Description: This Rule applies to all new and modified sources that are subject to the requirements of Section 2-1-301 and/or 2-1-302. The purpose of this Rule is to implement the New Source Review provisions of the federal and California Clean Air Acts (including the federal non-attainment New Source Review, Prevention of Significant Deterioration, and Minor New Source Review provisions) and the no-net-increase requirements of the California Health and Safety Code, among other requirements.

2-2-102 Exemption, Emissions From Operation of Abatement Devices And Techniques: The BACT requirements of Section 2-2-301 shall not apply to emissions of secondary pollutants that are the direct result of the use of an abatement device or emission reduction technique implemented to comply with the BACT or BARCT requirements for control of another pollutant. However, the APCO shall require the use of Reasonably Available Control Technology (RACT) for control of emissions of such pollutants.

2-2-103 Incorporation by Reference of Federal PSD Provisions: Where federal PSD provisions in 40 C.F.R. Section 52.21 are incorporated by reference in this Rule, all associated procedures, definitions, and other regulatory provisions in the Code of Federal Regulations applicable for implementing such provisions are also incorporated by reference and shall be followed and applied by the APCO in implementing such provisions, including but not limited to all of the implementing definitions set forth in 40 C.F.R. Section 52.21(b), which include the definitions in Sections 52.21(b)(13) (baseline concentration), 52.21(b)(14) (major source baseline date), 52.21(b)(15) (baseline area), 52.21(b)(18) (secondary emissions), and 52.21(b)(50) (subject to regulation). Where such regulatory provisions are incorporated by reference, the incorporation is to the version of that regulatory provision in effect upon December 19, 2012.

2-2-200 DEFINITIONS

2-2-201 Deleted December 6, 2017

2-2-202 Best Available Control Technology (BACT): An emission limitation, control device, or control technique applied at a source that is the most stringent of:

202.1 The most effective emission control device or technique that has been successfully utilized for the type of equipment comprising such a source; or

202.2 The most stringent emission limitation achieved by an emission control device or technique for the type of equipment comprising such a source; or

202.3 The most effective control device or technique or most stringent emission limitation that the APCO has determined to be technologically feasible for a

source, taking into consideration cost-effectiveness, any ancillary health and environmental impacts, and energy requirements; or

202.4 The most effective emission control limitation for the type of equipment comprising such a source that is contained in an approved implementation plan of any state, unless the applicant demonstrates to the satisfaction of the APCO that such limitation is not achievable.

Under no circumstances shall BACT be less stringent than any emission control required by any applicable provision of federal, state or District laws, rules or regulations.

2-2-203 Best Available Retrofit Control Technology (BARCT): An emission limitation that has been adopted or proposed to be adopted as part of the current Clean Air Plan approved by the District pursuant to the California Clean Air Act of 1988 as implementing the maximum degree of emissions reduction achievable by a class or category of source, taking into account environmental, energy and economic impacts.

2-2-204 California Coastal Waters: The area bounded by (i) the coast of the State of California and (ii) the line established by starting at the point on the California coast at the California-Oregon border, and proceeding:

- thence to 40.0°N, 125.5°W;
- thence to 39.0°N, 125.5°W;
- thence to 38.0°N, 124.0°W;
- thence to 37.0°N, 123.5°W;
- thence to 36.0°N, 122.5°W;
- thence to 35.0°N, 121.5°W;
- thence to 34.0°N, 120.5°W;
- thence to 33.0°N, 119.5°W;
- thence to 32.5°N, 118.5°W;

and thence to an ending point on the California coast at the California-Mexico border.

2-2-205 Class I Area: Point Reyes National Seashore and any other area designated as a Class I Area under Part C of the Clean Air Act. All other areas in the District are Class II Areas.

2-2-206 Contemporaneous: Occurring (i) within a five year period of time immediately prior to the date of a complete application for an authority to construct or permit to operate for a source; or (ii) on or after the date of a complete application for an authority to construct or permit to operate but prior to initial operation of the source (or for a source that is a replacement unit, as defined in 40 C.F.R. Section 51.165(a)(1)(xxi), that will replace an existing source in whole or in part, with respect to emission reduction credits being generated by the shutdown of the existing source being replaced, 90 days after initial operation of the replacement unit).

2-2-207 Creditable: For purposes of determining the net emissions increase associated with a new or modified source (or group of sources) under Section 2-2-220, an emission increase or decrease is creditable if it has not been relied on by a permitting agency in issuing a PSD permit, including a federal PSD permit or an authority to construct applying the PSD provisions of Sections 2-2-304 through 2-2-307, which permit is still in effect at the time of initial operation of the source(s).

2-2-208 Cumulative Increase: The increase in the potential to emit a pollutant authorized by an authority to construct or permit to operate measured against prior actual or potential emissions, less any contemporaneous onsite emission reduction credits credited to the authority to construct or permit to operate, calculated in accordance with the procedures set forth in Section 2-2-607.

- 2-2-209 Cumulative Increase Baseline Date:** April 5, 1991, for all pollutants except PM_{2.5}; and August 31, 2016, for PM_{2.5}.
- 2-2-210 District BACT Pollutant:** Precursor organic compounds (POC), non-precursor organic compounds (NPOC), oxides of nitrogen (NO_x), sulfur dioxide (SO₂), PM₁₀, PM_{2.5}, and carbon monoxide (CO).
- 2-2-211 Emission Reduction Credit:** Emission reductions associated with a physical change, change in method of operation, change in throughput or production, or other similar change at a source that are in excess of the reductions required by applicable regulatory requirements, and that are real, permanent, quantifiable, and enforceable, as calculated in accordance with Section 2-2-605.
- 2-2-212 Federal Land Manager:** With respect to any lands in the United States, the Secretary of the department with authority over such lands, or a subordinate acting under the authority of such Secretary.
- 2-2-213** Deleted December 6, 2017
- 2-2-214 Greenhouse Gases (GHGs):** The air pollutant that is defined in 40 C.F.R. Section 86.1818-12(a), which is a single air pollutant made up of a combination of the following six constituents: carbon dioxide, nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. GHG emissions shall be measured as CO₂ equivalent emissions (CO₂e) according to the methodology set forth in 40 C.F.R. Section 52.21(b)(49)(ii) for determining whether the emissions constitute a PSD pollutant as defined in Section 2-2-223, are a regulated NSR pollutant as defined in 40 C.F.R. Section 52.21(b)(50), or constitute significant emissions as defined in Section 2-2-227.1.
- 2-2-215 Hazardous Air Pollutant (HAP):** Any pollutant that is listed pursuant to Section 112(b) of the federal Clean Air Act.
- 2-2-216 Indian Governing Body:** The governing body of any tribe, band, or group of Indians subject to the jurisdiction of the United States and recognized by the United States as possessing power of self-government.
- 2-2-217 Major Facility:** For purposes of the New Source Review requirements of Regulation 2, Rule 2, a major facility is a facility that has the potential to emit 100 tons per year or more of POC, NO_x, SO₂, PM₁₀, PM_{2.5}, and/or CO. Fugitive emissions shall be included in calculating the facility's potential to emit under this Section as provided in Section 2-2-611. A physical change at a facility that does not otherwise qualify as a major facility is a new major facility if the change would constitute a major facility by itself.
- 2-2-218 Major Modification*:** A new source as defined in Section 2-1-232, or a modified source as defined in Section 2-1-234, or any combination of such new and modified sources at a facility that are part of a single common project, that (i) are or will be located at an existing major facility and (ii) will cause an increase in emissions of a pollutant for which the facility is a major facility, calculated according to Section 2-2-604, of the following amounts or more:
- | | |
|---------------------|-------------------|
| POC: | 40 tons per year |
| NO _x : | 40 tons per year |
| SO ₂ : | 40 tons per year |
| PM ₁₀ : | 15 tons per year |
| PM _{2.5} : | 10 tons per year |
| CO: | 100 tons per year |

**Note that the term "Major Modification" is not used in Regulation 2, Rule 2 for purposes of applying the Rule's PSD requirements. The term "PSD Project" is used instead to define new facilities and modifications to existing facilities that are subject to the Rule's PSD requirements. See Section 2-2-224.*

- 2-2-219 Net Air Quality Benefit:** A net improvement of air quality as determined by the APCO resulting from emission reduction credits impacting the same general area affected by the new or modified source and which will be consistent with reasonable further progress towards the attainment of the applicable air quality standard.
- 2-2-220 Net Emissions Increase:** For purposes of applying the PSD provisions and NAAQS Protection requirements of this Rule, a net emissions increase from a new source or modified source (or group of such sources) is the sum of the new emissions from the new source(s) and/or the increase in emissions from the modified source(s), plus any other creditable contemporaneous emissions increases at the facility calculated according to Section 2-2-604, less any other creditable contemporaneous emissions decreases at the facility calculated according to Section 2-2-604.
- 2-2-221 Offsets:** Offsets are any of the following:
- 221.1 banked emission reduction credits approved in accordance with District Regulation 2, Rule 4; or
 - 221.2 banked emission reduction credits from adjacent Districts if the applicant demonstrates that the requirements of Clean Air Act Section 173(c)(1) (42 U.S.C. Section 7503(c)(1)) and Health and Safety Code Section 40709.6 have been met or do not apply;
- that are provided to compensate for cumulative increases in emissions pursuant to Section 2-2-302 or 2-2-303.
- 2-2-222 Pollutant-Specific Basis:** A term used to describe a regulatory requirement governing multiple pollutants. If a regulatory requirement applies on a pollutant-specific basis, the requirement applies only for the individual pollutant(s) for which a source or facility meets the relevant applicability criteria, and does not apply for pollutant(s) for which the source or facility does not meet the relevant applicability criteria.
- 2-2-223 PSD Pollutant:** Any Regulated NSR Pollutant as defined in EPA's PSD Regulations at 40 C.F.R. Section 52.21(b)(50), except pollutants for which the San Francisco Bay Area has been designated as non-attainment of a California or National Ambient Air Quality Standard. If a pollutant is subject to both federal and California ambient air quality standards, the pollutant shall be treated as a PSD Pollutant for (and only for) the ambient air quality standard(s) for which the San Francisco Bay Area has not been designated as non-attainment.
- 2-2-224 PSD Project:** A new source as defined in Section 2-1-232, or a modified source as defined in Section 2-1-234, or a combination of such new or modified sources that are part of a single common project, that meets all of the following criteria:
- 224.1 Major PSD Facility: The source(s) are or will be located at a facility that has the potential to emit 100 tons or more per year of any Regulated NSR Pollutant as defined in 40 C.F.R. Section 52.21(b)(50)* (including fugitive emissions) if it is in one of the 28 categories listed in Section 169(1) of the Clean Air Act, or 250 tons or more per year of any Regulated NSR Pollutant as defined in 40 C.F.R. Section 52.21(b)(50)* (with fugitive emissions included only as specified in Section 2-2-611) if it is not in a listed category; and
 - 224.2 Significant Increase in Emissions of PSD Pollutant: The new emissions from the new source(s) and/or the increase in emissions from the modified

source(s) calculated according to Section 2-2-604 constitute significant emissions of any PSD pollutant as defined in Section 2-2-227.1; and

224.3 **Significant Net Increase in Emissions of PSD Pollutant:** The net emissions increase associated with the new or modified source(s), as defined in Section 2-2-220, constitute significant emissions of any PSD pollutant as defined in Section 2-2-227.1.

Any physical change or change in method of operation that takes place at a facility that does not meet the Major PSD Facility criteria specified in subsection 224.1, but which change would constitute a Major PSD Facility under the criteria in subsection 224.1 by itself, is a PSD Project.

**Note that GHG emissions are not included for purposes of applying the 100/250 ton-per-year major PSD facility threshold in Section 2-2-224.1. GHGs are not a Regulated NSR Pollutant under 40 C.F.R. § 52.21(b)(50) unless they are emitted from a facility that exceeds the 100/250 ton-per-year major PSD threshold for some other pollutant besides GHGs.*

2-2-225 Reasonably Available Control Technology (RACT): For sources that are to continue operating, RACT is the lowest emission limit that can be achieved by the specific source by the application of control technology taking into account technological feasibility and cost-effectiveness, and the specific design features or extent of necessary modifications to the source. For sources which are or will be shut-down, RACT is the lowest emission limit that can be achieved by the application of control technology to similar, but not necessarily identical categories of sources, taking into account technological feasibility and cost-effectiveness of the application of the control technology to the category of sources only and not to the shut-down source.

2-2-226 Related Sources: Two or more sources where the operation of one is dependent upon, supports or affects the operation of the other(s).

2-2-227 Significant: The term “significant” has the following meanings when used in the following contexts:

227.1 For determining whether an increase in emissions of a PSD pollutant is “significant” for purposes of the PSD provisions of this Rule, the increase is significant:

- 1.1 if it exceeds the values specified in the following table, or for a PSD pollutant that is not listed in the following table, if it is greater than zero; or
- 1.2 if it is from a source that is or would be located within 10 kilometers of a Class I area, and it would have an impact in such Class I area equal to or greater than 1 µg/m³ (24-hour average).

227.2 For determining whether an increase in emissions is “significant” for purposes of the NAAQS Protection Requirement in Section 2-2-308 and the public notice requirement in Section 2-2-404, the increase is significant if it exceeds the values specified in the following table.

Pollutant	Significant Emissions Rate	
	kg/yr	(ton/yr)
Carbon monoxide	90,500	(100)
Nitrogen oxides	36,200	(40)
Sulfur dioxide	36,200	(40)
Total particulate matter	22,680	(25)

PM ₁₀	13,575	(15)
PM _{2.5} *	9050	(10)
VOC*	36,200	(40)
GHGs**	67,875,000**	(75,000**)
Lead	530	(0.6)
Fluorides	2720	(3)
Sulfuric Acid Mist	6350	(7)
Hydrogen Sulfide	9050	(10)
Total Reduced Sulfur	9050	(10)
Reduced Sulfur Compounds	9050	(10)
Municipal waste combustor organics	3.2 x 10 ⁻³	(3.5 x 10 ⁻⁶)
Municipal waste combustor metals	13,575	(15)
Municipal waste combustor acid gases	36,200	(40)
Municipal solid waste landfill emissions	45,250	(50)

**Pollutants for which the Bay Area is designated as non-attainment of a NAAQS are not subject to the PSD requirements in Sections 2-2-304 through 2-2-307 by operation of 40 C.F.R. Section 52.21(i)(2). PM_{2.5} and VOC (as an ozone precursor) are therefore not subject to these PSD requirements as long as the Bay Area remains non-attainment for any PM_{2.5} or ozone NAAQS, respectively.*

***Per Section 2-2-214, emissions of GHGs are measured as CO₂e for purposes of determining whether an emissions increase exceeds this significance threshold. Per Section 2-2-223 and 40 C.F.R. Sections 52.21(b)(50)(iv) and 52.21(b)(49)(iv), increases in GHG emissions of less than 75,000 tons per year CO₂e are excluded from the definition of PSD pollutant and are not subject to the PSD requirements of Regulation 2, Rule 2.*

2-2-228 Federal Major NSR Source: A new major stationary source as defined in 40 C.F.R. section 51.165(a)(1)(iv), or a major modification as defined in 40 C.F.R. section 51.165(a)(1)(v).

2-2-229 Federal Offsets Baseline Shortfall: For purposes of the offsets equivalence demonstration provisions in Sections 2-2-412 and 2-2-415, the difference between:

229.1 The amount of offsets required for the Authority to Construct and/or Permit to Operate using the District's baseline calculation procedures under District Regulation 2, Rule 2; and

229.2 The amount of offsets that would be required under the federal baseline calculation procedures applicable under 40 C.F.R. section 51.165, including (but not limited to) the actual emissions baseline provision in 40 C.F.R. section 51.165(a)(3)(ii)(J).

A Federal Offsets Baseline Shortfall shall apply only in cases where (i) the amount of offsets required for the Authority to Construct and/or Permit to Operate is calculated using the baseline provision in Section 2-2-606.2 for modified sources for which offsets have previously been provided, and (ii) all of the previously-provided offsets were provided more than five years before the completeness date of the application for the Authority to Construct and/or Permit to Operate.

- 2-2-230 Federal Surplus-at-Time-of-Use Shortfall:** For purposes of the offsets equivalence demonstration provisions in Sections 2-2-412 and 2-2-415, the difference between:
- 230.1 The amount of emission reduction credit provided in banking certificates surrendered in connection with an Authority to Construct and/or Permit to Operate in order to satisfy offsets requirements under Sections 2-2-302 and/or 2-2-303; and
- 230.2 The amount of emission reduction credit that would be associated with the emission reductions for which the banking certificates were issued if the emission reduction credit calculation for each emission reduction under Sections 2-2-605 and 2-2-603 is performed using an adjusted baseline emissions rate pursuant to subsection 2-2-603.6 that is based on the most stringent of any of the following regulations that is in effect at the time the banking certificate is surrendered for use as an offset: (i) any District regulation required for purposes of federal attainment demonstration requirements, (ii) any District regulation, or state regulation applicable to sources within the District, approved into the California State Implementation Plan, or (iii) any federal New Source Performance Standard or National Emission Standard for Hazardous Air Pollutants.

- 2-2-231 Equivalence Credit:** For purposes of making the offsets equivalence demonstration pursuant to Section 2-2-412, emission reductions generated after November 15, 1990, that are any of the following:
- 231.1 Offsets: Emission reductions reflected in banking certificates from the District's emissions bank (or from an adjacent air district's bank pursuant to Section 2-2-221.2 or an earlier version of that provision governing the use of banked credits from an adjacent district) that were provided as offsets in connection with an Authority to Construct and/or Permit to Operate issued for a new source or modification that was not a Federal Major NSR Source.
- 231.2 Onsite Contemporaneous Emission Reduction Credits: Onsite contemporaneous emission reduction credits that were credited pursuant to Section 2-2-607.2 (or an earlier version of that provision governing the use of onsite contemporaneous emission reduction credits) in calculating the amount of offsets required in connection with an Authority to Construct and/or Permit to Operate issued for a new source or modification that was not a Federal Major NSR Source, provided that the emission reductions have not been used to net out of major NSR applicability under Section 2-1-234.2.1.
- 231.3 Orphan PM_{2.5} Emission Reductions: For PM_{2.5}, emission reductions that (i) occurred more than 5 years before the date of the equivalence demonstration, (ii) satisfy the requirements to be real, permanent, quantifiable, and enforceable sufficient to constitute Emission Reduction Credits under the definition set forth in Section 2-2-211, and (iii) have not been the subject of a request to bank the reductions in a banking application submitted under Regulation 2, Rule 4, or a request to use the reductions as a contemporaneous onsite emission reduction credits in connection with a New Source Review permit application under Regulation 2, Rule 2.

An emission reduction can qualify as an Equivalence Credit only if sufficient records exist to verify that the reduction meets the definition of an Equivalence Credit.

2-2-300 STANDARDS

2-2-301 Best Available Control Technology Requirement: An authority to construct and/or permit to operate for a new or modified source shall require BACT to control emissions of District BACT pollutants under the following conditions:

301.1 New Source: An authority to construct and/or permit to operate for a new source shall require BACT to control emissions of a District BACT pollutant if the source will have the potential to emit that pollutant in an amount of 10.0 or more pounds on any day as defined in Regulation 2-1-217;

301.2 Modified Source: An authority to construct and/or permit to operate for a modified source shall require BACT to control emissions of each District BACT pollutant for which the source is “modified” as defined in Section 2-1-234 for which:

2.1 the source, after the modification, will have the potential to emit that pollutant in an amount of 10.0 or more pounds on any day as defined in Regulation 2-1-217; and

2.2 the modification will result in an increase in emissions of that pollutant above baseline levels calculated pursuant to Section 2-2-604.

The BACT requirements in this Section shall apply on a pollutant-specific basis.

2-2-302 Offset Requirements, Precursor Organic Compounds and Nitrogen Oxides: Before the APCO may issue an authority to construct or permit to operate for a new or modified source at any facility that will have the potential to emit more than 10 tons per year of NO_x or POC after the new or modified source is constructed (including emissions from cargo carriers per Section 2-2-610), offsets must be provided according to the following requirements:

302.1 If the facility will have the potential to emit more than 10 tons per year but less than 35 tons per year of NO_x or POC after the new or modified source is constructed, offsets must be provided at a 1:1 ratio for any un-offset cumulative increase in emissions at the facility and any related sources since the baseline date determined in accordance with Section 2-2-608.

1.1 The APCO shall provide any required offsets from the Small Facility Banking Account in the District’s Emissions Bank in accordance with Section 2-4-414, unless the Small Facility Banking Account is exhausted or the applicant (or any entity controlling, controlled by, or under common control with the applicant) owns or controls offsets.

1.2 If the Small Facility Banking Account is exhausted, or if the applicant owns or controls offsets, the applicant shall provide any required offsets.

1.3 A permit limit for which offsets have been provided from the Small Facility Banking account may not be higher than the source’s maximum physical/design capacity to emit air pollutants, and may not be higher than is reasonably necessary to satisfy the applicant’s operational requirements (including sufficient flexibility to allow for future changes in operational requirements).

302.2 If the facility will have the potential to emit 35 tons per year or more of NO_x or POC after the new or modified source is constructed, the applicant shall:

2.1 Reimburse the Small Facility Banking Account for any cumulative increase for which offsets were previously provided from the Small Facility Banking Account; and

2.2 Provide federally-enforceable offsets at a 1.15:1 ratio for any un-offset cumulative increase in emissions at the facility and any related sources since the baseline date determined in accordance with Section 2-2-608.

302.3 An applicant may reimburse the Small Facility Banking Account under subsection 302.2.1 by reducing the cumulative increase associated with the permitting action(s) for which the District provided the Small Facility Banking Account credits. To do so, the applicant must request a lower emissions limit in a permit for which the Small Facility Banking Account credits were provided. Upon approval by the APCO, the amount by which the applicant must reimburse the Small Facility Banking Account shall be reduced by the difference between the old permit limit and the new permit limit.

302.4 The offset requirements in this Section shall be applied on a pollutant-specific basis.

2-2-303 Offset Requirements, PM_{2.5}, PM₁₀ and Sulfur Dioxide: Before the APCO may issue an authority to construct or permit to operate for a new or modified source at a facility that will have the potential to emit 100 tons per year or more of PM_{2.5}, PM₁₀ or sulfur dioxide after the new or modified source is constructed (including emissions from cargo carriers per Section 2-2-610), the applicant shall provide offsets according to the following requirements:

303.1 If the un-offset cumulative increase in emissions of PM_{2.5}, PM₁₀ or sulfur dioxide at the facility and any related sources since the baseline date determined in accordance with Section 2-2-608 exceeds 1 ton per year, the applicant shall provide offsets at a 1:1 ratio for the un-offset cumulative increase since the baseline date.

303.2 NO_x and/or sulfur dioxide offsets may be provided in place of PM₁₀ offsets required under subsection 303.1 at offset ratios determined by the APCO to result in a net air quality benefit. Any approval of the use of NO_x and/or sulfur dioxide offsets under this subsection shall be based on an analysis specific to the individual facility for which the determination is made, which shall include adequate modeling; and any such approval shall be granted only after public notice and an opportunity for public comment and with EPA concurrence.

303.3 Any NO_x and/or sulfur dioxide offsets provided in place of PM₁₀ offsets must be provided in addition to any NO_x and/or sulfur dioxide offsets required independently as a result of the source's NO_x and/or sulfur dioxide emissions.

303.4 The offset requirements in this Section shall be applied on a pollutant-specific basis.

2-2-304 PSD BACT Requirement: An authority to construct for a PSD Project shall require federal PSD Best Available Control Technology as defined in Section 169(3) of the federal Clean Air Act ("federal PSD BACT") for each PSD pollutant for which the net increase in emissions from the PSD Project will be significant as defined in Section 2-2-227.1. If federal PSD BACT is required for a pollutant under this Section, the authority to construct shall require federal PSD BACT for each new or modified source for which there will be an increase in emissions of that pollutant by any amount, calculated in accordance with Section 2-2-604. The APCO shall impose federal PSD BACT in an authority to construct subject to this Section according to and in satisfaction of all of the requirements applicable to federal PSD BACT under

40 C.F.R. Section 52.21(j), including any applicable exemptions from that Section's requirements under 40 C.F.R. Section 52.21(i).

2-2-305

PSD Source Impact Analysis Requirement: The APCO shall not issue an authority to construct for a PSD Project unless the APCO determines, for each PSD pollutant for which the net increase in emissions from the PSD Project will be significant as defined in Section 2-2-227.1, that the net increase in emissions from the PSD Project will not cause or contribute to a violation of (i) any applicable ambient air quality standard for such pollutant or (ii) any applicable PSD increment for such pollutant, as set forth in 40 C.F.R. Section 52.21(c). The APCO shall make such determination in accordance with the following procedures:

- 305.1 Pre-application Air Quality Analysis: The applicant shall prepare and submit an analysis of ambient air quality in the area that the PSD Project would affect for each PSD pollutant for which the net increase in emissions allowed by the authority to construct will be significant. The applicant's analysis shall be prepared according to and shall satisfy all of the requirements applicable to air quality analyses for federal PSD permitting under 40 C.F.R. Section 52.21(m)(1), including any applicable exemptions from that Section's requirements under 40 C.F.R. Section 52.21(i).
- 305.2 PSD Source Impact Analysis: The applicant shall demonstrate, for each PSD pollutant for which the net increase in emissions allowed by the authority to construct will be significant, that the net increase in emissions of such pollutant will not cause or contribute to a violation of (i) any applicable California or National Ambient Air Quality Standard for such pollutant or (ii) any applicable PSD increment for such pollutant, as set forth in 40 C.F.R. Section 52.21(c). The applicant's analysis and demonstration shall be prepared according to and shall satisfy all of the requirements applicable to PSD source impact analyses for federal PSD permitting under 40 C.F.R. Section 52.21(k), including any applicable exemptions from that Section's requirements under 40 C.F.R. Section 52.21(i).
- 305.3 Air Quality Models: All estimates of ambient concentrations required under this Section shall be based on applicable air quality models, databases, and other requirements specified in Appendix W of Part 51 of Title 40 of the Code of Federal Regulations (Guideline on Air Quality Models). Where an air quality model specified in Appendix W is inappropriate, the model may be modified or another model substituted upon written approval by EPA and written approval by the APCO after public notice and opportunity for public comment under the procedures set forth in Section 2-2-404. Where modeling is conducted solely to evaluate compliance with a California air quality standard, any APCO-approved model may be used.
- 305.4 APCO Determination: The APCO shall determine, based on the applicant's submissions and any other relevant information, whether any net emissions increases of PSD pollutants that the authority to construct will authorize in significant amounts would cause or contribute to a violation of (i) any applicable California or National Ambient Air Quality Standard for such pollutant or (ii) any applicable PSD increment for such pollutant, as set forth in 40 C.F.R. Section 52.21(c), for any PSD pollutant. In making this determination, the APCO shall use the same procedures and be subject to the same requirements as are applicable to the Administrator for issuing federal PSD permitting under 40 C.F.R. Section 52.21(k), including any

applicable exemptions that Section's requirements under 40 C.F.R. Section 52.21(i).

2-2-306 PSD Additional Impacts Analysis Requirements: Before issuing an authority to construct for a PSD Project, the APCO shall conduct the following additional impact analyses:

- 306.1 Visibility, Soils & Vegetation Impact Analysis: The applicant shall prepare and submit an analysis of the impairment to visibility, soils and vegetation that would occur as a result of the PSD Project and any commercial, residential, industrial, and other growth associated with the PSD Project. The applicant's analysis shall be prepared according to and shall satisfy all of the requirements applicable to air quality analyses for federal PSD permitting under 40 C.F.R. Section 52.21(o)(1), including any applicable exemptions that Section's requirements under 40 C.F.R. Section 52.21(i). The analysis need not address impacts on vegetation having no significant commercial or recreational value.
- 306.2 Associated Growth Analysis: The applicant shall prepare and submit an analysis of the air quality impact projected for the area as a result of general commercial, residential, industrial, and other growth associated with the PSD Project. The applicant's analysis shall be prepared according to and shall satisfy all of the requirements applicable to air quality analyses for federal PSD permitting under 40 C.F.R. Section 52.21(o)(2), including any applicable exemptions that Section's requirements under 40 C.F.R. Section 52.21(i).
- 306.3 APCO Review: The APCO shall review the applicant's additional impact analyses to ensure that they are complete and accurately reflect the circumstances associated with the PSD Project.

2-2-307 Consideration of Class I Area Impacts: If, within 30 days after receiving notice under Section 2-2-404 of a preliminary decision to issue an authority to construct for (i) a new major facility or a major modification of a major facility for NO_x, VOC, SO₂ or PM_{2.5} or (ii) a PSD Project, the Federal Land Manager with responsibility for administering any Class I Area provides the APCO with a demonstration that emissions from the project would have an adverse impact on the air quality-related values of the Class I Area (including visibility), the APCO shall promptly review and consider such demonstration. If the APCO concurs with such demonstration, or if the APCO concludes based on an independent review of the analysis submitted under Section 401.4 that the project will have such adverse impact, the APCO shall, after consultation with the Federal Land Manager and the applicant, deny the application for an authority to construct. If the APCO finds that such demonstration does not establish to the APCO's satisfaction that the project would have such adverse impact, the APCO shall explain its decision (or give notice of where such explanation can be obtained) in any subsequent notice of a public hearing held under Section 2-2-404.7.

2-2-308 NAAQS Protection Requirement: The APCO shall not issue an authority to construct for a new or modified source that will result in a significant net increase in emissions of any pollutant for which a National Ambient Air Quality Standard has been established unless the APCO determines, based upon a demonstration submitted by the applicant, that such increase will not cause or contribute to an exceedance of any National Ambient Air Quality Standard for that pollutant. Such demonstration shall be made using the procedures for PSD Air Quality Impact Analyses set forth in subsections 2-2-305.1 through 2-2-305.4. Such demonstration shall not be required for ozone. A PSD Air Quality Impact Analysis and determination

for a new or modified source that satisfies the requirements of Section 2-2-305 shall satisfy the requirements of this Section for all pollutants included in such analysis.

2-2-309 Compliance Certification: The APCO shall not issue an authority to construct for a new major facility or a major modification of an existing major facility unless the applicant provides a list, certified under penalty of perjury, of all major facilities within the state of California owned or operated by the applicant or by any entity controlling, controlled by, or under common control with the applicant and demonstrates by certifying under penalty of perjury that they are either in compliance, or on a schedule of compliance, with all applicable state and federal emission limitations and standards. The APCO may request the applicant to provide any technical information used by the applicant to certify compliance.

2-2-310 Denial, Failure to Meet Permit Conditions: The APCO shall deny a permit to operate for a source if, after providing written notification to the applicant and an opportunity to remedy any violation, the source is operating in violation of any condition specified in the authority to construct, or if any other source used to provide emission reduction credits for the source that is owned or operated by the applicant is operating in violation of any permit condition limiting emissions such that the required emission reduction credits are not actually being provided.

2-2-400 ADMINISTRATIVE REQUIREMENTS

2-2-401 Application: An application for an authority to construct under this Rule shall conform to the requirements of District Regulation 2-1-402, and shall include the following:

- 401.1 A detailed description of the proposed new source(s) or modification(s) for which the authority to construct is sought, including at a minimum (i) a description of the nature, location, design capacity, and typical operating schedule of the source(s) or modification(s), including specifications and drawings showing its design and plant layout, and (ii) a detailed schedule for construction of the source(s) or modification(s).
- 401.2 All information necessary for the APCO to determine whether the application satisfies the requirements of this Rule, including but not limited to (i) a demonstration of how the application satisfies applicable BACT standards under Sections 2-2-301 and 2-2-304, and (ii) the PSD analyses and demonstrations required under Sections 2-2-305 and 2-2-306, if applicable.
- 401.3 CEQA-related information required under Section 2-1-426; and for a new major facility, and for a modification to a major facility that will increase emissions by more than 100 tons per year of carbon monoxide, 40 tons per year of precursor organic compounds, nitrogen oxides, or sulfur dioxide, or 10 tons per year of PM_{2.5}, an analysis of alternative sites, sizes, production processes, and environmental control techniques for such proposed source that demonstrates that benefits of the proposed source significantly outweigh the environmental and social costs imposed as a result of its location, construction or modification.
- 401.4 If the application is for (i) a new major facility or a major modification of major facility for NO_x, VOC, SO₂ or PM_{2.5} or (ii) a PSD Project, and the project may have an impact on air quality related values (including visibility) within any Class I area(s), the application shall include an analysis of potential impacts to air quality related values (including visibility) in such Class I area(s) for review and consideration by the Federal Land Manager of such Class I

area(s). The determination of whether a project may have an impact on air quality related values (including visibility) within a Class I Area shall be made according to the guidelines adopted by the Federal Land Managers' Air Quality Related Values Work Group in its Phase I Report—Revised (2010), Natural Resource Report NPS/NRPC/NRR—2010/232.

401.5 Any other information requested by the APCO.

2-2-402 Notice to EPA and Federal Land Manager of Receipt of Permit Applications:

When the APCO receives a complete application for an Authority to Construct for a PSD Project, the APCO shall transmit a copy of the complete application to EPA Region IX. If the APCO receives a complete application for a project that requires an analysis of any Class I area impacts under Section 2-2-401.4, the APCO shall transmit a copy of the complete application to the Federal Land Manager(s) with responsibility for the Class I Area(s) involved within 30 days of receipt and at least 60 days prior to holding any public hearing on such application, and shall include the applicant's analysis of the anticipated impacts on air quality related values (including visibility) in such Class I area(s). In addition, the APCO shall also notify such Federal Land Manager(s) if the APCO receives any advance notification of any such application.

2-2-403 Authority to Construct, Preliminary Decision: If an application for an Authority to Construct is subject to the public notice and comment requirements of Section 2-2-404, the APCO shall make a preliminary decision as to whether an authority to construct shall be approved, or denied. The APCO shall make such preliminary decision within 90 days following the acceptance of the application as complete, provided that any fees required in accordance with Regulation 3 are paid; or within a longer time period if necessary to complete any PSD impact analyses required under Sections 2-2-305 and 2-2-306, if necessary to complete any CEQA analyses if the District is the CEQA Lead Agency, or if consented to by the applicant.

2-2-404 Publication of Notice and Opportunity for Public Comment: If the application is for (i) a new major facility or a major modification of an existing major facility, (ii) any new facility, or a modification of any existing facility, that will involve an increase in emissions of CO, NO_x, SO₂, PM₁₀, PM_{2.5}, VOC, or lead, calculated in accordance with Section 2-2-604, in an amount that is significant as defined in Section 2-2-227.2, or (iii) a PSD Project, the APCO shall provide notice of the preliminary decision made under Section 2-2-403 according to the following procedures:

404.1 The APCO shall publish a notice stating the preliminary decision of the APCO and inviting written public comment on it. The notice shall state the location of the information available pursuant to Section 2-2-405, the procedures and deadlines for submitting written public comments, and the opportunity for requesting a public hearing pursuant to subsection 404.7.

404.2 If the application is for a PSD Project, the notice shall also state the degree of PSD increment consumed if a PSD increment consumption analysis has been conducted.

404.3 The APCO shall publish the notice prominently on the District's internet website in a manner that will provide the public with routine and ready access; and if the application is for a new major facility or a major modification of an existing major facility, or for a PSD Project, the APCO shall also publish the notice prominently in at least one newspaper of general circulation within the District.

- 404.4. The APCO shall transmit a copy of the notice to ARB; EPA Region IX; adjacent air districts; the chief executive(s) of the city and county where the facility is located; the California State Lands Commission; any Indian Governing Body whose lands may be affected by the new or modified source(s) that is the subject of the notice; any person who requests such specific notification in writing; and, if the application is for a project that requires an analysis of any Class I area impacts under Section 2-2-401.4, the Federal Land Manager(s) with responsibility for the Class I Area(s) involved.
- 404.5 If the District is the CEQA Lead Agency with respect to the application, the APCO shall also ensure that the applicable CEQA notice and comment requirements are followed with respect to any CEQA document.
- 404.6 The APCO shall provide a period of at least 30 days following publication of the notice required under this Section for members of the public to submit written comments, and may extend the public comment period for good cause.
- 404.7 The APCO may elect to hold a public meeting to receive written and verbal comments from the public during the public comment period if the APCO finds that a public meeting is warranted and would substantially enhance public participation in the decision-making process. If the APCO elects to hold a public meeting, the APCO shall provide at least 30 days public notice of such meeting in the same manner as is required for the notice of preliminary decision, and the public comment period under Section 2-2-404.6 shall be extended, at a minimum, until the end of the public meeting.

2-2-405 Public Inspection: If an application for an Authority to Construct is subject to the public notice and comment requirements of Section 2-2-404, the APCO shall make available for public inspection, at District headquarters, the information submitted by the applicant, the APCO's preliminary decision to grant or deny the authority to construct including any proposed conditions and the reasons therefore, and any other relevant information on which the APCO's preliminary decision is based. Any such information shall also be transmitted, upon request, to ARB and EPA Region IX. In making information available for public inspection, the APCO shall consider any claims by the applicant regarding the confidentiality of trade secrets, as designated by the applicant prior to submission, in accordance with Section 6254.7 of the California Government Code.

2-2-406 Authority to Construct, Final Action: If an application for an Authority to Construct is subject to the public notice and comment requirements of Section 2-2-404, the APCO shall consider all public comments received and shall take final action on the application: (i) within 60 days after the close of the public comment period, or within 30 days after final approval of a CEQA Negative Declaration or Environmental Impact Report for the project (if applicable), whichever is later; and (ii) if the application is for a PSD Project, no later than one year after receipt of the complete application (unless a longer period is necessary and is consented to by the applicant). At the time of such final action, the APCO shall:

- 406.1 Prepare and make publicly available a written response to any public comments received explaining how the APCO has considered such comments in making a final decision; and
- 406.2 Provide written notice of the final decision to the applicant, ARB, EPA Region IX, any person who submitted comments during the public comment period or requested written notice of the final action, and, if the District is a Lead

Agency under CEQA, in accordance with all applicable CEQA public notice and comment requirements.

2-2-407 Issuance, Permit to Operate: Before issuing a permit to operate for a source subject to the requirements of this Rule, the APCO shall ensure that the following requirements have been met:

407.1 The APCO shall ensure that all conditions specified in the authority to construct have been and are being complied with, or in the case of conditions with a future compliance date, that such conditions are reasonably expected to be complied with by the applicable compliance date.

407.2 If the permit is for a source for which the applicant complied with the offset provisions of Sections 2-2-302 or 2-2-303 with emission reduction credits generated after the application date:

2.1 The APCO shall ensure that such emission reduction credits took effect or will take effect no later than initial operation of the source (or, for a source that is a replacement unit, as defined in 40 C.F.R. Section 51.165(a)(1)(xxi), that will replace an existing source in whole or in part, with respect to emission reduction credits being generated by the shutdown of the existing source being replaced, no later than 90 days after initial operation of the replacement unit); and

2.2 The APCO shall ensure that such emission reduction credits shall be maintained throughout the operation of the source.

2-2-408 Permit to Operate, Final Action: The APCO shall take final action to approve, approve with conditions, or disapprove a permit to operate a source subject to this Rule within 90 days after start-up of the new or modified source, unless such time period is extended with the written concurrence of the applicant.

2-2-409 Source Obligation, Relaxation of Enforceable Conditions: At such time as the applicability of any requirement of this Rule would be triggered by an existing source or facility, solely by virtue of a relaxation of any enforceable limitation on the capacity of the source or facility to emit a pollutant, then the requirements of this Rule shall apply to the source or facility in the same way as they would apply to a new or modified source or facility otherwise subject to this Rule.

2-2-410 Permit Conditions: The APCO may include any permit condition in an authority to construct or permit to operate that the APCO determines is necessary to ensure compliance with this Rule, including but not limited to conditions controlling the operation of the source, of its abatement equipment, or of sources used to generate emission reduction credits to comply with Sections 2-2-302 or 2-2-303. Such conditions may have a future effective date and may be made conditional on the results of source tests, ground level monitors or public complaints.

2-2-411 Offset Refunds: The APCO may refund offsets provided for an authority to construct or permit to operate, and waive any associated banking fees, under the following circumstances:

411.1 Where an applicant has provided offsets in excess of those required for an authority to construct or permit to operate, the APCO shall upon request of the applicant refund the difference between the amount of offsets provided and the amount of offsets required, as long as such request is made within 2 years of issuance of the authority to construct or within 6 months of issuance of the permit to operate.

411.2 Whenever a source for which the owner or operator has provided offsets is not constructed (or is constructed but never operated), and the authority to

construct for the source has expired or has been surrendered by the applicant, the APCO shall upon request of the applicant refund the offsets provided in connection with the authority to construct, as long as such request is made within 2 years of issuance or renewal of the authority to construct.

2-2-412 Demonstration of NO_x, POC and PM_{2.5} Offset Program Equivalence: By March 1 of each year, or by a later date approved by EPA, the APCO shall prepare and submit to EPA, and publish prominently on the District's website, an analysis demonstrating that the District's New Source Review program has obtained at least as many NO_x, POC and PM_{2.5} offsets in total as would have been required under the federal offsets provisions set forth in 40 C.F.R. section 51.165 for the Federal Major NSR Sources (as defined in Section 2-2-228) permitted by the District during the previous calendar year. The demonstration shall be based on the following information:

412.1 Calculation of Offsets Shortfall for Each Federal Major NSR Source: The APCO shall calculate the offsets shortfall for each Federal Major NSR Source permitted during the previous calendar year, which shall be the sum of the Federal Offsets Baseline Shortfall as defined in Section 2-2-229 (if any) and the Federal Surplus-at-Time-of-Use Shortfall as defined in Section 2-2-230 (if any).

412.2 Calculation of Total Offsets Shortfall for All Federal Major NSR Sources: The APCO shall sum the offsets shortfalls calculated pursuant to subsection 412.1 (if any) for all for all Federal Major NSR Sources permitted during the previous calendar year to obtain the total offsets shortfall for the year.

412.3 Identification of Equivalence Credits Sufficient to Cover Total Offsets Shortfall: The APCO shall identify Equivalence Credits sufficient to equal or exceed the amount of the total offsets shortfall calculated pursuant to subsection 412.2 (if any), subject to the following requirements.

3.1 The APCO shall not include any Equivalence Credits that were relied on in a prior equivalence demonstration for an earlier year.

3.2 All Equivalence Credits used in the equivalence demonstration must be adjusted to reflect any (i) District regulation required for purposes of federal attainment demonstration requirements, (ii) District requirement, or a state requirement applicable to sources within the District, approved into the California State Implementation Plan, or (iii) federal New Source Performance Standard or Maximum Achievable Control Technology Standard, that is adopted or promulgated between the date the Equivalence Credit was generated and the date it is used for purposes of the equivalence demonstration. The APCO shall make such adjustments in accordance with an EPA-approved surplus-at-time-of-use adjustment methodology.

2-2-413 No Net Increase Status Report: The APCO shall publish, in conjunction with the triennial update of the Clean Air Plan (CAP), a report demonstrating that the District's permitting program complies with the no-net-increase requirements of Section 40919(b) of the Health and Safety Code. This report shall demonstrate that sufficient offsets have been provided, as required by Section 2-2-302, for all permits issued during the previous three year CAP period. This report shall be forwarded to the California Air Resources Board, Stationary Source Division, for approval.

- 2-2-414 BACT Workbook:** The APCO shall publish and periodically update a BACT Workbook specifying the BACT requirements for commonly permitted sources. BACT will be determined for a source on a case-by-case basis, using the workbook as a guidance document, as the most effective control device or technique or most stringent emission limitation that meets the requirements of Section 2-2-202.
- 2-2-415 Additional Offset Requirements Where District Has Not Demonstrated NO_x, POC or PM_{2.5} Offset Program Equivalence:** If the APCO has not submitted the equivalence demonstration required by Section 2-2-412 by March 1 (or other EPA-approved date), the APCO shall require additional offsets for any subsequent Authority to Construct and/or Permit to Operate for a Federal Major NSR Source sufficient to make up for (i) any Federal Offsets Baseline Shortfall calculated pursuant to Section 2-2-229 and (ii) any Federal Surplus-at-Time-of-Use Shortfall calculated pursuant to Section 2-2-230. The APCO shall not issue an Authority to Construct or Permit to Operate for any Federal Major NSR Source unless the applicant has provided sufficient additional offset credits to make up for the shortfalls identified in the preceding sentence for that particular Authority to Construct or Permit to Operate. The APCO shall continue to require additional offsets sufficient to make up for such shortfalls for all Authorities to Construct and Permits to Operate for Federal Major NSR Sources issued after March 1 (or other EPA-approved date) until such time as the District has made the required equivalence demonstration for every year since 2017. The requirement to provide additional offsets under this Section shall apply on a pollutant-specific basis for each pollutant for which the APCO has not made the required equivalence demonstration.
- 2-2-500 MONITORING AND RECORDS**
- 2-2-501 Post-Construction Monitoring:** The APCO may require as a condition in an authority to construct that the owner or operator of a facility for which the authority to construct is issued must conduct such ambient air quality monitoring as the APCO determines is necessary to determine the effect that emissions from the facility may have, or are having, on air quality in the area.
- 2-2-600 MANUAL OF PROCEDURES**
- 2-2-601 Ambient Air Quality Monitoring:** Ambient air quality monitoring required pursuant to this Rule shall be conducted in accordance with the methods prescribed in the Manual of Procedures, Volume VI., and 40 C.F.R. Part 58, Appendix B.
- 2-2-602 Good Engineering Practice (GEP) Stack Height:** Stack heights beyond what is consistent with good engineering practices shall not be allowed for purposes of air quality modeling undertaken as part of any air quality analysis prepared in connection with an application for an authority to construct as required by Sections 2-2-305 through 2-2-308. This requirement does not limit the actual height of a stack, as long as good engineering practice stack heights are used in any such modeling analyses. Good engineering practice stack height shall be determined according to 40 C.F.R. Section 52.100(ii) and EPA's *Guideline for Determining Good Engineering Practice Stack Height*, EPA Publication No. EPA-450/4-80-023R (June 1985).
- 2-2-603 Baseline Emissions Calculation Procedures:** The following methodology shall be used to determine a source's baseline emissions for purposes of calculating an

emissions increase or decrease from a source under Sections 2-2-604.2, 2-2-605.2, and 2-2-606.3:

603.1 Determine Baseline Period Ending Date: The date on which the baseline period ends is determined as follows:

- 1.1 For determining the amount of an emissions increase from a new or modified source, the baseline period ends on the date on which the application for authority to construct/permit to operate the new or modified source is determined to be complete.
- 1.2 For determining the amount of a contemporaneous emissions increase under Section 2-2-220 for a physical change or change in the method of operation of a source that was not a modification of the source, the baseline period ends on the date the change was first implemented at the source.
- 1.3 For determining the amount of a contemporaneous onsite emission reduction credit or a contemporaneous emissions decrease under Section 2-2-220, the baseline period ends on the date on which the emission reduction becomes enforceable.
- 1.4 For determining the amount of an emission reduction credit for which a banking certificate is sought under Regulation 2, Rule 4, the baseline period ends the date on which the banking application is determined to be complete.

603.2 Determine Baseline Period: The baseline period is determined as follows:

- 2.1 For all pollutants other than greenhouse gases, the baseline period is the three-year period immediately preceding the baseline period ending date established under subsection 603.1.
- 2.2. For greenhouse gases, the baseline period is determined as follows:
 - 2.2.1 For a new source, the baseline period is a period with zero throughput and emissions. For such sources, baseline emissions and adjusted baseline emissions are zero for all purposes under Section 2-2-603.
 - 2.2.2 For an existing source that first operated less than 24 months before the date on which the application for authority to construct/permit to operate is determined to be complete, the baseline period is a period with maximum potential throughput and emissions. For such sources, baseline emissions and adjusted baseline emissions are the source's pre-existing potential to emit for all purposes under Section 2-2-603.
 - 2.2.3 For a modification to an existing electric utility steam generating unit as defined in 40 C.F.R. Section 51.166(b)(30) that has operated for 24 months or more prior to the date of application, the baseline period is any period of 24 consecutive months selected by the applicant within the 5-year period immediately preceding the baseline period ending date established under subsection 603.1, or other such time period that the APCO determines is more representative of normal source operation. For evaluating emissions from multiple sources, the same 24-month baseline period shall be used for all sources.

2.2.4 For a modification to any existing source other than an electric utility steam generating unit as defined in 40 C.F.R. Section 51.166(b)(30) that has operated for 24 months or more prior to the date of application, the baseline period is any period of 24 consecutive months selected by the applicant within the 10-year period immediately preceding baseline period ending date established under subsection 603.1. For evaluating emissions from multiple sources, the same 24-month baseline period shall be used for all sources.

603.3 Determine Baseline Throughput: Baseline throughput is the lesser of: (i) the actual average annual throughput during the baseline period; or (ii) the average permitted annual throughput during the baseline period, if limited by permit condition. If the applicant does not have sufficient verifiable records of the source's operation to substantiate its throughput during any portion(s) of the baseline period, the applicant is not entitled to credit for throughput during any such portion(s). Throughput shall be based on the source's operational parameter that correlates most closely to the source's emissions.

603.4 Determine Baseline Emissions: Baseline emissions are the actual average annual emissions during the baseline period (excluding any emissions that exceed any regulatory or permit limits). If the applicant does not have sufficient verifiable records of the source's operation to substantiate the emission rate during any portion(s) of the baseline period, the applicant is not entitled to credit for emissions during any such portion(s).

603.5 Determine Baseline Emissions Rate: The baseline emission rate is the emission rate per unit of throughput during the baseline period, calculated by dividing the source's baseline emissions by its baseline throughput.

603.6 Determine Adjusted Baseline Emissions Rate: The adjusted baseline emission rate shall be determined by adjusting the baseline emission rate downward, if necessary, to reflect the most stringent of RACT, BARCT, and applicable federal and District rules and regulations in effect or contained in the most recently adopted Clean Air Plan; except that for purposes of determining whether a source or group of sources constitutes a PSD Project under Section 2-2-224, the adjusted baseline emission rate shall not be adjusted downward to a greater extent than required under the provisions of 40 C.F.R. Sections 51.166(b)(47)(i)(b) and 51.166(b)(47)(ii)(b) & (c).

603.7 Determine Adjusted Baseline Emissions: The adjusted baseline emissions is the adjusted baseline emissions rate multiplied by the baseline throughput (except where otherwise specified under sections 2-2-603.2.2.1 or 2-2-603.2.2.2).

2-2-604 Emission Increase/Decrease Calculation Procedures, New Sources and Changes at Existing Sources: The amount of any emissions increase (or decrease) associated with a new source, or with a physical change, change in the method of operation, change in throughput or production, or other similar change at an existing source, shall be calculated according to the following procedures:

604.1 New Source: The emissions increase associated with a new source is the source's potential to emit.

604.2 Change to Existing Source: The emissions increase (or decrease) associated with a physical change, change in the method of operation, change in throughput or production, or other similar change at an existing source

(including a permanent shutdown of the source) shall be calculated as the difference between: (i) the source's potential to emit after the change; and (ii) the source's adjusted baseline emissions before the change, calculated in accordance with Section 2-2-603.

2-2-605 Emission Reduction Credit Calculation Procedures: The amount of emission reduction credits associated with a physical change, change in method of operation, change in throughput or production, or other similar change at a source shall be calculated according to the following procedures:

605.1 Eligibility for Credit: To qualify as emission reduction credits, the emission reductions associated with any such change: (i) must be enforceable through permit conditions; through relinquishment of the source's permit; through physical removal of the source such that reinstallation would require a new permit under Regulation 2; or in the case of source shutdown where no permit is required for the source being shut down, through an alternative legally-enforceable mechanism; and (ii) must be real, permanent, quantifiable, and in excess of any reductions required by applicable regulatory requirements. Emissions that were offset with credits from the Small Facility Banking Account cannot be used to generate emission reduction credits.

605.2 Calculating Amount of Credit: The amount of emission reduction credit associated with such a change shall be calculated as the difference between: (i) the source's adjusted baseline emissions before the change calculated pursuant to Section 2-2-603; and (ii) the source's potential to emit after the change.

2-2-606 Potential-to-Emit (PTE) Increase Calculation Procedures for Purposes of Determining Cumulative Increase: For purposes of calculating cumulative increase under Section 2-2-607, the increase in a source's potential to emit associated with an authority to construct and/or permit to operate for the source shall be calculated according to the following procedures:

606.1 New Source: For a new source, the increase in potential to emit is the source's full potential to emit.

606.2 Modified Source – Offsets Previously Provided: For a modified source, if offsets have previously been provided for the source's emissions, then the increase in potential to emit associated with the modification is the difference between:

- 2.1 the source's potential to emit after the modification; and
- 2.2 the source's potential to emit before the modification, adjusted downward, if necessary, to reflect the most stringent of RACT, BARCT, and applicable federal and District rules and regulations in effect or contained in the most recently adopted Clean Air Plan

606.3 Modified Source – Offsets Not Yet Provided: For a modified source, if offsets have not previously been provided for the source's emissions, then the increase in potential to emit associated with the modification is the difference between:

- 3.1 the source's potential to emit after the modification; and
- 3.2 the source's adjusted baseline emissions before the modification calculated in accordance with Section 2-2-603.

For purposes of calculating the cumulative increase associated with a source, the source's emissions shall include emissions from cargo carriers (other than motor vehicles) associated with the source as specified in Section 2-2-610.

2-2-607 Cumulative Increase Calculation Procedures: The cumulative increase in emissions associated with an authority to construct and/or permit to operate for a source shall be calculated as:

607.1 Project Emissions Increase: the increase in potential to emit associated with the authority to construct/permit to operate determined in accordance with Section 2-2-606; minus

607.2 Contemporaneous Onsite Emission Reduction Credits: any contemporaneous onsite emission reduction credits at the facility calculated in accordance with Section 2-2-605 that are credited to the authority to construct/permit to operate.

The cumulative increase associated with an authority to construct/permit to operate issued in the past shall be determined using the increase in potential to emit and contemporaneous onsite emissions reductions credits calculated at the time of issuance of the authority to construct/permit to operate. Emission reduction credits may not be double-counted (e.g., an emission reduction credit may not be applied to the cumulative increase calculation for more than one authority to construct/permit to operate).

2-2-608 Facility Un-Offset Cumulative Increase Calculation Procedures: For purposes of applying the emission offset provisions of Sections 2-2-302 and 2-2-303, a facility's un-offset cumulative increase in emissions since the baseline date shall be calculated using the following procedures:

608.1 Project Cumulative Increase: The cumulative increase from the project being permitted shall be determined in accordance with Section 2-2-607.

608.2 Prior Un-Offset Cumulative Increase: For each previous authority to construct/permit to operate issued for the facility, and for any related source as defined in Section 2-2-226, after the cumulative increase baseline date as specified in Section 2-2-209 (but excluding any authority to construct/permit to operate issued because a source lost its permit exemption per Section 2-1-424 and any authority to construct/permit to operate for a source that has been permanently removed from service), the un-offset cumulative increase shall be determined by:

2.1 Calculating the cumulative increase associated with each previous authority to construct/permit to operate issued for the facility, and for any related source as defined in Section 2-2-226, determined in accordance with Sections 2-2-607; and

2.2 Subtracting any offsets provided in connection with the authority to construct/permit to operate (including any offsets provided from the District's Small Facility Banking Account).

608.3 Facility Un-Offset Cumulative Increase: The facility's un-offset cumulative increase shall be determined by adding (i) the project cumulative increase calculated according to Section 2-2-608.1 and (ii) the un-offset cumulative increase from each previous authority to construct/permit to operate issued for the facility, and for any related source as defined in Section 2-2-226, after the cumulative increase baseline date as specified in Section 2-2-209 (but excluding any authority to construct/permit to operate issued because a source lost its permit exemption per Section 2-1-424 and any authority to construct/permit to operate for a source that has been permanently removed from service) calculated according to Section 2-2-608.2. Offsets shall be

provided for the facility's un-offset cumulative increase multiplied by the applicable offset ratio specified in Section 2-2-302 and 2-2-303.

- 2-2-609 Official Record of Cumulative Increases and Offsets:** The APCO may establish and maintain a database or other accounting document to record the cumulative increase (including project cumulative increase and associated emission reduction credits) and offsets associated with each authority to construct/permit to operate issued for a facility. In calculating the un-offset cumulative increase associated with a previous authority to construct/permit to operate under Section 2-2-608.2, the APCO may rely on the data specified in such document as conclusive, unless the APCO has information that indicates that some other data is more accurate. Records of cumulative increase and offsets shall be updated as necessary to ensure that they are current and accurate.
- 2-2-610 Facility Emissions Calculation Procedures, Cargo Carriers:** For purposes of applying the offset requirements of Sections 2-2-302 and 2-2-303, a facility's potential to emit and cumulative increase shall be calculated including emissions from cargo carriers (other than motor vehicles) associated with the sources at the facility. When applying these offset requirements, facilities that include cargo loading or unloading from cargo carriers other than motor vehicles shall include the cargo carriers as part of the source that receives or loads the cargo. Accordingly, all emissions from such cargo carriers while operating in the District, or within California Coastal Waters up to 11 nautical miles (12.66 statute miles) from the Golden Gate Bridge (and any additional areas of California Coastal Waters adjacent to the District if cargo carrier emissions in such areas would have a substantial impact on air quality within the District), shall be included as part of the source's emissions. Emissions from cargo carriers shall not be included for purposes of applying any other provisions of this Regulation, including the BACT and PSD requirements.
- 2-2-611 Emission Calculation Procedures, Fugitive Emissions:** Any fugitive emissions from a source shall be included in calculating the source's emissions for all purposes under this Rule; except that for purposes of determining whether a facility's emissions exceed the 100/250 ton per year thresholds in Section 2-2-217 (for a "Major Facility") and Section 2-2-224.1 (the first element in the definition of "PSD Project"), fugitive emissions shall be included only if the facility is in one of the 28 categories listed in Section 169(1) of the Clean Air Act or is in any other stationary source category that was being regulated under section 111 or 112 of the Clean Air Act as of August 7, 1980.

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**REGULATION 2
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2-3-100 GENERAL

2-3-101 Description: This Rule contains special provisions relating to the procedures for the review and standards for the approval of authorities to construct power plants within the District, for which a Notice of Intention (NOI) or Application for Certification (AFC) has been accepted by the California Energy Commission (Commission).

2-3-200 DEFINITIONS

2-3-201 Determination of Compliance: A decision by the APCO, made following a review of applicable data, conducted in a manner that is identical to the review conducted to establish the eligibility of a person to receive an authority to construct a stationary source subject to Rule 2 of this Regulation.

2-3-300 STANDARDS

2-3-301 Authority to Construct a Power Plant: An authority to construct a power plant shall be issued only upon the issuance by the APCO of a Determination of Compliance, and the submittal of the Determination of Compliance to the Commission.

2-3-302 Permit to Operate a Power Plant: The APCO shall issue a permit to operate a power plant if the applicant has received certification pursuant to an AFC and, after construction, the power plant is in compliance with all conditions of the certificate and the authority to construct.

2-3-400 ADMINSTRATIVE REQUIREMENTS

2-3-401 NOI Proceedings: Within 14 days of receipt of a NOI, the APCO shall notify the ARB and the Commission of the District's intention to participate in the NOI proceedings. If the District chooses to participate in the NOI proceedings, the APCO shall prepare and submit a report to the ARB and the Commission prior to the conclusion of the nonadjudicatory hearings specified in Section 25509.5 of the Public Resources Code. That report shall include, at a minimum:

401.1 A preliminary specific definition of BACT for the proposed power plant.

401.2 A preliminary discussion of whether there is substantial likelihood that the requirements of District Regulations can be satisfied by the proposed power plant.

401.3 A preliminary list of conditions which the proposed power plant must meet in order to comply with District regulations.

2-3-402 AFC Proceedings: Upon receipt of an AFC, the APCO shall determine whether the information contained therein is sufficient to undertake a Determination of Compliance review. If not, the APCO shall, within 20 days of receipt of the AFC, so inform the Commission, and the AFC shall be considered incomplete and returned to the applicant for resubmittal. The APCO may also request from the applicant any information necessary for the completion of the Determination of Compliance review. If the information is not supplied, the APCO may petition the presiding Commissioner for an order directing the applicant to provide such information.

2-3-403 Preliminary Decision: Within 180 days of accepting an AFC as complete, the APCO shall conduct a Determination of Compliance review and make a preliminary decision as to whether the proposed power plant meets the requirements of District regulations. If so, the APCO shall make a preliminary determination of conditions to be included in the Certificate, including specific BACT requirements and a description

of mitigation measures to be required.

2-3-404 Public Notice, Comment and Public Inspection: The preliminary decision made pursuant to Section 2-3-403 shall be subject to the public notice, public comment and public inspection requirements contained in Section 2-2-406 and 407 of Rule 2.

2-3-405 Determination of Compliance, Issuance: Within 240 days of the acceptance of the AFC as complete, the APCO shall issue and submit to the commission a Determination of Compliance. If the Determination of Compliance cannot be issued, the APCO shall so advise the Commission. When the AFC is approved by the Commission, the APCO shall ascertain whether the Certificate contains all applicable conditions. If so, the APCO shall grant an authority to construct.

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**REGULATION 2
PERMITS
RULE 4
EMISSIONS BANKING**

(Adopted March 7, 1984)

2-4-100 GENERAL

2-4-101 Banking: The banking of emission reduction credits is intended to provide a mechanism for sources to obtain offsets under the New Source Review regulations contained in Regulation 2, Rule 2 of the District and is not intended to recognize any pre-existing vested right to emit air pollutants.

(Amended June 15, 1994)

2-4-200 DEFINITIONS

2-4-201 Emission Reduction Credit: As defined in Section 2-2-211.

(Amended 7/17/91; 6/15/94; 10/7/98; 12/19/12)

2-4-202 Deleted May 17, 2000

2-4-203 Bankable Pollutants: Emission reduction credits of the following pollutants may be deposited in the emissions bank: precursor organic compounds, non-precursor organic compounds, particulate matter, PM₁₀, PM_{2.5}, sulfur dioxide, nitrogen oxides, and carbon monoxide.

(Amended 7/17/91; 6/15/94; 12/19/12)

2-4-204 Reasonably Available Control Technology: As defined in Regulation 2-1-209.

(Amended July 17, 1991)

2-4-300 STANDARDS

2-4-301 Bankable Reductions: An applicant may bank emission reductions if and only if the APCO determines (i) that the reductions satisfy all of the criteria necessary to constitute Emission Reduction Credits as defined in Section 2-2-211, including but not limited to the requirements that the reductions are real, permanent, quantifiable, and enforceable, and are calculated in accordance with Section 2-2-605; and (ii) that banking the reductions is not prohibited by Section 2-4-303. The APCO may include a condition in an authority to construct involving reductions pursuant to subsections 2-4-301.1, 301.2, or 301.5, stating that the emission reduction shall be eligible for banking after being demonstrated by source test or other means acceptable to the APCO, including emission factors. Any regulatory change adopted 90 or more days after a complete application for an authority to construct shall not affect the potential for bank deposits resulting from reductions at sources covered by that authority to construct. The following are examples of bankable reductions:

301.1 Emission reduction credits resulting from the installation of a level of control greater than required by regulation are bankable, including installation of BACT where BACT is not required.

301.2 Emission reduction credits due to the installation of different processes or equipment which emit less than the previous process or equipment that performed the same function.

301.3 Emission reduction credits due to the effective operation and maintenance of abatement equipment if the applicant accepts a condition on the permit specifying a lower level of emissions than otherwise required by District regulations.

301.4 Emission reduction credits resulting from switching to a fuel which results in less emissions, provided the applicant agrees to a condition on the appropriate permit specifying the fuel to be used in the future.

301.5 Emission reduction credits of fugitive emissions if the reductions are quantified by source tests or other methods approved by the APCO.

- 301.6 Other emission reduction credits, such as 1) limitations on the type or quantity of fuel burned, 2) solvent recovery projects, and 3) limitations on throughput.

(Amended 7/17/91; 6/15/94; 12/19/12; 12/6/2017)

2-4-302 Bankable Reductions for Closures: Emission reduction credits not prohibited by Section 2-4-303 are bankable. The following restrictions apply:

- 302.1 Closure of sources, where the reduction is permanent at the source, but it is unclear whether the reduction will be replaced by an emissions increase elsewhere within the District, are bankable only if the applicant accepts a condition restricting use of the deposits to offsetting emission increases in the same or closely related industries. For example, the closure of public utility power generation facilities could be bankable if use is restricted to offsetting emission increases from other power generation facilities (including resource recovery and cogeneration facilities). Closure of petroleum or petroleum product storage tanks at refineries could be bankable if use is restricted to offsetting emission increases at other petroleum or petroleum products storage tanks, or to offset emission increases at the associated refinery.

- 302.2 Issuance of a Banking Certificate for emission reductions resulting from a closure cancels the permit to operate. The reduction shall be enforceable through a condition in the Banking Certificate and through enforcement of Regulation 2-1-302 pertaining to operating without a permit.

(Amended 7/17/91; 6/15/94; 5/17/00; 12/6/2017)

2-4-303 Limitations on Deposits: The following cannot be banked:

- 303.1 Emission reduction credits achieved during periods in which a moratorium on banking deposits is in effect pursuant to Section 2-4-410. After removal of the moratorium, they may subsequently be banked. The period of the moratorium shall not be considered "normal operation" for the purpose of determining the bankable emissions.

- 303.2 Emission reductions from closure of sources where the demand for the services or product would merely shift to other sources in the District, with little or no decrease in emissions basin-wide.

2.1 The APCO may, at his or her discretion, require submittal of data to document that reductions from the closure of such types of operations will not result in such a shift, and could therefore be banked.

2.2 Only the net reduction (if any) shall be banked for shutdowns of manufacturing operations where the operation is being transferred elsewhere within the same stationary source or to a different stationary source owned by the applicant within the District.

- 303.3 Emission reductions due to the shutdown or closure of sources or the installation of controls on sources excluded from District regulations pursuant to Regulation 1-110 or exempt from permit requirements pursuant to Regulation 2-1.

- 303.4 Transfer of ownership of an emission source if the source remains operable and within the District.

- 303.5 Emission reductions at facilities belonging to companies which have received unreimbursed offsets from the Small Facility Emissions Bank. Once these offsets have been reimbursed, the remaining emission reductions may be banked.

(Amended 7/17/91; 6/15/94; 10/7/98; 5/17/00)

2-4-304 Limitations on Use of Deposits: Emission reduction credits may not be used to:

- 304.1 Exempt a source from Best Available Control Technology (BACT) requirements contained in subsections 2-2-301.1 and 301.2 of Regulation 2.

- 304.2 Exempt a source from emission limitations established in Regulation 10 (New Source Performance Standards).

- 304.3 Exempt a source from any other air pollution control requirements whatsoever of Federal, State, or District laws, rules and regulations.

(Amended 7/17/91; 6/15/94)

2-4-305 Use of Withdrawals: Bank deposits may be withdrawn by the depositor or by any other person to whom they have been transferred by the depositor for use in meeting the requirements to obtain offsets specified in Rule 2 of this Regulation.

(Amended July 17, 1991)

2-4-400 ADMINISTRATIVE REQUIREMENTS

- 2-4-401 Banking Application:** An application to deposit or re-evaluate an emission reduction in the emissions bank shall be submitted on forms specified by the APCO. No banking application shall be accepted from a stationary source for pollutants which are the subject of a variance, abatement order or other similar formal order, until compliance with the emission limitations which are the subject of the variance or order is achieved.
(Amended December 19, 2012)
- 2-4-402 Complete Banking Application:** The APCO shall determine whether a banking application is complete not later than 30 calendar days following receipt of the application, or after a longer time period agreed upon in writing by both the applicant and the APCO. If the APCO determines that the application is not complete, the applicant shall be notified in writing of the decision, specifying the information that is required. The applicant shall have 90 days to submit the requested information. Upon receipt of all requested information, a new 30 day period to determine completeness shall be initiated. If, at the end of 90 days, no data is submitted or the application is still incomplete, the APCO may cancel the banking application with written notification to the applicant. Upon a determination that the application is complete, the APCO shall notify the applicant in writing. Thereafter, only information to clarify, correct, or otherwise supplement the information submitted in the application, may be requested. Withdrawal of a banking application by an applicant shall result in cancellation of the application; any re-submittal may be evaluated using a new application completion date.
(Amended 7/17/91; 6/15/94; 5/17/00)
- 2-4-403 Preliminary Decision:** Within 60 days following the acceptance of a banking application as complete, which is not subject to the publication, public comment and inspection requirements of Section 2-4-405, or, with the consent of the applicant, such longer period as may be agreed upon, the APCO shall make a preliminary decision and notify the applicant in writing as to whether the APCO intends to approve, conditionally approve, or deny the application.
(Amended July 17, 1991)
- 2-4-404 Preliminary Decision, Major Deposits:** Within 90 days following the acceptance of a banking application as complete, which is subject to the publication, public comment and inspection requirements of Section 2-4-405, or, with the consent of the applicant, such longer period as may be agreed upon, the APCO shall make a preliminary decision and notify the applicant in writing as to whether the APCO intends to approve, conditionally approve, or deny the application.
(Adopted July 17, 1991)
- 2-4-405 Publication, Public Comment and Inspection:** Before approving the banking of any emission reduction in excess of 40 tons per year of any pollutant, the re-evaluation of PM₁₀ emission reduction credits under Section 2-4-416 resulting in an increase of more than 40 tons per year or before declaring a moratorium on further banking of emission reductions, the APCO shall cause to be published in at least one newspaper of general circulation within the District, and be sent to any individual submitting a written request to the APCO for notification, a notice stating the preliminary decision of the APCO to approve the banking of emission reductions or to declare a moratorium on further banking of emission reductions and inviting written public comment. The APCO shall make available for public inspection at District headquarters the information submitted by the applicant, the APCO's analysis, and the preliminary decision to grant or deny the banking application, including the reason therefore and any proposed conditions. The confidentiality of trade secrets shall be considered in accordance with Section 6254.7 of the Government Code. Such information shall also be transmitted to adjacent air pollution control districts, the California Air Resources Board, and the U.S. EPA.
(Renumbered, Amended 7/17/91; Amended 12/19/12)
- 2-4-406 Public Meeting:** During the 30-day period following the date of publication, which may be extended by the APCO, the APCO may, based on the receipt of written comments, elect to hold a public meeting to receive oral and written comments from the public. After considering all such comments, the APCO shall, within 30 days of the close of the comment period, make a final decision concerning such banking.
(Renumbered July 17, 1991)

- 2-4-407 Banking Certificate:** The APCO shall issue a banking certificate within 30 days of the issuance of the preliminary decision for an approved deposit not subject to Section 2-4-405, or within 30 days of the close of the public comment period if the banking application is approved. The certificate shall identify the owner of the certificate, the quantity of the emission reduction credits of each pollutant for deposit in the emissions bank in tons per year, the location of the facility at which the reduction was created, any conditions on use of the emission reduction credits, and any other data deemed appropriate by the APCO.
- (Renumbered, Amended 7/17/91; Amended 6/15/94)*
- 2-4-408 Appeal to the Hearing Board, Banking:** Any person dissatisfied with the decision of the APCO regarding the approval or disapproval of an application for banking air contaminants may appeal that decision within 30 calendar days in accordance with the provisions of Regulation 2-1-410.
- (Renumbered, Amended 7/17/91; Amended 5/17/00)*
- 2-4-409 Protection and Duration of Deposits:** Deposits are permanent until used by the depositor or any party to whom the depositor has transferred the deposit. Changes in offset ratios shall not apply to emission reduction credits already used. After issuance of the Banking Certificate confirming the deposit, subsequent changes in regulations to require the type of reduction banked shall not reduce or eliminate the deposit.
- (Renumbered 7/17/91; Amended 6/15/94)*
- 2-4-410 Moratorium on Banked Emissions:** If the APCO determines that additional mandatory emission reductions will be necessary to attain an ambient air quality standard, the APCO may declare a full or partial moratorium on banking deposits of the applicable air contaminant, after opportunity for public comment as provided in Sections 2-4-405 and 406. Such a moratorium shall be lifted after the APCO determines that the Bay Area Air Quality Plan demonstrates attainment of such standards.
- (Renumbered, Amended July 17, 1991)*
- 2-4-411 Banking Register:** The District shall maintain a “banking register”, which shall consist of a record of all deposits, deposit applications, withdrawals, and transactions. A summary of the data in the banking register shall be available to the public upon request and the District emission inventory shall explicitly include all outstanding deposits appearing in the summary as current existing emissions.
- (Renumbered, Amended July 17, 1991)*
- 2-4-412 Withdrawal Procedures for Deposits:** The following are procedures to be used for the withdrawal of banked emission reduction credits:
- 412.1 Deposits shall be withdrawn in accordance with the offset ratios in effect at the time of withdrawal as specified in Regulations 2-2-302 and 303.
 - 412.2 The owner of record shown in the District's banking register shall surrender the Banking Certificate in order to withdraw the banked emission reduction credit. If the entire deposit is used, the District shall retain the Certificate; if the deposit is partially used, the District shall retain the old Certificate and issue a new Certificate identifying the remaining portion of the deposit.
 - 412.3 If the deposit is transferred for later use, the owner of record shall submit the old Certificate signed by the owner of record and by the new owner; the District shall retain the old Certificate, issue a new Certificate in the name of the new owner for the amount transferred, and issue a new Certificate to the existing owner for any portion not transferred.
 - 412.4 If the deposit is transferred for use in an application for an authority to construct which requires offsets, the owner of record shall submit the old Certificate signed by the owner of record and by the new owner; the District shall retain the old Certificate, issue a new Certificate to the owner of record for any portion of the deposit not transferred, and identify use of the deposit in the authority to construct issued to the user of the deposit. No Certificate shall be issued to the user.
 - 412.5 For any transferred deposit, the creator of the deposit shall continue to have enforceable conditions in the appropriate permits to operate to assure permanency of the emission reduction and shall be held liable for compliance with those conditions; the user of any transferred bank deposit shall not be held liable for any failure of the creator to comply with District requirements.

(Renumbered, Amended 7/17/91; Amended 6/15/94)

2-4-413 Annual Report, Banking: The APCO shall provide an annual report to the Board of Directors on all banking transactions which have occurred during the preceding year.

(Renumbered July 17, 1991)

2-4-414 Small Facility Banking Account: The APCO may establish a small facility banking account and grant offsets. The APCO may fund the Small Facility Banking Account by deposit of unclaimed emission reductions resulting from source or facility closures, and by a small facility growth allowance established in the Clean Air Plan adopted by the District. In no event, may the APCO grant offsets in an amount that exceeds the amount contained in the Small Facility Banking Account. Allocation of credits shall conform to the requirements of Section 40919(a)(2) of the Health and Safety Code. If an applicant holds banked emission reduction credits, those credits must be used as a source of offsets prior to the APCO approving offsets from the small facility banking account (this includes bankable emission reduction credits held by other District facilities owned by the applicant). For the purposes of determining the amount of offsets granted by the APCO, any banked emission reduction credits that have been sold during the three years preceding a complete permit application shall be considered to be held by the applicant. Allocations from the small facility banking account cannot be transferred or banked by the recipient.

(Adopted 7/17/91; Amended 6/15/94; 10/7/98; 5/17/00; 12/21/04)

2-4-415 Military Base Closure Banking Account: The APCO shall establish a banking account for each military facility or base subject to termination of military operations. The APCO shall, in accordance with the provisions of this rule, bank the emission reduction credits for each military facility or base. The designated base reuse commission shall be entitled to the use of the banked emission reduction credits for projects within the jurisdiction of the base reuse commission, provided that the emission reduction credits have not been banked by the military facility or base.

(Adopted June 15, 1994)

2-4-416 Re-evaluating PM₁₀ Emission Reduction Credits: The owner of PM₁₀ banked emission reduction credits (ERCs) that were approved but not used prior to December 19, 2012 may request the District to re-evaluate those banked ERCs for the purpose of: converting PM₁₀ to PM₁₀ and PM_{2.5}; and/or including the condensable portion of PM₁₀ that was not included in the original evaluation.

(Adopted December 19, 2012)

2-4-600 MANUAL OF PROCEDURES

2-4-601 Emission Calculation Procedures: The emission calculation procedures contained in Regulation 2-2-600 shall be applicable to this Rule.

(Amended July 17, 1991)

2-4-602 Calculation Procedure for Converting Filterable PM₁₀ to Filterable PM_{2.5}: Existing PM₁₀ emission reduction credits can be converted to PM_{2.5} by multiplying the amount of PM₁₀ by a District-approved conversion factor, based on the type of source that originally generated the PM₁₀ credits. Acceptable conversion factors may include, but are not necessarily limited to the following:

- 602.1 For common source categories, the District will maintain a list of PM₁₀ to PM_{2.5} conversion factors in the Permit Handbook;
- 602.2 A comparison of AP-42 or other generally accepted emission factors for PM₁₀ and PM_{2.5};
- 602.3 Source specific emission test data comparing PM₁₀ and PM_{2.5} emission rates;
- 602.4 Emission test data comparing PM₁₀ and PM_{2.5} emission rates from a similar source.

(Adopted December 19, 2012)

2-4-603 Calculation Procedure for Including Condensable PM₁₀ or PM_{2.5}: The adjustment to add condensable (back-half) particulate to an existing credit will be based on the following:

- 603.1 The applicant must demonstrate the original credits were based solely on filterable particulate;
- 603.2 The applicant must identify the ratio of filterable to condensable PM₁₀ and provide supporting documentation;

- 603.3 The amount of condensable PM₁₀ will be determined by multiplying the amount of original filterable PM₁₀ by the ratio from section 2-4-603.2;
- 603.4 The condensable portion of PM₁₀ will be reduced if necessary, based on data that indicates a lower filterable PM₁₀ emission rate than was used in the original evaluation.
- 603.5 The original amount of filterable PM₁₀ will not be adjusted.

(Adopted December 19, 2012)

**REGULATION 2
PERMITS
RULE 6
MAJOR FACILITY REVIEW**

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REGULATION 2
PERMITS
RULE 6
MAJOR FACILITY REVIEW
(Adopted November 3, 1993)

2-6-100 GENERAL

- 2-6-101 Description:** The purpose of this rule is to implement the operating permit requirements of Title V of the federal Clean Air Act as amended in 1990. This rule shall apply to major facilities, phase II acid rain facilities, subject solid waste incinerator facilities, and any facility in a source category designated by the Administrator of the EPA as requiring a Title V permit. This rule also provides a means by which facilities may avoid the Title V requirements by limiting their potential to emit such that they are not major facilities. This rule shall not alter any other requirements of applicable federal, state, or District orders, rules or regulations.
- 2-6-110 Exemption, Asbestos:** Any demolition or renovation of an asbestos-containing source that requires a permit solely because it is subject to Regulation 11, Rule 2, Asbestos Demolition, Renovation, and Manufacturing, is exempt from this regulation.
- 2-6-111 Exemption, Wood Heaters:** Any wood heater that requires a permit solely because it is subject to Regulation 10, Subpart AAA, is exempt from this regulation.
- 2-6-112 Exemption, Motor Vehicles:** Engines used to propel motor vehicles, as defined in the California Vehicle Code, are exempt from this regulation.

2-6-200 DEFINITIONS

- 2-6-201 Administrative Permit Amendment:** A nonsubstantive amendment to a major facility review permit. Such amendments include, but are not necessarily limited to, the following: changes in recordkeeping format that are not relaxations of applicable requirements, the correction of typographical errors, the identification of administrative changes at a facility (such as a replacement of the facility's responsible official or a change in ownership or operational control of the facility which involves no physical or operational changes to the facility), or the imposition of new or more frequent emission monitoring requirements.
- 2-6-202 Applicable Requirements:** Air quality requirements with which a facility must comply pursuant to the District's regulations, codes of California statutory law, the federal Clean Air Act, other provisions of the United States Code, and the Code of Federal Regulations.
- 2-6-203 Clean Air Act:** The federal Clean Air Act, as amended in 1990, including the implementing regulations.
- 2-6-204 Designated Facility:** Any facility, other than a major facility, phase II acid rain facility, or subject solid waste incinerator facility, as defined by this rule, that falls within a source category designated as subject to the requirements of Title V of the federal Clean Air Act by the EPA Administrator after the effective date of this rule.
- 2-6-205 Early Reduction Demonstration:** A 90% reduction in hazardous air pollutants or a 95% reduction in particulate hazardous air pollutants achieved pursuant to Section 112(i)(5) of the federal Clean Air Act.
- 2-6-206 Facility:** Any property, building, structure, or installation (or any aggregation of facilities) located on one or more contiguous or adjacent properties and under common ownership or control of the same person that emits or may emit any air pollutant and is considered a single major industrial grouping (identified by the first two-digits of the applicable code in *The Standard Industrial Classification Manual*). In addition, facilities whose operations include cargo loading or unloading from cargo carriers other than motor vehicles shall include the cargo carriers as part of the source which receives or loads the cargo. Accordingly, all emissions from such carriers while operating in the District, or within California Coastal Waters adjacent to the District, shall be included as part of the source emissions.
- 206.1 Notwithstanding the definition in Section 2-6-206 above, the emissions related to cargo

carriers will not be included when determining applicability of the requirements of Sections 2-6-301 and 310.

- 2-6-207 Federally Enforceable:** All limitations and conditions which are enforceable by the Administrator of the U. S. EPA, including requirements developed pursuant to 40 CFR Parts 60 (NSPS), 61 (NESHAPS), 63 (HAP), 70 (State Operating Permit Programs), and 72 (Permits Regulation, Acid Rain), requirements contained in the State Implementation Plan (SIP) that are applicable to the District, any District permit requirements established pursuant to 40 CFR 52.21 (PSD) or District regulations approved pursuant to 40 CFR Part 51, Subpart I (NSR), and any operating permits issued under an EPA-approved program that is a part of the SIP and expressly requires adherence to any permit issued under such program.
- 2-6-208 Fossil Fuel:** Natural gas, petroleum, and coal, or any form of solid, liquid, or gaseous fuel derived from such materials for the purpose of creating useful heat.
- 2-6-209 Fugitive Emissions:** All emissions from unintended openings in process equipment, emissions occurring from miscellaneous activities relating to the operation of a facility, and emissions that could not reasonably pass through a stack, chimney, vent, or other functionally equivalent opening.
- 2-6-210 Hazardous Air Pollutant:** Any pollutant that is listed pursuant to Section 112(b) of the Clean Air Act.
- 2-6-211 Independent Power-Production Facility:** A facility that generates electricity and fulfills the following conditions:
- 211.1 The facility must be nonrecourse project-financed as defined in 10 CFR 715;
 - 211.2 The facility must sell 80 percent or more of its electrical output at wholesale;
 - 211.3 Direct public utility ownership of the equipment must not exceed 50 percent;
 - 211.4 The facility must have commenced operation after November 14, 1990; and
 - 211.5 The facility must be required to hold allowances under Title IV of the Clean Air Act.
- 2-6-212 Major Facility:** For the purposes of Regulation 2, Rule 6, a major facility is either of the following:
- 212.1 Major Facility (Regulated Air Pollutants): A facility that has the potential to emit 100 tons per year or more of any regulated air pollutant. For fugitive emissions of said pollutants, only those from facility categories listed in 40 CFR 70.2 "Definitions - Major source (2)" shall be included in determining whether the facility is a major facility. Once any facility is determined to be a major facility, all fugitive emissions from the facility shall be included in calculating the facility's emissions.
 - 212.2 Major Facility (Hazardous Air Pollutants): A facility that has the potential to emit 10 tons per year or more of a single hazardous air pollutant, 25 tons per year or more of a combination of hazardous air pollutants, or such lesser quantity as the EPA Administrator may establish by rule. All fugitive emissions of hazardous air pollutants are included in determining a facility's potential to emit. For radionuclides, the definition of a major facility shall be specified by the EPA Administrator by rule.
- 2-6-213 Major Facility Review (MFR):** Plantwide review of sources, emissions, and regulatory requirements at facilities including, but not limited to, major facilities, phase II acid rain facilities, subject solid waste incinerator facilities, and designated facilities, which are potentially subject to the permitting requirements of Regulation 2, Rule 6 and of Title V of the Clean Air Act.
- 2-6-214 Major Facility Review Permit:** An operating permit issued to a major facility, phase II acid rain facility, subject solid waste incinerator facility, or designated facility, pursuant to the requirements of this rule.
- 2-6-215 Minor Permit Modification:** Any modification to a federally enforceable condition on a major facility review permit which
- 215.1 is not a significant permit modification; and
 - 215.2 is not an administrative permit amendment; and
 - 215.3 does not violate any applicable requirement which is federally enforceable.
- 2-6-216 Operating Scenarios:** All modes of facility operation to be permitted, including normal operating conditions, start-up, and shutdown. This shall include all planned or reasonably foreseeable process, feed, and product changes. Operating scenarios must meet all applicable requirements.
- 2-6-217 Phase II Acid Rain Facility:** A facility that includes fossil-fueled combustion equipment that is used to generate electricity for sale as designated below:

- 217.1 A facility with a fossil-fueled combustion device that serves a generator with a nameplate capacity over 25 MW except cogeneration facilities, qualifying facilities, independent power production facilities, or solid waste incinerator facilities as described below;
 - 1.1 A facility with a fossil-fueled combustion device that commenced commercial operation after November 14, 1990 and that serves a generator with a nameplate capacity under 25 MW is a Phase II acid rain facility unless the facility complies with and obtains an exemption per 40 CFR 72.7.
- 217.2 A cogeneration facility with a fossil-fueled combustion device that sells more than 219,000 MW-hrs annually and more than one-third of its potential electric output capacity to any utility power distribution system, unless it is a qualifying facility or an independent power plant;
- 217.3 A solid waste incinerator that burns fossil fuels for 20 percent or more (on a BTU basis) of the total energy input during any calendar year; or
- 217.4 A qualifying facility or an independent power plant that does not meet both of the following conditions:
 - 4.1 Possession as of November 15, 1990 of qualifying power purchase commitments to sell at least 15 percent of its total planned net output capacity; and
 - 4.2 The net output capacity of the equipment cannot exceed 130 percent of the planned net output capacity.
- 217.5 The following are not Phase II Acid Rain Facilities:
 - 5.1 Simple combustion turbines that commenced operation before November 15, 1990;
 - 5.2 A fossil-fueled combustion device built before November 15, 1990, and that did not, as of November 15, 1990, and does not currently, serve a generator with a nameplate capacity of greater than 25 MW;
 - 5.3 A fossil-fueled combustion device that, during 1985, and as of November 15, 1990, and currently, does not serve a generator that produced or produces electricity for sale; and
 - 5.4 A fossil-fueled combustion device that commenced commercial operation on or after November 15, 1990, and serves a generator with a capacity not greater than 25 MW, burns fuel with a sulfur content that is less than 0.05 percent, and that complies with the requirements of 40 CFR 72.7.

2-6-218 Potential to Emit: The maximum capacity of a facility to emit a pollutant, based on its physical and operational design. Any physical or operational limitation on the capacity of the facility to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as a part of its design only if the limitation, or the effect it would have on emissions, is federally enforceable.

2-6-219 Preconstruction Permit or Review: A permit authorizing either construction or a review of construction plans prior to construction, including

- 219.1 An authority to construct permit issued pursuant to District Regulation 2, Rule 1;
- 219.2 An authority to construct permit issued pursuant to District Regulation 2, Rule 2;
- 219.3 A preconstruction review to determine the ability of a proposed source or source modification to comply with applicable New Source Performance Standards pursuant to District Regulation 10;
- 219.4 A preconstruction review conducted prior to a significant modification to a major facility review permit for a physical or operational change that would be prohibited by an existing federally enforceable condition;
- 219.5 A preconstruction review conducted prior to a physical or operational change to a synthetic minor facility that would increase the facility's potential to emit to above the threshold for a major facility. Such review must be associated with an application for a major facility review permit for said facility.

2-6-220 Qualifying Facility: One of two types of power-generating facilities pursuant to Title 16, Section 796, of the United States Code:

- 220.1 A cogeneration facility that is not owned by a public utility and is certified by the Federal Energy Regulatory Commission as a qualifying facility; or
- 220.2 A power production facility that is not owned by a public utility, has an output capacity not

greater than 80 MW, uses biomass, waste, renewable resources, geothermal resources, solar energy, wind energy, or any combination of the above as its primary energy source, and is certified by the Federal Energy Regulatory Commission as a qualifying facility.

- 2-6-221 Qualifying Power Purchase Agreement:** Defined in 40 CFR 72.2.
- 2-6-222 Regulated Air Pollutant:** The following air pollutants (as defined in Regulation 1) are regulated:
- 222.1 Nitrogen oxides and volatile organic compounds;
 - 222.2 Any pollutant for which a national ambient air quality standard has been promulgated;
 - 222.3 Any Class I or Class II ozone depleting substance subject to a standard promulgated under Title VI of the Clean Air Act; and
 - 222.4 Any pollutant that is subject to any standard promulgated under Section 111 of the Clean Air Act.
 - 222.5 Any pollutant that is subject to any standard promulgated under Section 112 of the Clean Air Act.
- 2-6-223 Responsible Official:** The responsible official will vary depending upon the type of facility, and shall be designated as follows:
- 223.1 Corporation: The responsible official shall be a president, secretary, treasurer, or vice president in charge of a principal business function or shall otherwise be a duly authorized representative if:
 - 1.1 the representative is responsible for the overall operation of the facility, and
 - 1.2 either the duly authorized representative is responsible for the operation of facilities that employ more than 250 persons or that have gross annual sales or expenditures exceeding \$25 million in 1980 dollars or the APCO has approved a petition from the original responsible official to allow the duly authorized representative to be the responsible official.
 - 223.2 Partnership or Sole Proprietorship: general partner or proprietor.
 - 2.1 Partnership of Corporations: The responsible official shall be the responsible official of any of the partner corporations.
 - 223.3 Municipality, State, Federal, or Other Public Agency: The principal executive officer or ranking elected official.
 - 223.4 Phase II Acid Rain Facilities: The designated representative pursuant to 40 CFR 72.20 through 72.25.
- 2-6-224 Schedule of Compliance:** A schedule of remedial measures issued by the District's Hearing Board, including an enforceable sequence of actions leading to compliance with all federally enforceable applicable requirements.
- 2-6-225 Severability Clause:** A statement in a permit issued under this rule that, in the case of a challenge to any part of the permit by EPA, the facility's owner or operator, or any other person, the remaining parts of the permit will remain valid.
- 2-6-226 Significant Permit Modification:** Any modification to a federally enforceable condition contained in a major facility review permit that can be defined as follows:
- 226.1 The incorporation of a change considered a major modification under 40 CFR Parts 51 (NSR) or 52 (PSD);
 - 226.2 The incorporation of a change considered a modification under in 40 CFR Parts 60 (NSPS), 61 (NESHAPS), or Section 112 of the Clean Air Act (HAP);
 - 226.3 Any significant change or relaxation of any applicable monitoring, reporting or recordkeeping condition;
 - 226.4 The establishment of or change to a permit term or condition allowing a facility to avoid an applicable requirement, including:
 - 4.1 a federally enforceable emission limit assumed in order to avoid classification as a modification under any provision of Title I of the federal Clean Air Act, or
 - 4.2 an alternative hazardous air pollutant emission limit pursuant to Section 112(i)(5) of the Clean Air Act;
 - 226.5 The establishment of or change to a case-by-case determination of any emission limit or other standard;
 - 226.6 The establishment of or change to a facility-specific determination for ambient impacts, visibility analysis, or increment analysis on portable sources; or
 - 226.7 The incorporation of any requirement promulgated by the U. S. EPA under the authority

of the Clean Air Act provided that three or more years remain on the permit term.

- 2-6-227 Simple Combustion Turbine:** Rotary engine driven by a gas under pressure that is created by the combustion of any fuel, including combined cycle engines, and excluding engines with auxiliary firing.
- 2-6-228 Source:** Any article, machine, equipment, operation, contrivance or related groupings of such that may produce and/or emit any regulated air pollutant or hazardous air pollutant.
- 2-6-229 Subject Solid Waste Incinerator Facility:** Any source that burns solid waste material (except hazardous waste as defined by RCRA) from commercial, industrial, or general public sources for which a New Source Performance Standard (NSPS) has been promulgated.
- 2-6-230 Synthetic Minor Facility:** A facility which, by imposition of facilitywide federally enforceable permit conditions, has its potential to emit limited to below the threshold levels for a major facility as defined by Section 2-6-212 and is not otherwise required to apply for a major facility review permit under Regulation 2, Rule 6.
- 2-6-231 Synthetic Minor Operating Permit:** A District operating permit which has been modified to include conditions imposing facilitywide federally enforceable emission limits, has been duly noticed to the public, and has been submitted to EPA, thereby making the facility a synthetic minor facility as defined by Regulation 2, Rule 6. As a District permit, a synthetic minor operating permit is subject to all the provisions of District Regulations 1, 2, and 3, including but not limited to permitting, compliance, and fee requirements.
- 2-6-232 Synthetic Minor Operating Permit Modification:** A modification to a federally enforceable term or condition of a synthetic minor operating permit that establishes a facilitywide emission limit or that specifies the recordkeeping requirements necessary to verify ongoing compliance with a facilitywide emission limit. (Adopted February 1, 1995)
- 2-6-233 Permit Shield:** A provision in a major facility review permit that identifies and justifies specific federally enforceable regulations and standards which are not applicable to a source or group of sources. Enforcement actions and litigation may not be initiated against the source or group of sources covered by the shield based on those identified regulatory and statutory provisions. (Adopted February 1, 1995)
- 2-6-234 Program Effective Date:** The date EPA specifies, through publication of final approval in the Federal Register, that the District's Major Facility Review Program becomes effective. (Adopted February 1, 1995)
- 2-6-300 STANDARDS**
- 2-6-301 Major Facility Review Requirement:** Any major facility as defined in Section 2-6-212 shall undergo major facility review in accordance with the requirements of this rule.
- 2-6-302 Major Facility Review Requirements for Phase II Acid Rain Facilities:** Any Phase II acid rain facility shall undergo major facility review in accordance with the requirements of this rule, whether or not such facility is classified as a major facility under Section 2-6-212.
302.1 After January 1, 2000, all Phase II acid rain facilities shall comply with the requirements of Sections 405, 406, 408, 409, 411, and 412 of the Clean Air Act.
- 2-6-303 Major Facility Review Requirements for Subject Solid Waste Incinerator Facilities:** Any subject solid waste incinerator facility shall undergo major facility review in accordance with the requirements of this rule, whether or not such facility is classified as a major facility under Section 2-6-212.
303.1 Any relevant Standard of Performance for New Stationary Sources that is adopted by EPA and incorporated by reference into District Regulation 10 shall apply to existing solid waste incinerators as well as to new or modified solid waste incinerators in the District and shall be included in the major facility review permits for such sources.
- 2-6-304 Major Facility Review Requirement for Designated Facilities:** Any designated facility shall undergo major facility review in accordance with the requirements of this rule, whether or not such facility is classified as a major facility under Section 2-6-212.
- 2-6-305 Operational Flexibility:** A facility may make a change to the facility or operation without requiring a major facility review permit revision in accordance with the procedures and restrictions set forth in Section 2-6-417 if the change is not a modification pursuant to Title I of the Clean Air Act and does not exceed any emissions allowable under federally enforceable provisions of the permit. Such change shall in no way affect the obligation of the permittee to

comply with any applicable requirement including the requirement to obtain an Authority to Construct under Rule 2-1. This provision shall not apply to the phase II acid rain portion of any facility subject to this Rule. (Amended February 1, 1995)

- 2-6-306 Emissions Trading:** The APCO shall allow emissions trading within a facility that has a major facility review permit in accordance with the procedures and restrictions set forth in Section 2-6-418 if the change is not a modification pursuant to Title I of the Clean Air Act and does not exceed any emissions allowable under the permit. This emission trading provision shall in no way affect the obligation of the permittee to comply with any applicable requirement including the requirement to obtain an Authority to Construct under Rule 2-1. This provision shall not apply to the phase II acid rain portion of any facility subject to this Rule.
- 2-6-307 Non-compliance, Major Facility Review:** Any facility subject to the requirements of this regulation that is not in compliance with any federally enforceable permit condition, any federally enforceable applicable requirement set forth in its major facility review permit, or the requirement to apply for a major facility review permit is in violation of the Clean Air Act and may be subject to enforcement action, permit termination, permit revocation and reissuance, and/or denial of a permit renewal. Moreover, a facility subject to major facility review which has not submitted a timely and complete permit application by the deadlines set forth in Section 2-6-404 may not operate. (Amended February 1, 1995)
- 2-6-308 Major Facility Review and Other District Permitting Requirements:** Submittal of a complete application or an administrative permit amendment request in accordance with this rule shall in no way affect, and shall not constitute compliance with, the requirements for authorities to construct and permits to operate as set forth in Regulation 2, Rules 1 and 2.
- 2-6-309 Prohibited Modifications:** A person shall not modify any source or operation covered by a major facility review permit issued under this rule unless such modification is either: (1) included in an operating scenario addressed in the permit; (2) authorized under this rule; or (3) permitted by the APCO pursuant to an application for a modification to the permit.
- 2-6-310 Synthetic Minor Operating Permit Requirement:** Any major facility which elects to accept facilitywide federally enforceable permit conditions such that the facility becomes a synthetic minor facility, and is not otherwise subject to major facility review, shall apply for a synthetic minor operating permit. Any facility which files false information with the District in order to obtain a synthetic minor operating permit is in violation of the Clean Air Act and District Regulations and may be subject to enforcement action.
- 2-6-311 Non-compliance, Synthetic Minor Facilities:** Any facility subject to the requirements of a synthetic minor operating permit that is not in compliance with any federally enforceable permit condition set forth in its synthetic minor operating permit is in violation of the Clean Air Act and may be subject to enforcement action, permit termination, permit revocation and reissuance, and/or denial of a permit renewal. (Amended February 1, 1995)

2-6-400 ADMINISTRATIVE REQUIREMENTS

2-6-401 Facilities Affected: The following categories of facilities are subject to the requirements of Regulation 2, Rule 6:

- 401.1 Major facilities
- 401.2 Phase II acid rain facilities
- 401.3 Subject solid waste incinerator facilities
- 401.4 Designated facilities
- 401.5 Synthetic minor facilities

2-6-402 Fees: Any facility subject to the requirements of this rule shall pay any applicable fees specified in District Regulation 3, Fees, including Schedule P.

2-6-403 Application for Major Facility Review Permit, Permit Renewal, or Permit Modification: The responsible official for any major facility, phase II acid rain facility, subject solid waste incinerator facility, or designated facility shall apply for a major facility review permit, permit renewal, or permit modification in accordance with all the requirements of this rule.

403.1 Notwithstanding the requirements set forth in this rule, a major facility that is not otherwise subject to major facility review shall not be required to apply for a federally enforceable operating permit (i.e., an MFR permit or a synthetic minor operating permit) until three years from the program effective date provided that its actual emissions are below all the following thresholds:

- 1.1 50 tons per year of any regulated air pollutant;
- 1.2 70% of the major facility threshold of any single hazardous air pollutant; and
- 1.3 15 tons per year of any combination of hazardous air pollutants.

For the purpose of this subsection, "actual emissions" shall be the maximum emissions for any consecutive 12-month period ending on or after January 1, 1992, based on the facility's annual reports to the District detailing throughputs of process materials, throughputs of materials stored and usages of materials, and shall be calculated using emission factors approved by the APCO. The provisions of this subsection shall not apply to any facility that has explicitly permitted emission levels at or above any threshold for a major facility as defined in section 2-6-212 regardless of its actual emissions. (Amended February 1, 1995)

2-6-404 Timely Application for a Major Facility Review Permit: The responsible official for a facility subject to the requirements of Section 403 of Regulation 2, Rule 6, shall submit an application for a major facility review permit to the APCO in a timely manner as described below:

- 404.1 The initial application for a major facility review permit shall be received by the APCO within 12 months after the facility becomes subject to Regulation 2, Rule 6.
- 404.2 An application for a five-year renewal of the terms and conditions of a major facility review permit shall be received by the APCO at least 6 months but no earlier than 12 months prior to the date on which the five-year period for the validity of the terms and conditions of the permit expires.
- 404.3 An application for a significant permit modification shall be received by the APCO within 12 months of commencing an operation associated with a significant permit modification. Where an existing federally enforceable major facility review permit condition would prohibit such change in operation, the responsible official must request preconstruction review and obtain a major facility review permit revision before commencing the change.
- 404.4 An application for a minor permit modification shall be received by the APCO prior to commencing any operation associated with the minor permit modification.
- 404.5 A phase II acid rain facility shall apply for a major facility review permit in accordance with the deadlines in Sections 404.1 and 404.7 of this rule. An initial application for the phase II acid rain portion of a major facility review permit shall be received by the APCO by January 1, 1996.
- 404.6 After EPA has approved Regulation 2, Rule 6, any major facility subject to Section 112(j) of the federal Clean Air Act must submit an application for a major facility review permit no later than 18 months after the date the U. S. Environmental Protection Agency fails to promulgate any emission standard listed pursuant to Clean Air Act Section 112(c)(1) according to the schedule promulgated under Clean Air Act Section 112(e).
- 404.7 Notwithstanding subsection 2-6-404.1 above, the initial application from any existing

facility subject to the permitting requirements of Regulation 2, Rule 6, that has less than 50 District permitted sources shall be received by the APCO within three months from the program effective date. The initial application from any existing facility subject to the permitting requirements of Regulation 2, Rule 6, that has 50 or more District permitted sources shall be received by the APCO within twelve months from the program effective date. (Amended February 1, 1995)

2-6-405 Complete Application for a Major Facility Review Permit: All applications for an initial major facility review permit, for a significant modification to an existing major facility review permit, and for a five-year renewal of the terms and conditions of a major facility review permit shall contain the following information in addition to the information required by Regulation 2-1-202:

- 405.1 All relevant BAAQMD permit application forms;
 - 405.2 A description of the facility's processes and products (by Standard Industrial Classification Code) including any associated with an operating scenario identified by the facility;
 - 405.3 A statement certifying that any fee required by District Regulation 3 has been paid;
 - 405.4 Identification and description of:
 - 4.1 each permitted source at the facility
 - 4.2 each source or other activity that is exempt from the requirement to obtain a permit or excluded from District rules or regulations under Regulation 2, Rule 1, and a citation of the section of the rule under which it is exempted or excluded;
 - 405.5 A list, including citation and description, of all applicable requirements for each source;
 - 405.6 A calculation and summary of annual emissions (including fugitive emissions) of any regulated air pollutant and any air pollutant for which the facility is major, from each permitted source, or any emission producing activity not defined as excluded under Regulation 1 or exempt under Regulation 2, Rule 1 if the emissions from such source or activity equal or exceed:
 - 6.1 Two tons per year of any single regulated air pollutant; or
 - 6.2 1,000 pounds per year of any single hazardous air pollutant.Emission calculations and summaries for pollutants emitted below the thresholds listed in subsections 2-6-405.6.1 and 2-6-405.6.2 are not required for such sources or activities that have emissions of other pollutants above these thresholds. The above emission calculations shall also be submitted for any alternate operating scenarios that are submitted with the application;
 - 405.7 A description of the compliance status of the facility with respect to all applicable federal, state, and District air quality requirements;
 - 405.8 A compliance statement as follows:
 - 8.1 A statement that the facility will continue to comply with all applicable requirements with which it is currently in compliance;
 - 8.2 A statement that the facility will meet all applicable requirements on a timely basis as requirements become effective during the permit term and a narrative of how the facility will achieve compliance with all applicable requirements if the facility is not currently doing so; and
 - 8.3 A copy of any schedule of compliance applicable to the facility's operations regarding air quality which has been issued by the District's Hearing Board, the California Air Resources Board, or any court of competent jurisdiction;
 - 405.9 A compliance certification by a responsible official of the facility that under penalty of perjury, the application forms and all accompanying reports and other required compliance certifications are true, accurate, and complete; and
 - 405.10 All information required by Volume II of the District's Manual of Procedures.
- Any applicant who fails to submit any relevant facts or who has submitted incorrect information in a permit application shall submit the supplementary facts or corrected information upon becoming aware of such failure or incorrect submittal. In addition, the applicant must provide additional information as necessary to address any requirements that become applicable.

(Amended February 1, 1995; April 5, 1995)

2-6-406 Application for a Minor Permit Modification: An application for a minor permit modification to a major facility review permit shall contain:

- 406.1 A description of the proposed change, the emissions resulting from the proposed

- change, and any new applicable requirements that will apply if the change occurs;
- 406.2 A draft permit including the proposed change;
- 406.3 A request by the responsible official that the minor modification procedures be used;
- 406.4 A certification by the responsible official that the proposed change is a minor modification as defined in Section 2-6-215; and
- 406.5 All documents or information required by Section 2-6-405 as they pertain to sources affected by the minor modification.

A facility that has submitted an application for a minor modification must comply with the proposed permit terms and conditions. If the facility fails to comply with the proposed terms during the time that the application is being processed, then the existing permit terms and conditions may be enforced against it.

2-6-407 Application Shield: An existing facility shall not be subject to enforcement action for not possessing a major facility review permit if the facility fulfills the following three conditions:

- 407.1. The facility has filed with the APCO a complete and timely application for an initial major facility review permit or for a five-year renewal of an existing major facility review permit;
- 407.2. The APCO has not acted on the application; and
- 407.3. The facility has honored all requests from the APCO for further information relating to the application by the date specified in writing of the request.

2-6-408 Completeness Determination: The APCO shall determine whether a major facility review permit application is complete as follows:

- 408.1 Application for an initial permit, for a five-year renewal or for a significant permit modification: The APCO shall determine completeness no later than 60 calendar days following receipt of the application. Unless the APCO requests additional information or otherwise notifies the applicant of incompleteness within 60 days of receipt of the application, the application shall be deemed complete.
- 408.2 An application for a minor permit modification: The APCO shall determine completeness within 30 days of receipt of the application. Unless the APCO requests additional information or otherwise notifies the applicant of incompleteness within 30 days of receipt of the application, the application shall be deemed complete. The District will determine whether the modification qualifies as a minor modification during the 30-day period.

After an application is deemed complete, the APCO may request in writing additional information necessary to evaluate or take final action on the permit. The facility shall have until the date specified in writing to respond to these requests.

2-6-409 Permit Content: A major facility review permit shall contain the following information and provisions:

- 409.1 A listing of all federal, state and District air quality requirements, emission limitations, permit conditions and operational or throughput standards or limits applicable to the facility, and a reference to the origin of each such requirement;
- 409.2 All applicable requirements for monitoring, recordkeeping and reporting, including applicable test methods and analysis procedures, as well as requirements for testing, monitoring, reporting and recordkeeping sufficient to assure compliance with the terms and conditions of the permit. Where the applicable requirement does not require periodic monitoring or testing, the permit shall contain periodic monitoring sufficient to yield reliable data from the relevant time periods that is representative of the source's compliance with the permit;
- 409.3 A restatement of the requirement of District Regulation 1-440 that the facility's owner or operator must provide the APCO with reasonable access to the premises of the facility;
- 409.4 A restatement of the requirement of District Regulation 1-441 and of Section 2-6-501 that the facility's owner or operator must provide the information, records, and reports requested or specified by the APCO;
- 409.5 A severability clause to ensure the continued validity of permit requirements in the event of a challenge to any portion of the permit;
- 409.6 The duration of the major facility review permit, not to exceed five years;
- 409.7 A statement that: (a) the owner or operator of the facility must comply with all permit conditions and limitations set forth in the major facility review permit; (b) an application for a change in the permit by the owner or operator of the facility does not revoke or limit

the applicability of any permit condition in the permit; (c) the major facility review permit does not convey a property right or exclusive privilege; and (d) the facility must keep a record in a contemporaneous log when the facility changes any aspect of its operations from one permitted scenario to another;

- 409.8 Provisions specifying the conditions under which the permit may be reopened for cause and modified, revoked, reissued, or terminated, prior to the end of the term;
- 409.9 A statement of compliance;
- 409.10 A schedule of compliance, including a requirement for progress reports consistent with the schedule of compliance to be prepared at least semi-annually;
- 409.11 Terms and conditions for reasonably anticipated operating scenarios;
- 409.12 If included in the permit application and approved by the APCO, terms and conditions for any permit shield;
- 409.13 A provision for payment of fees required by Regulation 3;
- 409.14 An identification of those terms and conditions of the permit which are not federally enforceable because they are not derived from any requirement of the Clean Air Act;
- 409.15 For phase II acid rain facilities, all acid rain provisions of a permit shall be contained in a separate and complete section of the permit. This section shall contain a permit condition prohibiting emissions exceeding the allowances that a facility holds under Title IV of the Clean Air Act;
- 409.16 Any terms and conditions for emissions trading approved under Section 2-6-418; and
- 409.17 All requirements and provisions pertaining to major facility review permits as set forth in Volume II of the District's Manual of Procedures. (Amended February 1, 1995)

2-6-410 Final Action for Initial Permit Issuance, Five-Year Renewal, Reopenings, and Revisions:

The APCO shall take final action on each major facility review permit application as follows:

- 410.1 The APCO shall take final action on an application for an initial permit, a significant permit modification, or a permit renewal within eighteen months after receipt of an application that has been deemed complete. No permit shall be issued until after all required EPA and public review. If a facility submits a timely and complete application for renewal, all terms and conditions of the permit shall remain in effect until the renewal permit has been issued or denied.
- 410.2 The APCO shall take action to issue or deny a minor permit modification within 90 days of receipt of the application or within 15 days after the end of the EPA Administrator's 45-day review, whichever is later;
- 410.3 After the APCO has reopened an existing permit for cause, pursuant to Section 2-6-415, the APCO shall take final action to modify, revoke and reissue, or terminate that permit within 12 months after the date on which the permit is formally reopened.
- 410.4 The APCO shall take final action on an application containing an early reduction demonstration within nine months after the APCO determines that the application is complete.
- 410.5 Submittal of applications for, and the permitting, revision, and reopenings of the acid rain portion of a major facility review permit shall occur in accordance with the deadlines set forth in Title IV of the Clean Air Act and the regulations promulgated thereunder.
- 410.6 Notwithstanding the deadline set forth in subsection 410.1 above, for existing facilities that become subject to MFR on the date that the program receives EPA approval, the APCO shall take final action on one-third of initial applications from such facilities annually over a period not to exceed three years from the program effective date.

(Amended February 1, 1995)

2-6-411 Reports to EPA and Public Petitions for Major Facility Review Permits: For all initial applications, five-year renewals, and proposed minor and significant permit modifications pursuant to this Rule, the APCO shall submit to EPA for review and comment each application or application summary, proposed permit, and each final major facility review permit. This EPA review shall be subject to the following:

- 411.1 EPA shall have 45 days from receipt of the proposed permit to review the proposed terms and conditions and to accept or object to them in writing.
- 411.2 If EPA objects to the proposed terms and conditions of a permit within the specified 45-day period, the APCO shall not issue the permit. If the APCO does not submit appropriate revisions that address EPA's objections within 60 days after being notified of EPA's objection, EPA may issue, revise or deny the permit.

- 411.3 If EPA does not object to the proposed terms and conditions of a major facility review permit within the specified 45-day period, any person dissatisfied with the proposed terms and conditions may petition EPA to reconsider the matter within 60 days thereafter. Any such petition must be based on objections raised during the public comment period on the proposed permit, unless the petitioner demonstrates that it was impracticable to do so or that the grounds for the objection arose after the close of the original public comment period.
- 3.1 If the APCO has not yet issued a proposed permit, the APCO shall resolve the issue prior to issuing the permit. If the APCO is unable to satisfy EPA's objection within 60 days of being notified thereof, EPA may issue, revise or deny the permit.
- 3.2 If the APCO has issued the permit following the 45-day EPA comment period but before receipt of an EPA objection based on public petition, the permit may be reopened for cause by the APCO in accordance with Section 2-6-415, or by the EPA in accordance with 40 CFR 70.7(g). In such event, the requirements of the permit shall remain in effect while the EPA or the APCO determines whether to modify, terminate, or revoke and reissue the permit.
- 411.4 If the proposed permit has been modified after EPA has reviewed and approved it, the APCO shall submit the modified proposed permit to EPA for a new 45-day review, in accordance with the provisions for the original 45-day review.

(Amended February 1, 1995)

2-6-412 Public Participation, Major Facility Review Permit Issuance: The APCO shall notify the public in advance of any proposed initial issuance, significant modification or five-year renewal of a major facility review permit, in accordance with the following procedures:

- 412.1 The APCO shall publish a notice in a major newspaper in the area where the facility is located and send the notice to persons on a mailing list (including those who have requested in writing to be on such list);
- 412.2 The notice shall identify by name and address the facility, the permittee and the permitting authority. The notice shall include information about the operation to be permitted, any proposed change in emissions, a District source for further information, a brief description of the comment procedures, and a description of procedures to request a hearing. If the APCO has scheduled a hearing, the notice shall contain the time and place of the hearing;
- 412.3 The notice shall provide at least 30 days for public comment and shall give notice of any public hearing at least 30 days prior to the hearing; and
- 412.4 The APCO shall keep a record of the commenting persons and the issues raised in all such comments for five years.

2-6-413 Administrative Permit Amendment Procedures: The APCO may make administrative permit amendments as follows:

- 413.1 Regulations promulgated under Title IV of the Clean Air Act shall govern administrative permit amendments to the acid rain portion of any permit.
- 413.2 The APCO shall take final action on an administrative permit amendment no later than 60 days from the receipt of the request, provided that the APCO determines that the amendment is covered under Section 2-6-201.
- 413.3 The APCO shall submit a copy of the revised permit to EPA.
- 413.4 The facility may implement the changes covered by the administrative permit amendment immediately upon submittal of the request.
- 413.5 Any request for a change in ownership shall include a written agreement between the parties to the transaction which specifies the date of transfer of the permit.

2-6-414 Minor Permit Modification Procedures: The APCO shall take action on applications for minor permit modifications as follows:

- 414.1 The APCO shall notify EPA of the proposed minor permit modification within 5 working days of the APCO determination that the application is complete.
- 414.2 The APCO shall act on the proposed minor modification within 90 days of receipt of an application or 15 days after the end of EPA's 45-day review period, whichever is later, or with the consent of the applicant for such longer period as may be agreed upon.
- 414.3 If prior to taking action on a proposed minor modification the APCO determines that the proposed modification should be reviewed as a significant modification, the APCO shall

revise the draft permit modification accordingly and shall submit this version to the EPA. In any such event, the provisions of Section 2-6-412 shall apply to all further consideration of the proposed modification.

2-6-415 Reopening for Cause: Proceedings to reopen and reissue a major facility review permit shall follow the same procedures that apply to the issuance of an initial major facility review permit and shall affect only those parts of the permit for which cause to reopen exists. Except in the case of an emergency, the APCO shall provide to the facility a notice of intent to reopen the permit at least 30 days in advance of the proposed reopening date. The APCO shall reopen and revise a major facility review permit under the following circumstances:

- 415.1 Additional requirements become applicable to a major facility having three or more years remaining before that facility's next scheduled major facility review. The APCO shall complete a reopening within 18 months after promulgation of the applicable requirement. (Reopening is not required if the effective date of the additional requirement is later than the date on which that facility's next scheduled major facility review is due);
- 415.2 Additional requirements become applicable to phase II acid rain facilities under the acid rain program. Upon approval by the EPA, excess emissions offset plans developed under this program shall be incorporated into the permit;
- 415.3 The APCO determines that the permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of the permit; or
- 415.4 The APCO determines that the permit must be revised or revoked to assure compliance with the applicable requirements.

2-6-416 Term for Major Facility Review: Once a major facility review permit is issued to a facility, except insofar as the permit must be reopened in accordance with Section 2-6-415, the terms and conditions of that permit shall remain valid for a period of five years from the date of issuance. At the conclusion of every such five-year period, the APCO must review the terms and conditions of a major facility review permit in the same way as an application for an initial major facility review permit.

- 416.1 The issuance of a modification to an existing major facility review permit at any time during the course of the five-year period for which the terms and conditions of that permit are valid shall not affect or extend the five-year period.
- 416.2 A facility subject to this rule shall continue to provide throughput update information as required by the District and to pay the annual fee required by Regulation 3, Schedule P.

2-6-417 Operational Flexibility Procedures: A facility shall give written notice to the APCO of any changes made to the facility, pursuant to Section 2-6-305 - Operational Flexibility. The notice shall be received by the APCO at least 30 days prior to the change. The notice shall contain a description of the change, the date on which the change will occur, any change in emissions, and any permit term or condition that is no longer applicable as a result of the change. The facility and the District shall each attach such notice to its copy of the permit.

2-6-418 Emissions Trading Procedures: The responsible official for a facility may propose that an emissions trading provision be included in its major facility review permit. The APCO shall include an emissions trading provision in the major facility review permit in accordance with the applicable procedures for final action (depending on whether the proposed provision is included in an initial application or in an application for a minor or significant permit modification) if the procedures and restrictions specified below have been followed:

- 418.1 The responsible official submits the proposal in the initial application, in a permit renewal application, or in an application for a significant modification;
- 418.2 The proposed emissions trading provision does not contravene any applicable requirement;
- 418.3 The proposal includes an emissions cap allowing for the trading of emissions increases and decreases, permit conditions, recordkeeping requirements and replicable procedures for determining compliance with applicable requirements;
- 418.4 The proposed emissions trades are quantifiable and federally enforceable; and
- 418.5 Once the emissions trading provisions have been incorporated into the permit, the facility notifies the APCO in writing at least seven days prior to a trade. The notification shall state when the trade will occur, what change in emissions will result, and how the trade will comply with the emission trading provisions. (Amended February 1, 1995)

- 2-6-419 Availability of Information:** The contents of permit applications, compliance plans, emissions or compliance monitoring reports, and compliance certification reports shall be available to the public, subject to the restrictions of the District's Administrative Code, Section 11. The contents of the permit shall be available to the public and shall not be subject to the above restrictions.
- 2-6-420 Application for a Synthetic Minor Operating Permit:** A facility which elects to accept federally enforceable permit conditions to limit its potential to emit to below the thresholds for a major facility, and is not otherwise required to obtain a major facility review permit under this rule, shall apply for a synthetic minor operating permit in accordance with the requirements of this rule. If for any reason the facility plans a physical or operational change which would increase its potential to emit such that it would exceed any threshold for a major facility, the facility shall become subject to major facility review and shall apply for a major facility review permit in accordance with the requirements of this rule. (Amended February 1, 1995)
- 2-6-421 Timely Application for a Synthetic Minor Operating Permit:** An application for a synthetic minor operating permit or synthetic minor operating permit modification shall be submitted in a timely manner as described below:
- 421.1 An existing major facility which elects to apply for a synthetic minor operating permit in order to avoid a requirement to obtain a major facility review permit shall apply for and receive a synthetic minor operating permit prior to the date by which it would have to apply for a major facility review permit.
 - 421.2 Any facility not subject to the requirements of Regulation 2, Rule 6, may apply for a synthetic minor operating permit at any time, in accordance with Section 2-6-422.
 - 421.3 A facility seeking a synthetic minor operating permit modification (as defined by section 2-6-232) may apply for the modification at any time in accordance with section 2-6-422.
 - 421.4 For a modification to a synthetic minor operating permit which will not change any federally enforceable term or condition of the permit that establishes a facilitywide emission limit or that specifies the recordkeeping requirements necessary to verify ongoing compliance with a facilitywide emission limit, an application must be received by the APCO in accordance with the requirements of Regulation 2, Rule 2, New Source Review.
 - 421.5 For a physical or operational change to a synthetic minor facility which would increase the facility's potential to emit to a level above that of a major facility, the facility must undergo preconstruction review and apply for a major facility review permit prior to commencing the change, in accordance with the requirements of Regulation 2, Rule 6.
 - 421.6 Renewals of synthetic minor operating permits shall be made in accordance with the requirements of Section 3-207.
 - 421.7 Notwithstanding subsection 2-6-421.1 above, an application for a synthetic minor operating permit for an existing major facility with emissions greater than those described in subsection 2-6-403.1, and that elects to become a synthetic minor facility, shall be received by the APCO no later than nine months from the date Regulation 2, Rule 6, is adopted by the District Board. (Amended February 1, 1995)
- 2-6-422 Complete Application for a Synthetic Minor Operating Permit:** An application for a synthetic minor operating permit or for a synthetic minor operating permit modification (as defined by section 2-6-232) shall contain the following:
- 422.1 All relevant BAAQMD permit application forms;
 - 422.2 A statement certifying payment of any fee required by District Regulation 3, including Schedule P;
 - 422.3 Identification and description of all existing sources at the facility, including sources that are exempt from permits under Regulation 2, Rule 1;
 - 422.4 A calculation (following the protocol set forth in the Manual of Procedures, Volume II, Part 3, subsection 2.2.2.c) of annual and monthly maximum emissions of regulated air pollutants and hazardous air pollutants from the facility. All fugitive emissions of hazardous air pollutants shall be included. For fugitive emissions of regulated air pollutants, only those from facility categories listed in the Manual of Procedures, Volume II, Part 3, Section 1 shall be included;
 - 422.5 Proposed federally enforceable permit conditions to limit facilitywide emissions to below the thresholds for a major facility; and
 - 422.6 Proposed federally enforceable permit conditions imposing recordkeeping and reporting

requirements sufficient to determine ongoing compliance. (Amended February 1, 1995)

2-6-423

District Procedures for Synthetic Minor Operating Permits: The APCO shall take action on applications for synthetic minor operating permits and for synthetic minor operating permit modifications as follows:

- 423.1 **Completeness:** The APCO shall determine if the application is complete within 30 days of receipt, or within a longer time period as agreed upon by both the applicant and the APCO.
- 423.2 **Permit Content:** The synthetic minor operating permit shall contain all information and provisions pertaining to synthetic minor operating permits as set forth in Volume II of the District's Manual of Procedures including:
 - 2.1 Permanent, quantifiable and practically enforceable permit conditions limiting the facility's potential to emit to no greater than 95 tons per year of any regulated air pollutant, 9 tons per year of any single hazardous air pollutant, and 23 tons per year of any combination of hazardous air pollutants, including any required production limits based on short time periods not to exceed one month as proposed in the July 13, 1993, Federal Register, 37789; and
 - 2.2 Federally enforceable permit conditions requiring monitoring, recordkeeping, and reporting sufficient to determine compliance with the emission limits set forth in subsection 423.2.1.
- 423.3 **Public Participation:** Prior to any determination by the APCO that a facility may be issued a synthetic minor operating permit, the APCO shall notify the public in accordance with the following procedures:
 - 3.1 The APCO shall publish a notice in a major newspaper in the area where the facility is located.
 - 3.2 The notice shall provide at least 30 days for public comment.
 - 3.3 The notice shall state that permit conditions for the facility will be modified to provide a facilitywide emission limit in accordance with Section 2-6-310 and shall include information as to how the public may obtain copies of the permit conditions associated with the limit, any information regarding the modification submitted by the owner or operator of the facility, the APCO's analysis of this information, and of the effect, if any, of the modification on air quality.
- 423.4 **Reports to EPA:** The APCO shall provide to EPA a copy of each proposed and final synthetic minor operating permit. EPA shall have a 30 day review period as described in Volume II of the District's Manual of Procedures.
- 423.5 **Final Action:** The APCO shall take final action on a synthetic minor operating permit within 180 days following the acceptance of the application as complete or 90 days after the program effective date, whichever is later. (Amended February 1, 1995)

2-6-500 MONITORING AND RECORDS

2-6-501 Recordkeeping: The APCO may require that the owner or operator of any facility subject to this rule keep any records that are relevant or necessary to enable the APCO to determine emissions from the facility. The facility shall keep such records on site for five years from the date of entry and shall make the records available to the APCO upon request.

2-6-502 Monitoring Reports: Every six months, the facility shall prepare and submit to the District any monitoring reports required by the major facility review permit. A responsible official shall certify all such reports under penalty of perjury. In addition to the reporting requirements set forth in Regulation 1, subsection 522.7 and Section 542, the facility shall promptly identify and report to the APCO all monitored excesses and any other deviations from the requirements of the permit.

2-6-600 MANUAL OF PROCEDURES

2-6-601 Major Facility Review Permit Procedures: The specific procedures for application submittals, the engineering evaluation and the required permit content for major facility review permits are set forth in Volume II of the District's Manual of Procedures.

2-6-602 Synthetic Minor Operating Permit Procedures: The specific procedures for the engineering evaluation and the required permit content for synthetic minor operating permits are set forth in Volume II of the District's Manual of Procedures.

- 2-6-206 Facility: Any property, building, structure, or installation (or any aggregation of facilities located on one or more contiguous or adjacent properties and under common ownership or control of the same person that emits or may emit any air pollutant and is considered a single major industrial grouping (identified by the first two-digits of the applicable code in the *Standard Industrial Classification Manual*). In addition, facilities whose operations include cargo loading or unloading from cargo carriers other than motor vehicles shall include the cargo carriers as part of the source which receives or loads the cargo. Accordingly, emissions from such carriers while operating in the District, or within California Coast Waters adjacent to the District, shall be included as part of the source emissions.

206.1 Notwithstanding the definition in Section 2-6-206 above, the emissions related to cargo carriers will not be included when determining applicability of the requirements of Sections 2-6-301 and 310.
- 2-6-207 Federally Enforceable: All limitations and conditions which are enforceable by the Administrator of the U. S. EPA, including requirements developed pursuant to 40 CFR Part 60 (NSPS), 61 (NESHAPS), 63 (HAP), 70 (State Operating Permit Programs), and 71 (Permits Regulation, Acid Rain), requirements contained in the State Implementation Plan (SIP) that are applicable to the District, any District permit requirements established pursuant to 40 CFR 52.21 (PSD) or District regulations approved pursuant to 40 CFR Part 51, Subpart I (NSR), and any operating permits issued under an EPA-approved program that is a part of the SIP and expressly requires adherence to any permit issued under such program.
- 2-6-210 Hazardous Air Pollutant: Any pollutant that is listed pursuant to Section 112(b) of the Clean Air Act.
- 2-6-212 Major Facility: For the purposes of Regulation 2, Rule 6, a major facility is either of the following:

 - 212.1 Major Facility (Regulated Air Pollutants): A facility that has the potential to emit 10 tons per year or more of any regulated air pollutant. For fugitive emissions of such pollutants, only those from facility categories listed in 40 CFR 70.2 "Definitions - Major source (2)" shall be included in determining whether the facility is a major facility. Once any facility is determined to be a major facility, all fugitive emissions from the facility shall be included in calculating the facility's emissions.
 - 212.2 Major Facility (Hazardous Air Pollutants): A facility that has the potential to emit 1 ton per year or more of a single hazardous air pollutant, 25 tons per year or more of a combination of hazardous air pollutants, or such lesser quantity as the EPA Administrator may establish by rule. All fugitive emissions of hazardous air pollutants are included in determining a facility's potential to emit. For radionuclides, the definition of a major facility shall be specified by the EPA Administrator by rule.
- 2-6-213 Major Facility Review (MFR): Plantwide review of sources, emissions, and regulatory requirements at facilities including, but not limited to, major facilities, phase II acid rain facilities, subject solid waste incinerator facilities, and designated facilities, which are potentially subject to the permitting requirements of Regulation 2, Rule 6 and of Title V of the Clean Air Act.

2-6-214 **Major Facility Review Permit:** An operating permit issued to a major facility, phase II acid rain facility, subject solid waste incinerator facility, or designated facility, pursuant to the requirements of this rule.

2-6-218 **Potential to Emit:** The maximum capacity of a facility to emit a pollutant, based on its physical and operational design. Any physical or operational limitation on the capacity of the facility to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as a part of its design only if the limitation, or the effect it would have on emissions, is federally enforceable.

2-6-222 **Regulated Air Pollutant:** The following air pollutants (as defined in Regulation 1) are regulated:

- 222.1 Nitrogen oxides and volatile organic compounds;
- 222.2 Any pollutant for which a national ambient air quality standard has been promulgated;
- 222.3 Any Class I or Class II ozone depleting substance subject to a standard promulgated under Title VI of the Clean Air Act; and
- 222.4 Any pollutant that is subject to any standard promulgated under Section 111 of the Clean Air Act.
- 222.5 Any pollutant that is subject to any standard promulgated under Section 112 of the Clean Air Act.

2-6-230 **Synthetic Minor Facility:** A facility which, by imposition of facilitywide federally enforceable permit conditions, has its potential to emit limited to below the threshold levels for a major facility as defined by Section 2-6-212 and is not otherwise required to apply for a major facility review permit under Regulation 2, Rule 6.

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2-6-231 **Synthetic Minor Operating Permit:** A District operating permit which has been modified to include conditions imposing facilitywide federally enforceable emission limits, has been duly noticed to the public, and has been submitted to EPA, thereby making the facility a synthetic minor facility as defined by Regulation 2, Rule 6. As a District permit, a synthetic minor operating permit is subject to all the provisions of District Regulations 1, 2, and 3, including but not limited to permitting, compliance, and fee requirements.

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2-6-232

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Synthetic Minor Operating Permit Modification: A modification to a federally enforceable term or condition of a synthetic minor operating permit that establishes a facilitywide emission limit or that specifies the recordkeeping requirements necessary to verify ongoing compliance with a facilitywide emission limit. (Adopted February 1, 1995)

2-6-234
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Program Effective Date: The date EPA specifies, through publication of final approval in the Federal Register, that the District's Major Facility Review Program becomes effective.
(Adopted February 1, 1995)

2-6-300 STANDARDS

2-6-301 Major Facility Review Requirement: Any major facility as defined in Section 2-6-212 shall undergo major facility review in accordance with the requirements of this rule.

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2-6-310

Synthetic Minor Operating Permit Requirement: Any major facility which elects to accept facilitywide federally enforceable permit conditions such that the facility becomes a synthetic minor facility, and is not otherwise subject to major facility review, shall apply for a synthetic minor operating permit. Any facility which files false information with the District in order to obtain a synthetic minor operating permit is in violation of the Clean Air Act and District Regulations and may be subject to enforcement action.

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2-6-311

Non-compliance, Synthetic Minor Facilities: Any facility subject to the requirements of a synthetic minor operating permit that is not in compliance with any federally enforceable permit condition set forth in its synthetic minor operating permit is in violation of the Clean Air Act and may be subject to enforcement action, permit termination, permit revocation and reissuance, and/or denial of a permit renewal. (Amended February 1, 1995)

2-6-401

Facilities Affected: The following categories of facilities are subject to the requirements of Regulation 2, Rule 6:

- 401.1 Major facilities**
- 401.2 Phase II acid rain facilities**
- 401.3 Subject solid waste incinerator facilities**
- 401.4 Designated facilities**
- 401.5 Synthetic minor facilities**

2-6-402

Fees: Any facility subject to the requirements of this rule shall pay any applicable fees specified in District Regulation 3, Fees, including Schedule P.

Application for Major Facility Review Permit, Permit Renewal, or Permit Modification:

The responsible official for any major facility, phase II acid rain facility, subject solid waste incinerator facility, or designated facility shall apply for a major facility review permit, permit renewal, or permit modification in accordance with all the requirements of this rule.

403.1 Notwithstanding the requirements set forth in this rule, a major facility that is not otherwise subject to major facility review shall not be required to apply for a federally enforceable operating permit (i.e., an MFR permit or a synthetic minor operating permit) until three years from the program effective date provided that its actual emissions are below all the following thresholds:

1.1 50 tons per year of any regulated air pollutant;

1.2 70% of the major facility threshold of any single hazardous air pollutant; and

1.3 15 tons per year of any combination of hazardous air pollutants.

For the purpose of this subsection, "actual emissions" shall be the maximum emissions for any consecutive 12-month period ending on or after January 1, 1992, based on the facility's annual reports to the District detailing throughputs of process materials, throughputs of materials stored and usages of materials, and shall be calculated using emission factors approved by the APCO. The provisions of this subsection shall not apply to any facility that has explicitly permitted emission levels at or above any threshold for a major facility as defined in section 2-6-212 regardless of its actual emissions.

(Amended February 1, 1995)

2-6-404

Timely Application for a Major Facility Review Permit: The responsible official for a facility subject to the requirements of Section 403 of Regulation 2, Rule 6, shall submit an application for a major facility review permit to the APCO in a timely manner as described below:

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- 404.1 The initial application for a major facility review permit shall be received by the APCO within 12 months after the facility becomes subject to Regulation 2, Rule 6.
- 404.2 An application for a five-year renewal of the terms and conditions of a major facility review permit shall be received by the APCO at least 6 months but no earlier than 12 months prior to the date on which the five-year period for the validity of the terms and conditions of the permit expires.
- 404.3 An application for a significant permit modification shall be received by the APCO within 12 months of commencing an operation associated with a significant permit modification. Where an existing federally enforceable major facility review permit condition would prohibit such change in operation, the responsible official must request preconstruction review and obtain a major facility review permit revision before commencing the change.
- 404.4 An application for a minor permit modification shall be received by the APCO prior to commencing any operation associated with the minor permit modification.
- 404.5 A phase II acid rain facility shall apply for a major facility review permit in accordance with the deadlines in Sections 404.1 and 404.7 of this rule. An initial application for the phase II acid rain portion of a major facility review permit shall be received by the APCO by January 1, 1996.
- 404.6 After EPA has approved Regulation 2, Rule 6, any major facility subject to Section 112(j) of the federal Clean Air Act must submit an application for a major facility review permit no later than 18 months after the date the U. S. Environmental Protection Agency fails to promulgate any emission standard listed pursuant to Clean Air Act Section 112(c)(1) according to the schedule promulgated under Clean Air Act Section 112(e).
- 404.7 Notwithstanding subsection 2-6-404.1 above, the initial application from any existing facility subject to the permitting requirements of Regulation 2, Rule 6, that has less than 50 District permitted sources shall be received by the APCO within three months from the program effective date. The initial application from any existing facility subject to the permitting requirements of Regulation 2, Rule 6, that has 50 or more District permitted sources shall be received by the APCO within twelve months from the program effective date.

(Amended February 1, 1995)

2-6-420

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Application for a Synthetic Minor Operating Permit: A facility which elects to accept federally enforceable permit conditions to limit its potential to emit to below the thresholds for a major facility, and is not otherwise required to obtain a major facility review permit under this rule, shall apply for a synthetic minor operating permit in accordance with the requirements of this rule. If for any reason the facility plans a physical or operational change which would increase its potential to emit such that it would exceed any threshold for a major facility, the facility shall become subject to major facility review and shall apply for a major facility review permit in accordance with the requirements of this rule. (Amended February 1, 1995)

2-6-421

Timely Application for a Synthetic Minor Operating Permit: An application for a synthetic minor operating permit or synthetic minor operating permit modification shall be submitted in a timely manner as described below:

421.1 An existing major facility which elects to apply for a synthetic minor operating permit in order to avoid a requirement to obtain a major facility review permit shall apply for and receive a synthetic minor operating permit prior to the date by which it would have to apply for a major facility review permit.

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421.2 Any facility not subject to the requirements of Regulation 2, Rule 6, may apply for a synthetic minor operating permit at any time, in accordance with Section 2-6-422.

421.3 A facility seeking a synthetic minor operating permit modification (as defined by section 2-6-232) may apply for the modification at any time in accordance with section 2-6-422.

421.4 For a modification to a synthetic minor operating permit which will not change any federally enforceable term or condition of the permit that establishes a facilitywide emission limit or that specifies the recordkeeping requirements necessary to verify ongoing compliance with a facilitywide emission limit, an application must be received by the APCO in accordance with the requirements of Regulation 2, Rule 2, New Source Review.

421.5 For a physical or operational change to a synthetic minor facility which would increase the facility's potential to emit to a level above that of a major facility, the facility must undergo preconstruction review and apply for a major facility review permit prior to commencing the change, in accordance with the requirements of Regulation 2, Rule 6.

421.6 Renewals of synthetic minor operating permits shall be made in accordance with the requirements of Section 3-207.

421.7 Notwithstanding subsection 2-6-421.1 above, an application for a synthetic minor operating permit for an existing major facility with emissions greater than those described in subsection 2-6-403.1, and that elects to become a synthetic minor facility, shall be received by the APCO no later than nine months from the date Regulation 2, Rule 6, is adopted by the District Board.

(Amended February 1, 1995)

2-6-422

Complete Application for a Synthetic Minor Operating Permit: An application for a synthetic minor operating permit or for a synthetic minor operating permit modification (as defined by section 2-6-232) shall contain the following:

422.1 All relevant BAAQMD permit application forms;

422.2 A statement certifying payment of any fee required by District Regulation 3, including Schedule P;

422.3 Identification and description of all existing sources at the facility, including sources that are exempt from permits under Regulation 2, Rule 1;

422.4 A calculation (following the protocol set forth in the Manual of Procedures, Volume II, Part 3, subsection 2.2.2.c) of annual and monthly maximum emissions of regulated air pollutants and hazardous air pollutants from the facility. All fugitive emissions of hazardous air pollutants shall be included. For fugitive emissions of regulated air pollutants, only those from facility categories listed in the Manual of Procedures, Volume II, Part 3, Section 1 shall be included;

422.5 Proposed federally enforceable permit conditions to limit facilitywide emissions to below the thresholds for a major facility; and

422.6 Proposed federally enforceable permit conditions imposing recordkeeping and reporting requirements sufficient to determine ongoing compliance. (Amended February 1, 1995)

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2-6-423 **District Procedures for Synthetic Minor Operating Permits:** The APCO shall take action on applications for synthetic minor operating permits as follows:

423.1 **Completeness:** The APCO shall determine if the application is complete within 30 days of receipt, or within a longer time period as agreed upon by both the applicant and the APCO.

423.2 **Permit Content:** The synthetic minor operating permit shall contain all information and provisions pertaining to synthetic minor operating permits as set forth in Volume II of the District's Manual of Procedures including:

2.1 Permanent, quantifiable and practically enforceable permit conditions limiting the facility's potential to emit to below the thresholds for a major facility, including any required production limits based on short time periods not to exceed one month as proposed in the July 13, 1993, Federal Register, 37769; and

2.2 Federally enforceable permit conditions requiring monitoring, recordkeeping, and reporting sufficient to determine compliance with the emission limits set forth in subsection 423.2.1.

423.3 **Public Participation:** Prior to any determination by the APCO that a facility may be issued a synthetic minor operating permit, the APCO shall notify the public in accordance with the following procedures:

3.1 The APCO shall publish a notice in a major newspaper in the area where the facility is located.

3.2 The notice shall provide at least 30 days for public comment.

3.3 The notice shall state that permit conditions for the facility will be modified to provide a facilitywide emission limit in accordance with Section 2-6-310 and shall include information as to how the public may obtain copies of the permit conditions associated with the limit, any information regarding the modification submitted by the owner or operator of the facility, the APCO's analysis of this information, and of the effect, if any, of the modification on air quality.

423.4 **Reports to EPA:** The APCO shall provide to EPA a copy of each proposed and final synthetic minor operating permit. EPA shall have a 30 day review period as described in Volume II of the District's Manual of Procedures.

423.5 **Final Action:** The APCO shall take final action on a synthetic minor operating permit within 180 days following the acceptance of the application as complete.

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2-6-602 Synthetic Minor Operating Permit Procedures: The specific procedures for the engineering evaluation and the required permit content for synthetic minor operating permits are set forth in Volume II of the District's Manual of Procedures.

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REGULATION 3

FEEES

- 3-100 GENERAL
- 3-101 Description: This regulation establishes fees to be charged for Hearing Board filings, for permits, banking, experimental exemptions and for the renewal of permits.
- 3-102 Exemption, Public Agencies: Any state or local agency or public district, except a publicly owned utility, is exempt from paying the fees prescribed.
- 3-103 Exemption, Abatement Equipment: Except for a Filing Fee, fees shall not be required for any piece of equipment whose sole function is to reduce the emission of contaminants to the atmosphere.
- 3-200 DEFINITIONS
- 3-201 Cancelled Application: Any application which has been determined to be complete and is subsequently withdrawn by the applicant.
- 3-202 Change of Location: Any transfer of an existing permitted source from one location to another not on the same property or facility.
- 3-203 Filing Fee: A fixed fee for a single application for one or more authorities to construct.
- 3-204 Initial Fee: A fee for each new or modified source based on the type and size of the source.
- 3-205 Internal Offset: Any reduction of emissions below those required by any regulation of the District or the Air Quality Management Plan, including the shutdown of sources, where the reduced emissions are to be used subsequently to offset emission increases at the facility.
- 3-206 Modification: See Section 1-217 of Regulation 1.
- 3-207 Renewal Fee: A fee required for the annual renewal of a permit to operate.
- 3-208 Resubmitted Application: Any application which has been determined to be complete, on which some evaluation has been undertaken, which has been subsequently cancelled or withdrawn by the applicant, and which is then resubmitted with changes.

- 3-209 Small Business: A business as defined in Section 1896 of Title 2 of the California Administrative Code.
- 3-210 Solvent Evaporating Source: Any source utilizing organic solvent, as part of a process in which evaporation of the solvent is a necessary step. Such processes include, but are not limited to, painting and surface coating, rotogravure coating and printing, flexographic printing, adhesive laminating, etc. Solvent cleaning operations and manufacture or mixing of solvents or surface coatings are not included.
- 3-211 Source: See Section 1-227 of Regulation 1.
- 3-300 STANDARDS
- ~~_____~~
~~_____~~
~~_____~~
- 3-302 Fees for New or Modified Sources: Applicants for authorities to construct and permits to operate new or modified sources shall pay a filing fee of \$100 plus the initial fee given in Schedules, B, C, D, E, F, H or I. Where more than one of these schedules is applicable to a source, the fee paid shall be the highest of the applicable schedules. Applications for internal offsets shall be treated as applications for modified sources.
- 302.1 An applicant who qualifies as a small business shall pay the filing fee and, if the source falls under schedules B, C, E, F, H or I one half of the initial fee. If the source falls under schedule D, he shall pay the full initial fee.
- 302.2 The initial fee for modified sources which do not have a permit to operate because they were in operation prior to July 1, 1972 will be the same as for a new source.
- 302.3 Applicants for an authority to construct and permit to operate abatement equipment, where there is no other modification to the source, shall pay the filing fee but no initial fee.
- 3-303 Retroactive Permits: An applicant required to obtain permits to operate existing facilities in accordance with Section 1-401 of Regulation 2 shall pay the renewal fees given in the appropriate Schedule (B, C, D, E, F, H or I).
- 3-304 Replacement: Applicants who are replacing sources or equipment with non-identical equipment will pay the filing fee plus the initial fee. For replacement with

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identical equipment only the filing fee will be paid.

- 3-305 Cancellation or Withdrawal: There will be no refund of fees if an application is cancelled or withdrawn after it has been determined to be complete. However, if an application for essentially similar identical equipment is submitted within six months of the date of cancellation or withdrawal, the initial fee will be credited in full against the fee for the new application.
- 3-306 Change in Conditions: If an applicant applies to change the conditions on an existing authority to construct or permit to operate, he will pay a filing fee but no and an initial fee of \$300 per source. There will be no change in anniversary date.
- 3-307 Change of Ownership: An applicant who wishes to record a change of ownership of a source which has an existing authority to construct or permit to operate will pay the filing fee but no initial fee. There will be no change in anniversary date.
- 3-308 Change of Location: An applicant who wishes to move an existing source which has a permit to operate shall pay no fee if the move is on the same facility. He shall pay the filing fee and half the initial fee if the move is not on the same facility. The anniversary date will be the date of the move.
- 3-309 Duplicate Permit: An applicant for a duplicate permit to operate shall pay a fee of \$20.00 per permit.
- 3-310 Late Fee: An applicant for an authority to construct or a permit to operate a source which has been constructed without an authority to construct shall pay the filing fee plus a penalty fee of 1.5 times the initial fee. Effective January 1, 1984 the penalty fee shall be two times the initial fee, except for sources which have filed in response to a violation notice, in which case the penalty fee shall be five times the initial fee.
- 3-311 Banking: Any applicant who wishes to bank emissions for future use shall pay a filing fee of \$900 plus \$150 \$100 per sources, plus the initial fee given in Schedules B, C, D, E, F, H or I. Where more than one of these schedules is applicable to a source, the fee paid shall be the highest of the applicable schedules. Any applicant for the withdrawal of banked emissions shall pay a fee of \$100.

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- 3-312 Emission Caps and Alternative Compliance Plans: Any facility which elects to use an alternative compliance plan ("bubble") to comply with District emission limitations, or to use annual or monthly emission limits to acquire a permit in accordance with the provisions or Regulation 2 - Rule 2 (New Source Review) shall pay an additional annual fee equal to fifteen percent of the total plant renewal fee.
- 3-313 Experimental Exemptions: Any applicant for an experimental exemption under Regulation 1 Section 111 shall pay a filing fee of \$300 plus the initial fee given in Schedules B, C, D, E, F, H or I. Where more than one of these schedules is applicable to a source, the fee paid shall be the highest of the applicable schedules.
- 3-400 ADMINISTRATIVE REQUIREMENTS
- 3-401 Permits: Definitions, standards and conditions contained in Regulation 2, Permits, are applicable to this regulation.
- 3-402 Single Anniversary Date: The APCO may assign a single anniversary date to a facility on which all its renewable permits to operate expire and will require renewal. Fees will be prorated to compensate for different time periods resulting from change in anniversary date.
- 3-403 Change in Operating Parameters: See Section 1-404 of Regulation 2.
- 3-404 Exemptions: No fee is required for any source listed as exempted in Regulation 2, Sections 1-111 and 1-112.
- 3-405 Fees Not Paid: If an applicant for an authority to construct a new or modified source has not paid the fees billed within 60 days of such billing, the application will be cancelled. Such a cancelled application can be reactivated on payment of fees. If fees for renewals of permits to operate are not paid prior to the anniversary date (or dates) of the permits, the facility will be notified that the permits have expired and that further operation is no longer authorized. Reinstatement of a lapsed permit will require a penalty fee of 50% of the appropriate fee in addition to the renewal fee.
- 3-406 Anniversary Date: The date on which a permit to operate is issued or modified in accordance with Section 3-402.

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3-407 Fee to Be Paid Before A/C is Issued: An Authority to Construct will not be issued until all fees are paid.

3-408 Permit to Operate Valid for 12 Months: A Permit to

Operate is valid for 12 months from the date of issue. A renewal fee is required annually for re-issuance of the Permit to Operate.

3-409 Drycleaners: For the purpose of calculating permit fees the APCO shall consider a drycleaner facility one source governed by Schedule I.

SCHEDULE A
SCHEDULE OF FILING FEES

2/3/83

- 10. For each application for emergency variance from the provisions of Regulation 8, Rule 7-301 and 7-302 from a service station owner whose entire facility has been shut down in accordance with the provisions of Regulation 8, Rule 7-306.....\$0

SCHEDULE A

SCHEDULE OF FILING FEES

8-30-83

Established by the Board of Directors December 7, 1977

Resolution No. 1046

(Code section references are to the California Health & Safety Code, unless otherwise indicated)

- 1. For each application for variance exceeding 90 days, in accordance with §42350, including applications on behalf of a class of applicants, which meet the requirements of the Hearing Board Rules for a valid and proper class action for variance..... \$ 300
 Plus, for each hearing in addition to the first hearing necessary to dispose of said variance application, in accordance with §42350, the additional sum of.. \$ 100
- 2. For each application for variance not exceeding 90 days, in accordance with §42350, including applications on behalf of a class of applicants, which meet the requirements of the Hearing Board Rules for a valid and proper class action for variance..... \$ 100
 Plus, for each hearing in addition to the first hearing necessary to dispose of said variance application, in accordance with §42350, the additional sum of . \$ 100
- 3. For each application to modify a variance in accordance with §42356..... \$ 100
 Plus, for each hearing in addition to the first hearing on said application to modify a variance, in accordance with §42356, necessary to dispose of the application, the additional sum of..... \$ 100
- 4. For each application to extend a variance, in accordance with §42357,..... \$ 100
 Plus, for each hearing in addition to the first hearing on an application to extend a variance, in accordance with §42357, necessary to dispose of the application, the additional sum of..... \$ 100
- 5. For each application to revoke a variance..... \$ 0
- 6. For each application for approval of a Schedule of Increments of Progress in accordance with §41703..... \$ 0
- 7. For each application for variance in accordance with Health & Safety Code §41703, which exceeds 90 days..... \$ 300
 Plus, for each hearing in addition to the first hearing on said application for variance in accordance with §41703, the additional sum of..... \$ 100
- 8. For each application for variance in accordance with §41703, not to exceed 90 days..... \$ 100
 Plus, for each hearing in addition to the hearing on said application for a variance in accordance with §41703, the additional sum of..... \$ 100

9. Each application for relief in accordance with Regulation 2 - Permits . . . 50

10. *(Deleted November 17, 1982)*

Any person who certifies under penalty of perjury that payment of the foregoing fees will cause an unreasonable hardship, may be excused from payment of fees by order of the Hearing Board on that account. Public agencies qualifying under Government Code §6103 shall be exempt from payment of filing fees.

2/7/89

REGULATION 4
AIR POLLUTION EPISODE PLAN

4-100 GENERAL

4-101 Description: The Air Pollution Episode Plan is a system designed to reduce levels of air contaminants which may reach or have reached the level which may be harmful to health, and to protect that portion of the population at risk. This Regulation establishes control and advisory procedures when specified levels have been reached at each of three stages.

4-300 STANDARDS

4-301 Preplanned Abatement Strategies: Any person responsible for the emission of 90.6 metric tons (100 tons) per year or more of air contaminants for which a California or federal ambient air quality standard is established shall submit a Stationary Source Curtailment Plan and a Traffic Abatement Plan to the APCO for approval.

301.1 The plans shall be submitted to the APCO within 60 days of the effective date of the regulation. If disapproved by the APCO, the plan must be resubmitted within 30 days of notice of disapproval. Such plans shall include information on the nature and quantity of air contaminants being emitted and the method and amount of reduction which will be achieved during each stage of the Air Pollution Episode Plan described in Sections 4-302, 4-304 and 4-305, and such additional information as the APCO may require in accordance with State Air Resources Board Executive Order G-63 dated January 23, 1976.

4-302 Air Pollution Advisory/Alert: A District-wide Alert shall be declared by the APCO when the concentration of pollutants as specified for this stage in Table I is reached or predicted in any area of the District. At the same time, an Air Pollution Advisory shall be declared in the specifically affected areas so persons with respiratory or cardiac problems and the general public may take suitable action. Notification of such an Advisory/Alert shall be made by the APCO to the following:

302.1 Public officials.

302.2 Persons operating any facility or activity subject to 4-301, preplanned abatement strategies.

302.3 Public health, safety and emergency agencies.

302.4 News media, the population at risk and the general public.

4-303 Abatement Actions: When an Advisory/Alert is declared, the following abatement actions shall be put into effect throughout the District:

303.1 All open burning shall be prohibited.

303.2 The use of incinerators for the disposal of solid waste shall be limited to the hours between 1700 and 2200 PST.

303.3 Lancing or soot-blowing required for fuel burning equipment shall be limited to the hours between 1700 and 2200 PST. This requirement shall not apply where the particulate emissions are abated by 95% or better efficient air pollution control equipment.

303.4 Preplanned abatement strategies required under Section 4-301 shall be initiated.

303.5 All persons operating motor vehicles shall be requested to eliminate all but essential driving.

303.6 Other Air Pollution Alert actions as required by the APCO in accordance with the latest California Air Pollution Emergency Plan adopted by the ARB.

4-304 Air Pollution Warning: A District-wide Warning shall be declared by the APCO when the concentration of pollutants specified for this stage in Table I is reached or predicted in any area of the District. When a Warning is declared, the following abatement action shall be put into effect:

304.1 The abatement actions required by Sections 4-301 and 4-303.

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- 304.2 The operations, services, and hours of business of all government, industrial and commercial facilities not subject to Section 4-301 shall be limited to the operations, services and hours of business customarily maintained on Sundays, as certified by the persons responsible for such facilities.
- 304.3 Other Air Pollution Warning actions as required by the APCO in accordance with the latest California Air Pollution Emergency Plan adopted by the ARB.
- 4-305 **Air Pollution Emergency:** A District-wide Emergency shall be declared by the APCO when the concentration of pollutants specified for this stage in Table I is reached in any area of the District. When an Emergency is declared, the following abatement actions shall be put into effect:
- 305.1 The abatement actions required by Sections 4-301 and 4-303.
- 305.2 All recreational and non-emergency commercial and industrial facilities shall be closed. Sewage treatment plants, power generating facilities or other facilities necessary to maintain the public health are deemed to be emergency facilities.
- 305.3 The APCO shall notify the ARB that a state of local emergency exists and that appropriate action may be taken by the Governor under the Emergency Services Act to prohibit the use of all motor vehicles except for emergencies, or any other action deemed warranted.
- 305.4 Other Air Pollution Emergency actions as required by the APCO in accordance with the latest California Air Pollution Emergency Plan adopted by the ARB.
- 4-400 **ADMINISTRATIVE REQUIREMENTS**
- 4-401 **Termination of Episode Stages:** The APCO shall terminate each Episode Stage when the concentration of air contaminants falls below and is expected to remain below the concentration specified for that stage in Table I. Notification of such termination shall be made to the public and to those persons and facilities listed in Section 4-302.
- 4-402 **Communications:** The APCO may require a facility subject to Section 4-301 to acquire and maintain a selective radio call receiver for the purpose of receiving a declaration of an Alert Warning or Emergency from the District. The selective radio call receiver must be in conformance with specifications established by the APCO.
- 4-403 **Meteorological Forecasts:** The APCO shall maintain a weather watch, incorporating national weather service analysis, forecasts and regional advisories with District contaminant and weather monitoring data, to provide timely notice of conditions likely to result in reaching any episode stage criteria.
- 4-404 **Enforcement:** The APCO shall ensure that a source inspection plan is implemented upon the declaration of any episode stage.

2/7/89

REGULATION 4
TABLE 1
EPISODE STAGE CRITERIA

Contaminant	Averaging time	Stage I Advisory Alert	Stage II Warning	Stage III Emergency
Oxidant, as Ozone	1 hr.	0.20 ppm	0.35 ppm	0.50 ppm
Oxidant in combination with sulfur dioxide	1 hr.	0.20 ppm*	0.35 ppm*	0.50 ppm*
Carbon Monoxide	1 hr. 4 hrs. 8 hrs.	40 ppm 25 ppm 15 ppm	75 ppm 45 ppm 30 ppm	100 ppm 60 ppm 40 ppm
Sulfur Dioxide	1 hr. 24 hrs.	0.5 ppm 0.2 ppm	1.0 ppm 0.7 ppm	2.0 ppm 0.9 ppm
PM ₁₀	24 hrs.	350 ug/m ³	420 ug/m ³	500 ug/m ³
Sulfate in combination with oxidant	24 hrs. (sulfate) 1 hr. (oxidant)		25 ug/m ³ 0.20 ppm	

*These levels shall apply when the oxidant concentration and the sulfur dioxide concentration each exceed 0.10 ppm, one hour average, and shall be determined by adding the oxidant and sulfur dioxide concentrations.

If excessive concentrations of pollutants for which criteria have not been established occur or are predicted to occur, appropriate abatement actions shall be taken by the affected APCD after consultation with the ARB.

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

REGULATION 5

OPEN BURNING

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REGULATION 5

OPEN BURNING

5-100 GENERAL

5-101 Description: This Regulation forbids open burning within the District with certain exceptions. (Amended November 2, 1994)

5-110 Exemptions: The following fires are exempt from this Regulation:

110.1 Fires set only for cooking of food for human beings. Fires set for recreational purposes using only clean dry wood or charcoal, and a small amount of firestarter.

110.2 Fires burning as safety flares or for the combustion of waste gases.

110.3 The use of flame cultivation when the burning is performed with LPG or natural gas-fired burners designed and used to kill seedling grass and weeds in orchards, vineyards and field crops and the growth is such that the combustion will not continue without the burner.

110.4 Fires set for the purposes of fire training using one gallon or less of flammable liquid per fire. (Amended December 19, 1990; November 2, 1994)

5-111 Conditional Exemptions: The following special conditions must be met for fires allowed by Sections 401.1 through 401.18 unless specifically exempted or further restricted in that Section, and shall be complied with during any burning permitted under those Sections.

111.1 No burning shall take place before sunrise.

111.2 No additional materials or fuel shall be ignited nor shall any material or fuels be added to any fire after two hours before sunset.

111.3 No material or fuel shall be ignited, nor shall any material or fuel be added to any fire when the wind velocity is less than five (5) miles per hour except for crossfiring, or when the wind direction at the site shall be such that the direction of smoke drift is toward a populated area in order to minimize local nuisances caused by smoke and particulate fallouts.

111.4 All piled material shall have dried for a minimum of 60 days prior to ignition.

111.5 All material to be burned shall be reasonably free of dirt or soil.

111.6 Piled material shall be limited to a base area not to exceed 25 square yards and the height shall be at least 2/3 of the average width of the pile.

111.7 Ignition material shall be limited to those listed by the State Director of Forestry, as follows: orchard torches; drip torches; pressurized diesel torches; propane or LPG torches; commercial petroleum gel materials, pressurized or solid (napalm or blivets); commercial safety fuses; commercial type ignition grenades, e.g. Fenner, etc.; fuses; commercial fuse lighters and matches. All fires shall be ignited so as to burn as rapidly as possible within conditions of safety and minimum pollution.

111.8 Ignition shall be initiated at or near the top of the piled material. No additional material, except ignition material, shall be added to the fire.

111.9 Tonnage, volume or acreage of material burned on any given day and/or at any specified site is subject to limitations set by the APCO, but may not exceed any limits set by the ARB. (Amended December 19, 1990; November 2, 1994)

5-200 DEFINITIONS

5-201 Agricultural Fire: A fire used for the purpose of initiating, continuing or maintaining agriculture as a gainful occupation. Fuels are limited to materials grown on the site and shall not include feed or fertilizer containers, finished or treated wood, plastic or rubber products, plumage, hides, fur, offal or fecal material or refuse from plant or animal processing other than from initial crop harvesting, pruning or attrition of forest, fruit and nut trees, vines and cane crops. (Amended November 2, 1994)

5-202 Fire: Any combustion of combustible materials of any type outdoors in the open, not in any enclosure, where the products of combustion are not directed through a flue.

5-203 Flue: Any duct or passages for air, gases, or the like, such as a stack or chimney.

5-204 Gainful Occupation: Any occupation from which there is proof of gross profit or loss as evidenced by tax receipts, sales slips or other such documents.

5-205 Deleted December 19, 1990

5-206 Permissive Burn Day: Any day that is so declared by the APCO when, in his opinion, air pollution caused by open burning will not adversely affect ambient air quality or downwind population. In declaring such permissive burn days, the meteorological criteria established by the ARB for the San Francisco Bay Area Air Basin shall be used as a guideline. (Amended November 2, 1994)

5-207 Treated Brush: Material which has been felled, crushed or uprooted with mechanical equipment, or has been desiccated with herbicide.

5-208 Hazardous Material: For purposes of this Regulation, combustible or flammable material which may pose a fire or explosion hazard including natural vegetation or other native growth cleared away to maintain a firebreak around any building or structure to comply with Section 4291 of the State Public Resources Code to reduce the risk of a wildfire. This term does not apply to waste propellants, explosives, pyrotechnics and their associated contaminated wastes regulated under subsection 5-401.14. (Adopted March 17, 1982; Amended December 19, 1990; November 2, 1994)

5-209 Public Fire Official: An officer of a public agency charged with the responsibilities of setting or allowing fires. Public fire official includes but is not limited to, local, state, and federal officers. (Adopted December 19, 1990)

5-210 Contraband: Any illegal or prohibited good that has been confiscated by a public law enforcement agency, including but not limited to explosives, pyrotechnics and illegal drugs. (Adopted December 19, 1990; Amended November 2, 1994)

5-211 Contaminated Waste: For the purposes of this regulation, material which becomes contaminated during the manufacture of propellants, explosives and pyrotechnics, including but not limited to articles of clothing, plastic implements and sheeting. (Adopted December 19, 1990)

5-212 Stubble: The remaining stalk, stem, or trunk of a herbaceous plant or cereal grass (primarily oats, wheat and hay) after harvest of a field crop. (Adopted November 2, 1994)

5-213 Prescribed Burning: The planned, controlled application of fire to vegetation to achieve a specific natural resource management objective(s) on land areas selected in advance of that application. The fire is conducted within the limits of a burn plan and prescription that describes both the acceptable range of weather, moisture, fuel, and fire behavior parameters to achieve the desired effects. (Adopted November 2, 1994)

5-214 Backfiring: A field crop burn ignition technique where the fire is ignited at the downwind side of the burn area, so that the fire must burn into the wind towards the fuel source. (Adopted November 2, 1994)

5-215 Stripfiring: A field crop burn ignition technique where the fire is ignited in parallel strips by walking straight through the burn area into the wind. Adopted November 2, 1994)

5-216 'X' or Crossfiring: A field crop burn ignition technique where the fire is ignited in two semi-circle arch patterns that almost intersect in the middle of the burn area. The first fire is lit by walking into the wind from the downwind side. The second fire is lit by walking with the wind from the headwind side of the field. This technique is used during light (less than five miles per hour) and variable winds only. (Adopted November 2, 1994)

5-217 Property: A single parcel of real property, as determined by the County Assessor. The term also includes contiguous parcels under the same ownership. (Adopted November 2, 1994)

5-218 APCO: The Air Pollution Control Officer of the Bay Area Air Quality Management District or the designee thereof. (Adopted November 2, 1994)

5-219 ARB: The Air Resources Board of the State of California.(Adopted November 2, 1994)

5-220 District: The Bay Area Air Quality Management District. (Adopted November 2, 1994)

5-300 STANDARDS

5-301 Prohibition of Fires: Except as provided in this regulation:

301.1 A person shall not ignite, cause to be ignited, permit to be ignited, or suffer, allow, or maintain any fires within the District.

301.2 No burning shall take place within the District on other than a permissive burn day. (Amended November 2, 1994)

5-400 ADMINISTRATIVE REQUIREMENTS

5-401 Allowable Fires: The following fires may be allowed on permissive burn days:

401.1 Disease and Pest: Fires set for the purpose of disease and pest prevention. The fire must be set or allowed by the Agricultural Commissioner of the County in the performance of official duty. Prior reporting pursuant to Section 5-406 must be made to the APCO, by the person setting the fire. (Amended December 19, 1990; November 2, 1994)

401.2 Crop Replacement: Agricultural fires set for the purpose of establishing an agricultural crop in a location which formerly contained another type of agricultural crop or natural growth. The fire must be set or allowed by the public fire official having jurisdiction, in the performance of official duty, and must be necessary for the crop replacement to proceed. Fires are limited to a period beginning October 1 and ending April 30; however, upon the determination of the APCO that heavy winter rainfall has prevented such burning, the burn period may be extended to no later than June 30. (Amended December 19, 1990; November 2, 1994)

401.3 Orchard Pruning and Attrition: Agricultural fires set for the purpose of disposal of periodic prunings and attrition losses from fruit trees, nut trees, vineyards and cane fruits. Fires must be set or allowed by the public fire official having jurisdiction, in the performance of official duty, and must be necessary to maintain and continue the growing of the fruit trees, vineyards and cane fruits as a gainful occupation. Fires are limited to a period beginning November 1 and ending April 30; however, upon the determination of the APCO that heavy winter rainfall has prevented such burning, the burn period may be extended to no later than June 30. (Amended March 15, 1981; December 19, 1990; November 2, 1994)

401.4 Double Cropping Stubble: Agricultural fires set for the purpose of disposal of grain stubble from agricultural land from which both grain and vegetable crops are harvested during the same calendar year. Fires must be set or allowed by a public fire official having jurisdiction, in the performance of official duty, and must be necessary to remove the grain stubble and straw before a field vegetable crop can be planted. All material to be burned shall be free of visible surface moisture. No fires shall take place before 10:00 a.m. local time on any day. Fires are limited to a period beginning June 1 and ending August 31. (Amended December 19, 1990; November 2, 1994)

401.5 Stubble: Agricultural fires set for the purpose of disposal of stubble and straw. Fires must be set or allowed by a public fire official having jurisdiction, in the performance of official duty, and must be necessary to maintain and continue the growing of field crops as a gainful occupation. Fire ignition techniques shall be limited to backfiring, stripfiring, and 'X' or crossfiring unless an alternate technique is approved by the APCO where a specific field condition is determined not to lend itself to these techniques in a given year. All material to be burned shall be free of visible surface moisture. After 0.15 inches or more rainfall, the material must pass the "crackle" test pursuant to Section 5-601 prior to burning. No fires shall

take place before 10:00 a.m. local time on any day. Fires are limited to a period beginning September 1 and ending December 31. Outside of Sonoma County, no more than 100 acres of any property shall be burned in a single day. Within Sonoma County, no person shall conduct a burn without a prior acreage burning allocation from the APCO and no more than 500 acres total of all properties shall be burned in a single day. In addition, no more than 100 acres of any property shall be burned in a single day. If by 12:00 p.m. the daily 500 acre burn acreage limitation has not been allocated, up to 200 acres of any property may be burned in a single day provided :

- a. the additional acreage burning allocation has been approved by the APCO; and
- b. no more than two fields exceeding 100 acres total are burned simultaneously on the same property. (Amended December 19, 1990; November 2, 1994)

401.6 Hazardous Material: Any fires set for the purpose of the prevention or reduction of a fire hazard, including the disposal of dangerous materials. The fires must be set or allowed by any public fire official, in the performance of official duty. The fire must, in the opinion of such officer, be necessary, and the fire hazard not able to be abated by any other means. However, fires may be conducted to dispose of materials to comply with Section 4291 of the Public Resources Code provided all of the following conditions are satisfied:

- a. only natural vegetation or other native growth may be burned;
- b. the amount of material to be burned shall be greater than 5 cubic yards cleared annually from a single property;
- c. the material is burned where it was grown without being moved to a different location unless approved by the APCO;
- d. available alternatives to burning such as shredding, chipping, composting, disking, plowing, and harrowing are not feasible; and
- e. the material, if ignited accidentally, would result in a fire of such magnitude as to immediately threaten life or adjacent improved property or resources and require an excessive fire suppression effort. Prior reporting pursuant to Section 5-406 must be made to the APCO by the person setting the fire. (Amended December 19, 1990; November 2, 1994)

401.7 Fire Training: Fires set for the purpose of instruction of either public or industrial employees in fire fighting methods. The fire must be set or allowed by the public officer having jurisdiction, and must be, in his opinion, necessary. Notwithstanding contrary provisions of Section 5-111, a fire fighting agency may set one fire per quarter calendar year for the purpose of training volunteer or seasonal fire fighters. This may be done on other than a permissive burn day if the APCO is notified at least two weeks in advance. Prior reporting pursuant to Section 5-406 must also be made to the APCO for other fire training by the person setting the fire. (Amended December 19, 1990; November 2, 1994)

401.8 Flood Debris: Fires set for the purpose of removing wood and vegetation debris deposited by flood waters. The fire must be set or allowed by the public fire official having jurisdiction, in the performance of official duty, and must be necessary for the continuing or maintaining of agriculture as a gainful occupation. Fires are limited to a period beginning October 1 and ending May 31. (Amended December 19, 1990; November 2, 1994)

401.9 Irrigation Ditches: Fires set for the purpose of controlling growth of vegetation in irrigation ditches and canals. The fire must be set or allowed by a public fire official having jurisdiction, in the performance of official duty, and must, in the opinion of such officer, be necessary. Prior reporting pursuant to Section 5-406 must be made to the APCO by the person setting the fire. (Amended December 19, 1990; November 2, 1994)

401.10 Flood Control: Fires set for the purpose of disposal of material which is lying or growing within natural channels or flood control channels. The fire must be set or allowed by a public official in charge of flood control activities. The fire must, in the opinion of such official, be a necessary incident to the clearing and maintenance of water courses and flood control channels for preventing or eliminating a flood hazard. Prior reporting pursuant to Section 5-406 must be made to the APCO by the person setting the fire. (Amended December 19, 1990; November 2, 1994)

401.11 Range Management: Fires set for the purpose of range management and grazing. The fire must be set or allowed by the State Director of Forestry, or public fire official, and must be necessary to maintain and continue the grazing of animals as a gainful occupation. Brush to be burned shall be treated at least six months prior to burn if determined to be technically feasible by the State Director of Forestry or public fire official. Unwanted trees over 6 inches in diameter shall be felled prior to burn and dried for a minimum of six months. Feasibility shall be subject to the approval of the APCO. Sections 5-111.1 and 5-111.6 may be waived by the State Director of Forestry or fire official when determined necessary in the public interest. Fires are limited to a period beginning July 1 and ending April 30. Prior reporting pursuant to Section 5-406 must be made to the APCO by the person setting the fire. (Amended December 19, 1990; November 2, 1994)

401.12 Forest Management: Fires set for the purpose of removing forest debris and for forest management. The fire must be set or allowed by a public fire official having jurisdiction, in the performance of official duty, and must, in his opinion, be necessary. Sections 5-111.1 and 5-111.6 may be waived by the fire official when deemed necessary in the public interest. All materials shall be piled or windrowed unless deemed poor practice by the fire official. Fires are limited to a period beginning November 1 and ending April 30. (Amended December 19, 1990; November 2, 1994)

401.13 Wildlife Management: Fires set for the purpose of improvement of lowland and marsh for wildlife and game habitat. The fire must be declared necessary by the California Department of Fish and Game. No such fire may be allowed on a given piece of land more than once in any 2 year period. The California Department of Fish and Game shall provide the APCO such information as may be deemed necessary by the APCO to verify the necessity of each burn and land area burning frequencies. No fires shall take place before 10:00 a.m., nor shall fires take place or any material added to an existing fire after 3:00 p.m. local time on any day. Fires are limited to a period beginning February 1 and ending March 31, and a period beginning September 1 and ending October 15; however, upon the determination of the APCO in consultation with the California Department of Fish and Game and the Solano County Mosquito Abatement District, that heavy winter rainfall has prevented such burning, the burn period beginning February 1 and ending March 31 may be extended to no later than June 30. Outside of the Suisun Resource Conservation District (SRCD), no more than 100 acres of any property shall be burned in a single day. For fires conducted within the boundaries of the SRCD:

- a. no person shall conduct a burn without a prior acreage burning allocation from the Solano County Sheriffs' Dispatch;
- b. during the Fall burning period, total daily acreage to be burned shall be determined by the APCO, but in no case shall the total allocation exceed 300 acres. In addition, no more than 100 acres of any property and no more than 100 acres of all properties designated by the same SRCD hundred-series ownerships shall be burned;
- c. during the Spring burning period, no more than 600 acres total of all properties shall be burned in a single day. (Amended March 15, 1981; May 20, 1981; August 3, 1983; November 2, 1994)

401.14 Waste Propellants, Explosives and Pyrotechnics: Until January 1, 1997, fires set for the purpose of disposing of waste propellants, explosives, or pyrotechnics including associated contaminated wastes generated at manufacturing facilities shall be allowed. The fires must be set or allowed by the public fire official having jurisdiction, in the performance of official duty. The fires must be necessary and the waste

not able to be disposed of by any means other than open burning. No material shall be imported from off-site for disposal. The total combined amount of waste material burned per facility shall not exceed 24,000 pounds (12 tons) in calendar year 1995 and 20,000 pounds (10 tons) in calendar year 1996. In addition, the total combined amount of waste material burned per facility shall not exceed 6,000 pounds per day (3 tons/day). Any person seeking to set fires under this provision shall also comply with the requirements of Section 5-405. If the requirements of subsection 5-405.4 are not satisfied, such fires shall be prohibited as of January 1, 1996. (Adopted December 19, 1990; Amended November 2, 1994)

401.15 Contraband: Fires set for the purpose of disposing of contraband. The fire must be set or allowed by any peace officer or public fire official, in the performance of official duty. The fire must, in the opinion of such officer, be necessary and the material not be able to be disposed of by any other means. Prior reporting must be made to the APCO by the person setting the fire pursuant to Section 5-406. (Adopted December 19, 1990; Amended November 2, 1994)

401.16 Wildland Vegetation Management: Prescribed burning by a state or federal agency, or through a cooperative agreement or contract involving the state or federal agency, conducted on land predominately covered with chaparral, trees, coastal scrub, or standing brush. Any person seeking to set fires under this provision shall comply with the requirements of Section 5-408 and receive approval by the APCO in writing prior to any burn. This fire may be done on other than a permissive burn day, as defined in Section 5-206, if approved by the APCO pursuant to subsection 5-408.2. (Adopted November 2, 1994)

401.17 Filmmaking: Fires set as part of commercial film or video production activities for motion pictures and television. The fire shall be set or allowed by the public fire official having jurisdiction, in the performance of official duty. Any person seeking to set fires under this provision shall comply with the requirements of Section 5-409 and receive APCO approval in writing at least 10 working days prior to the burn. This fire may be done on other than a permissive burn day, as defined in Section 5-206, if approved by the APCO pursuant to subsection 5-409.2. (Adopted November 2, 1994)

401.18 Public Exhibition: Fires set as part of a planned civic event designed to educate or otherwise benefit the public. The fire shall be set or allowed by the public fire official having jurisdiction, in the performance of official duty. Any person seeking to set fires under this provision shall receive APCO approval in writing at least 10-working days prior to the burn. (Adopted November 2, 1994)

5-402 Deleted November 2, 1994

5-403 Agricultural Land Use: Debris from land clearing shall not qualify under subsections 5-401.1, 5-401.2, 5-401.3, 5-401.4 or 5-401.5 unless applicant certifies, under penalty of perjury, that said land is to remain in agricultural use for a gainful occupation for a period of one year subsequent to the burning, and that applicant has not caused or contributed to the need for the burning of the material for any reason other than the promotion of agricultural use of the land for a gainful occupation. However, the County Agricultural Commission may waive this Section by certifying that burning of the material under subsection 5-401.1 is, in his opinion, the only safe method of disposal. Failure to comply with the conditions of this Section shall be considered a violation of this Regulation. Each pile burned in violation shall be cited as a separate offense.(Amended November 2, 1994)

5-404 Emergency Waivers: A public officer authorized under subsections 5-401.1, 5-401.6 and 5-401.10 to grant permission for open burning may grant waivers from subsections 5-111.1 through 5-111.9 when, in his judgment, such emergency or summary action is necessary for the public safety. When such action is taken, the authorizing authority shall certify the following in a report to the APCO within 10 calendar days following the burning: a description and quantity of the material burned and an explanation of the reasons for granting the permission.(Amended November 2, 1994)

5-405 Propellants, Explosives and Pyrotechnics Compliance Schedule: Any person seeking to dispose of waste material within the provisions of 5-401.14 shall comply with the following:

405.1 By April 1, 1994 and thereafter annually submit a report to the APCO that shall contain the following information:

- (a) Review of alternative technology for the use, treatment, and/or disposal of waste propellants, explosives and pyrotechnics, other than open burning which minimize the impact on air quality.
- (b) Schedule and steps that have been taken and will be taken for the development and implementation of alternative use, treatment, and/or disposal methods to comply with subsection 5-401.14.
- (c) Waste minimization efforts.
- (d) Documentation of efforts to obtain U.S. Department of Transportation (DOT) hazard classification and approval to ship each different type of waste material, by formulation reference, that has not been previously approved for shipping. Such documentation shall be maintained on a monthly basis and be made available to the APCO upon request.

405.2 Open burning records must be maintained as per Section 5-501.

405.3 Verbal notification shall be given prior to each open burn.

405.4 By January 1, 1996, submit to the APCO an application for an Authority-to-Construct and submit to the California Department of Toxic Substances Control a permit application, for any on-site waste treatment system equipment necessary to comply with the January 1, 1997 prohibition of waste propellant, explosives, and pyrotechnics fires pursuant to subsection 5-401.14.

405.5 The installation of an on-site waste treatment system shall be completed and in operation no later than January 1, 1997. In addition, any off-site treatment or disposal method shall be implemented no later than January 1, 1997. (Adopted December 19, 1990; Amended November 2, 1994)

5-406 Prior District Notification; Disease and Pest, Fire Training, Flood Control, Irrigation Ditches, Range Management, Hazardous Material, and Contraband: The person setting the fire shall provide written, facsimile or verbal notification to the District prior to the burn. If notification is made verbally by telephone, there must be a written confirmation of this action sent to the APCO within 5 calendar days. For structural fire training, written notification shall be made to the APCO at least 10 working days prior to the burn pursuant to the requirements of Regulation 11-2-401.3 (Asbestos Demolition, Renovation and Manufacturing). (Adopted December 19, 1990; Amended November 2, 1994)

5-407 Deleted November 2, 1994

5-408 Prescribed Burn Requirements: Any person seeking to conduct prescribed burning pursuant to Section 5-401.16 shall comply with the following requirements:

408.1 Submit a prescribed burn plan to the APCO for review at least 30 calendar days prior to the proposed burning that provides the following information:

- a. location and specific objectives of each proposed burn;
- b. acreage or tonnage, type, and arrangement of vegetation to be burned;
- c. directions and distances to nearby sensitive receptor areas;
- d. fuel condition, combustion and meteorological prescription elements for the project;
- e. projected schedule and duration of project ignition, combustion, and burn down;

- f. specifications for monitoring and of verifying critical parameters;
- g. specifications for disseminating project information;
- h. certification by a resource ecologist, biologist, or forester that the proposed burning is necessary to achieve the specific management objective(s) of the burn plan; and
- i. smoke management plan.

408.2 Permission to burn on other than a permissive burn day shall be governed by the 48-hour forecast issued by the APCO.

408.3 Prior to ignition, notify the APCO on the day of each burn.

408.4 Within 30 calendar days following completion of the burn project, provide the total acreage, volume or tonnage of vegetation actually burned. (Adopted November 2, 1994)

5-409 Filmmaking Burn Petition: Any person seeking to conduct a fire pursuant to Section 5-401.17 shall comply with the following requirements:

409.1 Submit an open burning petition to the APCO that provides the following information, as applicable:

- a. date(s) and specific location(s) of each proposed burn;
- b. type and quantity (tonnage, acreage, or volume) of each material to be burned;
- c. the projected fuel use rate in BTU per hour, if known, calculated using the higher heating value of each fuel; and
- d. the burn duration.

409.2 Permission to burn on other than a permissive burn day shall be subject to written approval of the open burning petition by the APCO.

409.3 Prior to ignition, notify the APCO on the day of each burn.

409.4 If the APCO grants written approval, such approval shall be available at the burn location for inspection by the APCO, upon request.

5-500 MONITORING AND RECORDS

5-501 Open Burning Records: Any person subject to 5-405 shall comply with the following requirements:

501.1 A person shall maintain records on a monthly basis that provide the following information:

- a. date of burn
- b. amount and identification of each type of material burned, by formulation reference and the expected U.S. Department of Transportation hazard classification
- c. wind speed and direction
- d. start time and duration of burn.

501.2 Such records shall be retained and available for inspection by the APCO for 24 months.

501.3 The open burn records shall be submitted to the APCO on a yearly basis.(Adopted December 19, 1990; Amended November 2, 1994)

5-600 MANUAL OF PROCEDURES

5-601 Appraisal of Field Crop Fuel Moisture; The "Crackle" Test: Any person who wants to conduct an evaluation of fuel moisture in field crop stubble or straw remaining after harvest pursuant to subsection 5-401.5 shall satisfy the following criteria prior to burning:

601.1 Sampling: To ensure representative sampling, sample in accordance with the following requirements:

- a. obtain samples from several different areas of the field
- b. select some samples from underneath the straw mat including the bottom layer
- c. a handful of sample material is considered a sufficient size to test.

601.2 Evaluation: The field is considered dry enough to burn, or passes the "crackle" test when:

- a. each sample is tested just prior to burning
- b. each sample tested makes an audible "crackle" when it is bent sharply.
- c. If the sample does not pass the test, then the area from which the sample was selected cannot be burned until such material is considered dry enough to burn. (Adopted November 2, 1994)

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

REGULATION 6

PARTICULATE MATTER AND VISIBLE EMISSIONS

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REGULATION 6

PARTICULATE MATTER AND VISIBLE EMISSIONS

6-100 GENERAL

6-101 Description: The purpose of this Regulation is to limit the quantity of particulate matter in the atmosphere through the establishment of limitations on emission rates, concentration, visible emissions and opacity.

6-110 Exemption, Temporary Sandblasting Operations: Temporary Sandblasting operations are exempt from the provisions of this Rule. Such operations are subject to the provisions of Regulation 12, Rule 4. (Adopted July 11, 1990)

6-111 Exemption, Open Outdoor Fires: The limitations of this rule shall not apply to emissions arising from open outdoor fires. (Adopted December 19, 1990)

6-200 DEFINITIONS

6-201 Exhaust Gas Volume: The volume of gases discharged from an operation; or an emission point.

6-202 Particulate Matter: Any material which is emitted as liquid or solid particles, or gaseous material which becomes liquid or solid particles at the testing temperatures specified in the Manual of Procedures, excluding uncombined water.

6-203 Process Weight: The total weight of all material introduced into an operation, excluding liquids and gases used solely as fuels, air which is not consumed as a reactant, and combustion air.

6-204 Process Weight Rate: A rate established as follows:

204.1 For continuous or long-run steady-state operations, the total process weight for the entire period of continuous operation or for a typical portion thereof, divided by the number of hours of such period or portions thereof.

204.2 For cyclical or batch operations, the total process weight for a period which covers a complete operation or an integral number of cycles, divided by the hours of actual process operation during such period. Where the nature of any process or operation or the design of any equipment is such as to permit more than one interpretation of this section, that interpretation which results in the minimum value for allowable emission shall apply.

6-300 STANDARDS

6-301 Ringelmann No. 1 Limitation: Except as provided in Sections 6-303, 6-304 and 6-306, a person shall not emit from any source for a period or periods aggregating more than three minutes in any hour, a visible emission which is as dark or darker than No. 1 on the Ringelmann Chart, or of such opacity as to obscure an observer's view to an equivalent or greater degree. (Amended July 11, 1990)

6-302 Opacity Limitation: Except as provided in Sections 6-303, 6-304 and 6-306, a person shall not emit from

any source for a period or periods aggregating more than three minutes in a any hour an emission equal to or greater than 20% opacity as perceived by an opacity sensing device, where such device is required by District regulations. (Amended July 11, 1990)

6-303 Ringelmann No. 2 Limitation: A person shall not emit for a period or periods aggregating more than three minutes in any hour, a visible emission which is as dark or darker than No. 2 on the Ringelmann Chart, or of such opacity as to obscure an observer's view to an equivalent or greater degree, nor shall said emission, as perceived by an opacity sensing device in good working order, where such device is required by District regulations, be equal to a greater than 40% opacity, from the following sources:

303.1 Internal combustion engines of less than 25 liters (1500 in³) displacement, or any engine used solely as a standby source of motive power;

303.2 Laboratory equipment used exclusively for chemical or physical analyses or experimentation;

303.3 Portable brazing, soldering or welding equipment;

303.4 Deleted July 11, 1990. (Amended January 5, 1983, July 11, 1990)

6-304 Tube Cleaning: During tube cleaning, and except for three minutes in any one hour, a person shall not emit from any heat transfer operation using fuel at a rate of not less than 148 GJ (140 million BTU) per hour, a visible emission as dark or darker than No. 2 on the Ringelmann Chart, or of such opacity as to obscure an observer's view to an equivalent or greater degree, or equal to or greater than 40% opacity as perceived by an opacity sensing device in good working order. The aggregate duration of such emissions in any 24 hour period shall not exceed 6.0 minutes per 1055 GJ (one billion BTU) gross heating value of fuel burned during such 24 hour period.

6-305 Visible Particles: A person shall not emit particles from any operation in sufficient number to cause annoyance to any other person, which particles are large enough to be visible as individual particles at the emission point or of such size and nature as to be visible individually as incandescent particles. This Section 6-305 shall only apply if such particles fall on real property other than that of the person responsible for the emission.

6-306 Diesel Piledriving Hammers: Piledriving hammers powered by diesel fuel shall comply with one of the following standards:

306.1 A person shall not emit from any diesel piledriving hammer for a period or periods aggregating more than four minutes during the driving of a single pile, a visible emission which is as dark or darker than No. 1 on the Ringelmann Chart, or of such opacity as to obscure an observer's view to an equivalent or greater degree.

306.2 A person shall not emit from any diesel piledriving hammer for a period or periods aggregating more than four minutes during the driving of a single pile, a visible emission which is as dark or darker than No. 2 on the Ringelmann Chart or of such opacity as to obscure an observer's view to an equivalent or greater degree provided that the operator utilizes kerosene, smoke suppressing fuel additives and synthetic lubricating oil, and the requirements of Section 6-503 are satisfied. (Adopted July 11, 1990)

6-310 Particulate Weight Limitation: A person shall not emit from any source particulate matter in excess of 343 mg per dscm (0.15 gr. per dscf) of exhaust gas volume.

310.1 Incineration or Salvage Operations. For the purposes of 6-310, the actual measured concentration of particulate matter in the exhaust gas from any incineration operation or salvage operation shall be corrected to the concentration which the same quantity of particulate matter would constitute in the exhaust gas minus water vapor corrected to standard conditions, containing 12% CO₂ by volume, and as if no auxiliary fuel had been used.

310.2 Gas-fired Pathological Waste Incinerators. The particulate emissions from gas-fired pathological waste incinerators, where emissions are not mingled with emissions from incineration of general wastes, shall be corrected as specified in Section 6-310.1 except that correction for auxiliary fuel shall not be required.

310.3 Heat Transfer Operation. For the purposes of 6-310, the actual measured concentration of particulate matter in the exhaust from any heat transfer operation shall be corrected to the concentration which the same quantity of particulate matter would constitute in the exhaust gas minus water vapor, corrected to standard conditions, containing 6% oxygen by volume.

6-311 General Operations: In addition to the limitation of Section 6-310, a person shall not discharge into the atmosphere from any general operation particulate matter from any emission point, at a rate in excess of that specified in Table 1 for the process weight rate indicated. This section shall not apply to fuel-fired indirect heat exchangers.

TABLE 1

ALLOWABLE RATE OF EMISSIONS BASED ON PROCESS WEIGHT RATE

Process wt rate = P		Emission = E	
kg/hour	lbs/hour	kg/hour	lbs/hour
250	550	0.8	1.8
300	660	0.9	2.0
400	880	1.1	2.4
500	1100	1.3	2.9
1000	2205	2.1	4.6
2000	4410	3.3	7.3
3000	6615	4.3	9.5
4000	8820	5.2	11.0
5000	11020	6.0	13.0
10000	22045	9.6	27.0
20000	44090	15.2	33.0
over 26000	57320	18.1	40.0

(interpolation formula deleted May 21, 1980. See page 605 for formulae.)

Interpolation in kg/hr

E in kg/hr = 0.02 P^{0.67} in kg/hr

The interpolation of the data in this Table shall be accomplished by the use of the equation $E = 0.022P^{0.67}$, where E = rate of emission in kg/hour, not to exceed 18.1 kg/hour and P = process weight rate in kg/hour.

interpolation in lbs/hr

E in lbs/hr = 4.10 P^{0.67} in lbs/hr

6-320 Sulfuric Acid Manufacturing Plants: A person shall not emit from any operation manufacturing sulfuric acid using as a principal raw material any sulfur-containing material, any emission having a concentration of SO₃ or H₂SO₄, or both, expressed as 100% H₂SO₄, exceeding 92 mg per dscm (0.04 gr. per dscf) of exhaust gas volume.

6-330 Sulfur Recovery Units: A person shall not emit from any operation manufacturing sulfur, using as a principal raw material any sulfur-containing material, any emission having a concentration of SO₃ or H₂SO₄, or both, expressed as 100% H₂SO₄, exceeding 183 mg dscm (0.08 gr. dscf) of exhaust gas volume.

6-400 ADMINISTRATIVE REQUIREMENTS

6-401 Appearance of Emissions: Every person responsible for an emission (except from gas fired heat transfer operations regulated by Sections 6-301, 6-303 and 6-304) shall have and maintain means whereby the operator of the plant shall be able to know the appearance of the emission at all times.

6-500 MONITORING AND RECORDS

6-501 Sampling Facilities and Instruments Required: Persons subject to this regulation shall provide sampling facilities and install instruments as required pursuant to the provisions of Sections 1-501, 1-520 and 1-521 of Regulation 1.

6-502 Data, Records and Reporting: Persons monitoring emissions in accordance with the requirements of Sections 1-520 and 1-521 of Regulation 1 shall keep records, report emission excesses and provide summaries of data collected as required by Regulation 1.

6-503 Records: A person responsible for the operation of a diesel pile-driving hammer who chooses to comply with subsection 6-306.2 shall maintain and have available for inspection records which establish the use of kerosene, smoke suppressing fuel additives and synthetic lubricating oil. (Adopted July 11, 1990)

6-600 MANUAL OF PROCEDURES

6-601 Particulate Matter, Sampling, Sampling Facilities, Opacity Instruments and Appraisal of Visible Emissions: The MOP contains the testing temperature for the determination of the presence of particulate matter, procedures relating to the siting of sampling facilities, source test procedures, opacity instrument specifications, calibration and maintenance requirements, and the procedure for appraising visible emissions.

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ORGANIC COMPOUNDS
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REGULATION 8

ORGANIC COMPOUNDS

RULE 1

GENERAL PROVISIONS

(Adopted January 1, 1980)

8-1-100 GENERAL

8-1-101 Description: The purpose of this Regulation is to limit the emission of organic compounds to the atmosphere. Certain organic compounds may also be subject to the requirements of Regulations 11 or 12. (Amended March 17, 1982)

8-1-110 Exemptions: The following shall be exempted from the provisions of this regulation:

110.1 Any structure designed and used exclusively as a dwelling for not more than two families, provided that this exclusion does not apply to the application of an architectural coating.

110.2 Any internal combustion engine.

110.3 Any operation or group of operations which are related to each other by being a part of a continuous process, or a series of such operations on the same process material, which are subject to Regulation 8, Rule 2 or Rule 4, and for which emissions of organic compounds are reduced at least 85% on a mass basis. Where such reduction is achieved by incineration, at least 90% of the organic carbon shall be oxidized to carbon dioxide.

110.4 Stationary storage tanks having a capacity of less than 1.0 m³ (260 gal.).

110.5 Any stationary storage tank installed prior to January 4, 1967 which is not used for storage of gasoline to be dispensed to internal combustion engine fuel tanks, and is either less than 7.6 m³ (2000 gal.) capacity or an underground tank with an offset fill line.

110.6 Deleted May 4, 1988.

110.7 Any emission of organic compounds where the person responsible for such emission demonstrates to the satisfaction of the APCO that the emission contains ethane and if the ethane were not present the emission would not violate any standard. (Adopted March 17, 1982)

8-1-200 DEFINITIONS

8-1-201 Organic Compound: Any compound of carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate. (Amended June 17, 1981, March 17, 1982)

8-1-202 Organic Liquids: All precursor organic compounds which contain hydrogen and which would exist as liquids at actual conditions of use or storage. (Amended March 17, 1982)

8-1-203 Petroleum Refinery Complex: Any facility engaged in producing gasoline, kerosene, distillate fuel oils, residual fuel oils, lubricants or other products through distillation of petroleum or through redistillation, cracking,

rearrangement or reforming of unfinished petroleum derivatives. (Renumbered March 17, 1982)

8-1-204 Process Unit Turnaround: Any non-emergency unit shutdown, for the purpose of repair, maintenance or inspection, and subsequent start-up. (Renumbered March 17, 1982)

8-1-205 Submerged Fill Pipe: Any discharge pipe or nozzle which meets either of the following conditions:

205.1 Where the tank is filled from the top, the discharge pipe or nozzle is totally submerged when the liquid level is 15 cm.(6 in.) from the bottom of the tank.

205.2 Where the tank is filled from the side, the discharge pipe or nozzle is totally submerged when the liquid level is 45 cm. (18 in.) from the bottom of the tank. (Renumbered March 17, 1982)

8-1-206 True Vapor Pressure: The pressure exerted when an organic liquid is in equilibrium with its own vapor expressed in bars. True vapor pressure may be found by referring to applicable nomographs in American Petroleum Institute Bulletin No. 2517. (Renumbered March 17, 1982)

8-1-207 Volatile Organic Compound (VOC): Any organic compound which would be emitted during use, application, curing or drying of a solvent or surface coating. (Amended March 17, 1982; June 15, 1994)

8-1-208 Organic Compound, Non-Precursor: Methylene chloride, 1,1,1, trichloroethane, 1,1,2 trichlorotrifluoroethane (CFC-113), trichlorofluoromethane (CFC-11), dichlorodifluoromethane (CFC-12), dichlorotetrafluoroethane (CFC-114), dichlorodifluoromethane (CFC-22) chloropentafluoroethane (CFC-115), 2-chloro-1,1,1,2-tetrafluoroethane (HCFC-124), pentafluoroethane (HFC-125), 1,1,2,2-tetrafluoroethane (HFC-134), 1,1,1-trifluoroethane (HFC-134a), 1,1-difluoroethane (HFC-152a), trifluoromethane (CFC-23); and perfluorocarbons which fall into these classes:

- (1) Cyclic, branched, or linear completely fluorinated alkanes;
- (2) Cyclic, branched, or linear, completely fluorinated ethers with no unsaturations,
- (3) Cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations, and
- (4) Sulfur containing perfluorocarbons with no unsaturations and with sulfur bonds only to carbon and fluorine. (Adopted March 17, 1982, Amended June 15, 1994)

8-1-209 Deleted June 15, 1994

8-1-300 STANDARDS

8-1-320 Surface Preparation; Clean-up; Coating, Ink, Paint Removal: Effective August 1, 1988 a person shall not use open containers for the storage or disposal of cloth or paper impregnated with organic compounds that are used for surface preparation, clean-up, or coating, ink, or paint removal. (Adopted May 18, 1988)

8-1-321 Closed Containers: Effective August 1, 1988 a person shall not store spent or fresh organic compounds to be used for surface preparation, clean-up, or coating, ink, or paint removal, in open containers. (Adopted May 18, 1988)

8-1-322 Spray Equipment Clean-up Limitation: Effective August 1, 1988 a person shall not use organic compounds for the clean-up of spray equipment unless equipment for collection of the cleaning compounds and minimizing its evaporation to the atmosphere is used. (Adopted May 18, 1988)

8-1-600 MANUAL OF PROCEDURES

8-1-601 Analysis of Sample: Samples of organic compounds as defined in Subsection 110.6 shall be analyzed for

vapor pressure as prescribed in the Manual of procedures, Volume III, Method 13. (Adopted March 17, 1982)

8-1-602 Determination of Emissions: Emissions of organic compounds as specified in Subsection 8-1-110.3 shall be measured as prescribed by any of the following methods: 1) BAAQMD Manual of Procedures, Volume IV, ST-7, 2) EPA Method 25 or 25A. A source shall be considered in violation if the VOC emissions measured by any of the referenced test methods exceed the standards of the rule. (Adopted March 17, 1982, Amended June 15, 1994)

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-

REGULATION 8
ORGANIC COMPOUNDS
RULE 2
MISCELLANEOUS OPERATIONS

9/28/94

8-2-100 GENERAL

- 8-2-101 Description: The purpose of this Rule is to reduce emissions of precursor organic compounds from miscellaneous operations. (Amended March 17, 1982)
- 8-2-110 Exemption, Natural Gas: Emissions from any operations consisting entirely of natural gas, provided best modern practices are used, are exempt from this Rule.
- 8-2-111 Exemption, Preparation of Food: Emissions from the preparation of food for human consumption provided best modern practices are used, are exempt from this Rule.
- 8-2-112 Exemption, Cold Reduction Equipment Used in Metal Forming: The emissions from any cold reduction equipment used in metal forming are exempt from this rule provided the cooling oil introduced in the cold reduction system is not less than 90 percent (by weight) normal paraffins of a carbon number 12 or higher and that such oil shall have a Reid vapor pressure not greater than 52 mm Hg (1.0 psia). (Amended September 2, 1981)
- 8-2-113 Exemption, Blind Changing: Emissions from blind changing are exempt from this Rule, providing best modern practices are used. (Amended March 17, 1982)
- 8-2-114 Exemption, Miscellaneous Plants: Emissions from cooling towers, railroad tank cars, marine vessels and crude oil production operations are exempt from this Rule, provided best modern practices are used.
- 8-2-115 Exemption, Equipment: The following equipment is exempt from this Rule, provided best modern practices are used:
- 115.1 Presses used for the curing of rubber products or plastic products.
 - 115.2 Ovens used exclusively for the curing of plastics which are concurrently being vacuum held to a mold or for the softening or annealing of plastics.
 - 115.3 Ovens used exclusively for the curing of vinyl plastisols by the closed mold curing process.
 - 115.4 Equipment used exclusively for the melting or applying of wax.
 - 115.5 Equipment used exclusively for the packaging of lubricants and greases.
 - 115.6 Equipment used exclusively for the manufacture of water emulsions of waxes, greases or oils.
 - 115.7 Vacuum producing devices in laboratory operations or which are used exclusively in connection with other equipment which is excluded or exempted by this Regulation.
 - 115.8 Vacuum producing devices which do not remove or convey air contaminants from another source.
 - 115.9 Porcelain enameling furnaces, porcelain enameling drying ovens, vitreous enameling furnaces or vitreous enamel drying ovens.
 - 115.10 All printing presses other than rotogravure printing presses.
 - 115.11 Equipment used exclusively for bonding lining to brake shoes.
 - 115.12 Equipment used for hydraulic and hydrostatic testing.
 - 115.13 Ovens and furnaces used for heat treating and annealing metals.
 - 115.14 Oil quench tanks used for tempering heated metals.
 - 115.15 Crucible type or pot type furnaces with a brimful capacity of less than 450 in³ of molten metal.
 - 115.16 Space heating and heat transfer operations using gas fuel and rated at less than one million BTU's per hour.
 - 115.17 Equipment used exclusively for steam cleaning.

1/28/17

- 8-2-116 Exemption, Equipment or Exhaust System:** The following equipment or any exhaust system or collector exclusively serving such equipment is exempt from this Rule providing best modern practices are used:
- 116.1 Ovens used exclusively for curing potting materials or for castings made with epoxy resins.
 - 116.2 Equipment used for compression molding or injection molding of plastics.
 - 116.3 Dipping operations for coating objects with oils, waxes, or greases.
 - 116.4 Dipping operations for applying coatings of natural or synthetic resins which contain no organic solvents.
 - 116.5 Unheated solvent dispensing containers, unheated solvent rinsing containers, or unheated coating dip tanks, all of 100 gal. capacity or less.
 - 116.6 Kilns used for firing ceramic ware, heated exclusively by natural gas, liquefied petroleum gas, electricity or any combination thereof.
 - 116.7 Shell core and shell molding machines.
 - 116.8 Die casting machines.
 - 116.9 Laboratory equipment used exclusively for chemical or physical analyses and bench scale laboratory equipment.

8-2-200 DEFINITIONS

8-2-201 Miscellaneous Operations: Any operation other than those limited by the other Rules of this Regulation 8 and the Rules of Regulation 10.

8-2-202 Total Carbon: Organic compounds calculated as total carbon shall be determined as follows:

- 202.1 Total carbon of an individual organic compound is equal to the ppm of that compound in an emission multiplied by the number of carbon atoms present in the molecule.
- 202.2 Total carbon in an emission is the sum of the total carbon of all of the individual organic compounds present in the effluent. 1,1,1, trichloroethane, methylene chloride, methane and chlorofluorocarbons shall not be included in the calculation of total carbon.

8-2-300 STANDARDS

8-2-301 Miscellaneous Operations: A person shall not discharge into the atmosphere from any miscellaneous operation an emission containing more than 6.8 kg. (15 lbs.) per day and containing a concentration of more than 300 PPM total carbon on a dry basis. (Amended May 21, 1980)

8-2-600 MANUAL OF PROCEDURES

8-2-601 Determination of Compliance: Emissions of organic compounds as specified in Section 8-2-301 shall be measured as prescribed by any of the following methods 1) BAAQMD Manual of Procedures, Volume IV, ST-7, 2) EPA Method 25 or 25A. A source shall be considered in violation if the VOC emissions measured by any of the referenced test methods exceed the standards of this rule.

(Adopted March 17, 1982, Amended June 15, 1994)

**REGULATION 8
ORGANIC COMPOUNDS
RULE 3
ARCHITECTURAL COATINGS**

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REGULATION 8
ORGANIC COMPOUNDS
RULE 3
ARCHITECTURAL COATINGS

(Adopted March 1, 1978)

8-3-100 GENERAL

8-3-101 Description: The purpose of this Rule is to limit the quantity of volatile organic compounds in architectural coatings supplied, sold, offered for sale, applied, solicited for application, or manufactured for use within the District.

(Amended November 21, 2001)

8-3-102 Applicability: Except as provided in Section 8-3-110, this Rule is applicable to any person who supplies, sells, offers for sale, or manufacturers any architectural coating for use within the District, as well as any person who applies or solicits the application of any architectural coating within the District.

(Adopted November 21, 2001)

8-3-103 Severability: If a court of competent jurisdiction issues an order that any provision of this rule is invalid, it is the intent of the Board of Directors of the District that other provisions of this rule remain in full force and affect, to the extent allowed by law.

(Adopted November 21, 2001)

8-3-110 Exemptions: This rule does not apply to:

110.1 Any architectural coating that is sold or manufactured for use outside of the District or for shipment to other manufacturers for reformulation or repackaging;

110.2 Any aerosol coating product; or

110.3 Any architectural coating that is sold in a container with a volume of one liter (1.057 quart) or less.

(Amended, Renumbered November 21, 2001)

8-3-111 Deleted November 21, 2001

8-3-112 Deleted January 8, 1986

8-3-113 Deleted November 21, 2001

8-3-114 Deleted November 21, 2001

8-3-200 DEFINITIONS

8-3-201 Adhesive: Any chemical substance that is applied for the purpose of bonding two surfaces together other than by mechanical means.

(Adopted November 21, 2001)

8-3-202 Aerosol Coating Product: A pressurized coating product containing pigments or resins that dispense product ingredients by means of a propellant, and is packaged in a disposable can for hand-held application, or for use in specialized equipment for ground traffic/marketing applications. Aerosol coating products are subject to District Regulation 8, Rule 49 or the provisions of 17 California Code of Regulations 94520 *et seq.*

(Adopted November 21, 2001)

8-3-203 Antenna Coating: A coating labeled and formulated exclusively for application to equipment and associated structural appurtenances that are used to receive or transmit electromagnetic signals.

(Adopted November 21, 2001)

8-3-204 Antifouling Coating: A coating labeled and formulated for application to submerged stationary structures and their appurtenances to prevent or reduce the attachment of marine or freshwater biological organisms. To qualify as an antifouling coating, the coating must be registered with both the U.S. Environmental Protection Agency under the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. Section 136, *et seq.*) and with the California Department of Pesticide Regulation.

(Adopted November 21, 2001)

8-3-205 Appurtenances: Any accessory to a stationary structure coated at the site of installation, whether installed or detached, including but not limited to: bathroom and kitchen fixtures; cabinets; concrete forms; doors; elevators; fences; hand railings; heating equipment, air conditioning equipment, and other fixed mechanical equipment or stationary tools; lampposts; partitions; pipes and piping systems; rain-gutters and down-spouts; stairways, fixed ladders, catwalks, and fire escapes; and window screens.

(Adopted November 21, 2001)

8-3-206 Architectural Coatings: A coating to be applied to stationary structures and their appurtenances at the site of installation, to portable buildings at the site of installation, to pavements, or to curbs. Coatings applied in shop applications or to non-stationary structures such as airplanes, ships, boats, railcars, and automobiles, and adhesives are not considered architectural coatings for the purpose of this rule.

(Amended, Renumbered November 21, 2001)

8-3-207 Bitumens: Black or brown materials including, but not limited to, asphalt, tar, pitch and asphaltite that are soluble in carbon disulfide, consist mainly of hydrocarbons and are obtained from natural deposits or as residues from the distillation of crude petroleum or coal.

(Renumbered 5/18/83; Amended, Renumbered 11/21/01)

8-3-208 Bituminous Roof Coating: A coating which incorporates bitumens that is labeled and formulated exclusively for roofing.

(Amended November 21, 2001)

8-3-209 Bituminous Roof Primer: A primer which incorporates bitumens that is labeled and formulated exclusively for roofing.

(Amended November 21, 2001)

8-3-210 Bond Breakers: A coating labeled and formulated for application between layers of concrete to prevent a freshly poured top layer of concrete from bonding to the layer over which it is poured.

(Adopted 5/18/83; Amended, Renumbered 11/21/01)

8-3-211 Clear Brushing Lacquers: Clear wood finishes, excluding clear lacquer sanding sealers, formulated with nitrocellulose or synthetic resins to dry by solvent evaporation without chemical reaction and to provide a solid, protective film, which are intended exclusively for application by brush, and which are labeled as specified in subsection 8-3-401.5.

(Adopted November 21, 2001)

8-3-212 Clear Wood Coatings: Clear and semi-transparent coatings, including lacquers and varnishes, applied to wood substrates to provide a transparent or translucent solid film.

(Adopted November 21, 2001)

8-3-213 Coating: A material applied onto or impregnated into a substrate for protective, decorative, or functional purposes. Such materials include, but are not limited to, paints, varnishes, sealers, and stains.

(Adopted November 21, 2001)

8-3-214 Colorant: A concentrated pigment dispersion in water, solvent, and/or binder that is added to an architectural coating after packaging in sale units to produce the desired color.

(Adopted November 21, 2001)

8-3-215 Concrete Curing Compound: A coating labeled and formulated for application to freshly poured concrete to retard the evaporation of water.

(Adopted 5/18/83; Amended, Renumbered 11/21/01)

8-3-216 Dry Fog Coating: A coating labeled and formulated only for spray application such that overspray droplets dry before subsequent contact with incidental surfaces in the vicinity of the surface coating activity.

(Adopted November 21, 2001)

8-3-217 Exempt Compound: A compound identified by the US EPA as having a negligible contribution to photochemical reactivity. Compounds exempt for the purposes of this Rule are listed in subsection 8-3-261.1.

(Adopted November 21, 2001)

- 8-3-218 Faux Finishing Coating:** A coating labeled and formulated as a stain or glaze to create artistic effects including, but not limited to, dirt, old age, smoke damage, and simulated marble and wood grain.
(Adopted November 21, 2001)
- 8-3-219 Fire-Resistive Coating:** An opaque coating labeled and formulated to protect the structural integrity by increasing the fire endurance of interior or exterior steel and other structural materials, that has been fire tested and rated by a testing agency approved by building code officials for use in bringing assemblies of structural materials into compliance with federal, state, and local building code requirements. The fire-resistive coating and the testing agency must be approved by building code officials. The fire-resistive coating shall be tested in accordance with ASTM Designation E 119-98, incorporated by reference in subsection 8-3-606.2.
(Adopted November 21, 2001)
- 8-3-220 Fire-Retardant Coating:** A coating labeled and formulated to retard ignition and flame spread, that has been fire tested and rated by a testing agency approved by building code officials for use in bringing building and construction materials into compliance with federal, state, and local building code requirements. The fire-retardant coating and the testing agency must be approved by building code officials. The fire-retardant coating shall be tested in accordance with ASTM Designation E 84-99, incorporated by reference in subsection 8-3-606.1.
(Renumbered 5/18/81; Amended, Renumbered 11/21/01)
- 8-3-221 Flat Coating:** A coating that is not defined under any other definition in this rule and that registers gloss less than 15 on an 85-degree meter or less than 5 on a 60-degree meter according to ASTM Designation D 523-89 (1999), incorporated by reference in subsection 8-3-606.3.
(Adopted November 21, 2001)
- 8-3-222 Floor Coating:** An opaque coating that is labeled and formulated for application to flooring, including, but not limited to, decks, porches, steps, and other horizontal surfaces which may be subject to foot traffic.
(Adopted November 21, 2001)
- 8-3-223 Flow Coating:** A coating labeled and formulated exclusively for use by electric power companies or their subcontractors to maintain the protective coating systems present on utility transformer units.
(Adopted November 21, 2001)
- 8-3-224 Form-Release Compound:** A coating labeled and formulated for application to a concrete form to prevent the freshly poured concrete from bonding to the form. The form may consist of wood, metal, or some other material other than concrete.
(Adopted November 21, 2001)
- 8-3-225 Graphic Arts Coating or Sign Paint:** A coating labeled and formulated for hand application by artists using brush or roller techniques to indoor and outdoor signs (excluding structural components) and murals, including lettering enamels, poster colors, copy blockers, and bulletin enamels.
(Amended, Renumbered 5/18/83, 11/21/01)
- 8-3-226 High-Temperature Coating:** A high performance coating labeled and formulated for application to substrates exposed continuously or intermittently to temperatures above 204°C (400°F).
(Adopted November 21, 2001)
- 8-3-227 Industrial Maintenance Coating:** A high performance architectural coating, including primers, sealers, undercoaters, intermediate coats, and topcoats, formulated for application to substrates exposed to one or more of the following extreme environmental conditions listed in subsections 8-3-227.1 through 227.5, and labeled as specified in subsection 8-3-401.4:
- 227.1 Immersion in water, wastewater, or chemical solutions (aqueous and non-aqueous solutions), or chronic exposure of interior surfaces to moisture condensation;
 - 227.2 Acute or chronic exposure to corrosive, caustic, or acidic agents, or to chemicals, chemical fumes, or chemical mixtures or solutions;
 - 227.3 Repeated exposure to temperatures above 121°C (250°F);

- 227.4 Repeated (frequent) heavy abrasion, including mechanical wear and repeated (frequent) scrubbing with industrial solvents, cleansers, or scouring agents; or
227.5 Exterior exposure of metal structures and structural components.

(Amended, Renumbered 5/18/83; Amended 1/8/86; Amended, Renumbered 11/21/01)

8-3-228 Lacquer: A clear or opaque wood coating, including clear lacquer sanding sealers, formulated with cellulosic or synthetic resins to dry by evaporation without chemical reaction and to provide a solid, protective film.

(Amended, Renumbered 5/18/83, 11/21/01)

8-3-229 Low-Solids Coating: A coating containing 0.12 kilogram or less of solids per liter (1 pound or less of solids per gallon) of coating material.

(Adopted 11/4/98; Amended, Renumbered 11/21/01)

8-3-230 Magnesite Cement Coating: A coating labeled and formulated for application to magnesite cement decking to protect the magnesite cement substrate from erosion by water.

(Adopted November 21, 2001)

8-3-231 Mastix Texture Coating: A coating labeled and formulated to cover holes and minor cracks, and to conceal surface irregularities, and applied in a single coat of at least 10 mils (0.010 inch) dry film thickness.

(Adopted 5/18/83; Amended, Renumbered 11/21/01)

8-3-232 Metallic Pigmented Coating: A coating containing at least 48 grams of elemental metallic pigment per liter of coating as applied (0.4 pounds per gallon), when tested in accordance with South Coast Air Quality Management District Method 318-95, incorporated by reference in subsection 8-3-606.4.

(Renumbered 5/18/83; Amended, Renumbered 11/21/01)

8-3-233 Multi-Color Coating: A coating that is packaged in a single container and that exhibits more than one color when applied in a single coat.

(Renumbered 5/18/83; Amended, Renumbered 11/21/01)

8-3-234 Nonflat Coating: A coating that is not defined under any other definition in this rule and that registers a gloss of 15 or greater on an 85-degree meter and 5 or greater on a 60-degree meter according to ASTM Designation D 523-89 (1999), incorporated by reference in subsection 8-3-606.3.

(Adopted 9/1/82; Amended, Renumbered 11/21/01)

8-3-235 Nonflat – High Gloss Coating: A nonflat coating that registers a gloss of 70 or above on a 60 degree meter according to ASTM Designation D 523-89 (1999), incorporated by reference in subsection 8-3-606.3.

(Adopted November 21, 2001)

8-3-236 Non-Industrial Use: Non-industrial use means any use of architectural coatings except in the construction or maintenance of any of the following: facilities used in the manufacturing of goods and commodities; transportation infrastructure, including highways, bridges, airports and railroads; facilities used in mining activities, including petroleum extraction; and utilities infrastructure, including power generation and distribution, and water treatment and distribution systems.

(Adopted November 21, 2001)

8-3-237 Post-Consumer Coating: A finished coating that would have been disposed of in a landfill, having completed its usefulness to a consumer, and does not include manufacturing wastes.

(Adopted November 21, 2001)

8-3-238 Pre-Treatment Wash Primer: A primer that contains a minimum of 0.5 percent by acid, by weight, when tested in accordance with ASTM Designation D 1613-96, incorporated by reference in subsection 8-3-606.5, that is labeled and formulated for application directly to bare metal surfaces to provide corrosion resistance and to promote adhesion of subsequent topcoats.

(Adopted November 21, 2001)

8-3-239 Primer: A coating labeled and formulated for application to a substrate to provide a firm bond between the substrate and subsequent coats.

(Adopted November 21, 2001)

8-3-240 Quick-Dry Enamel: A nonflat coating that is labeled as specified in subsection 8-3-401.8 and that is formulated to have the following characteristics:

- 240.1 Is capable of being applied directly from the container under normal conditions with ambient temperatures between 16°C and 27°C (60°F and 80°F);
- 240.2 When tested in accordance with ASTM Designation D 1640-95, incorporated by reference in subsection 8-3-606.6, sets to touch in 2 hours or less, is tack free in 4 hours or less, and dries hard in 8 hours or less by the mechanical method test; and
- 240.3 Has a dried film gloss of 70 or above on a 60-degree meter.

(Adopted 9/1/82; Amended, Renumbered 5/18/83, 11/21/01)

8-3-241 Quick Dry Primer, Sealer, and Undercoater: A primer, sealer, or undercoater that is dry to touch in 30 minutes and can be recoated in 2 hours when tested in accordance with ATSM D 1640-95, incorporated by reference in subsection 8-3-606.6.

(Adopted 5/18/83; Amended, Renumbered 11/21/01)

8-3-242 Recycled Coating: An architectural coating formulated such that not less than 50 percent of the total weight consists of secondary and post-consumer coating, with not less than 10 percent of the total weight consisting of post-consumer coating.

(Adopted November 21, 2001)

8-3-243 Residential: Areas where people reside or lodge, including, but not limited to, single and multiple family dwellings, condominiums, mobile homes, apartment complexes, motels, and hotels.

(Adopted November 21, 2001)

8-3-244 Roof Coating: A non-bituminous coating labeled and formulated exclusively for application to roofs for the primary purpose of preventing penetration of the substrate by water or reflecting heat and ultraviolet radiation. Metallic pigmented roof coatings which qualify as Metallic Pigmented Coating shall not be considered to be in this category, but shall be considered to be in the Metallic Pigmented Coating category.

(Adopted 5/18/83; Amended, Renumbered 11/21/01)

8-3-245 Rust Preventative Coating: A coating formulated for non-industrial use to prevent the corrosion of metal surfaces and labeled as specified in subsection 8-3-401.6.

(Adopted November 21, 2001)

8-3-246 Sanding Sealer: A clear or semi-transparent wood coating labeled and formulated for application to bare wood to seal the wood and to provide a coat that can be abraded to create a smooth surface for subsequent applications of coatings. A sanding sealer that also meets the definition of a lacquer is not included in this category, but is included in the lacquer category.

(Adopted November 21, 2001)

8-3-247 Sealer: A coating labeled and formulated for application to a substrate for one or more of the following purposes: to prevent subsequent coatings from being absorbed by the substrate, or to prevent harm to subsequent coatings by materials in the substrate.

(Adopted November 21, 2001)

8-3-248 Secondary Coating (Rework): A fragment of a finished coating or a finished coating from a manufacturing process that has converted resources into a commodity of real economic value, but does not include excess virgin resources of the manufacturing process.

(Adopted November 21, 2001)

8-3-249 Shellac: A clear or opaque coating formulated solely with the resinous secretions of the lac beetle (*Laccifer lacca*), thinned with alcohol, and formulated to dry by evaporation without a chemical reaction.

(Amended, Renumbered 5/18/83, 11/21/01)

8-3-250 Shop Application: Application of a coating to a product or a component of a product in or on the premises of a factory or a shop as part of a manufacturing, production, or repairing process (e.g., original equipment manufacturing coatings).

(Adopted November 21, 2001)

8-3-251 Solicit: To require for use or to specify, by written or oral contract.

(Adopted November 21, 2001)

8-3-252 Specialty Primer, Sealer and Undercoater: A coating labeled as specified in subsection 8-3-401.7 and that is formulated for application to a substrate to seal fire,

smoke or water damage; to condition excessively chalky surfaces; or to block stains. An excessively chalky surface is one that is defined as having a chalk rating of four or less as determined by ASTM Designation D 4214-98, incorporated by reference in subsection 8-3-606.7.

(Adopted 5/18/83; Amended, Renumbered 11/21/01)

8-3-253 Stain: A clear, semitransparent, or opaque coating labeled and formulated to change the color of a surface but not conceal the grain pattern or texture.

(Renumbered 5/18/83; Amended, Renumbered 11/21/01)

8-3-254 Swimming Pool Coating: A coating labeled and formulated to coat the interior of swimming pools and to resist swimming pool chemicals.

(Adopted November 21, 2001)

8-3-255 Swimming Pool Repair And Maintenance Coating: A rubber based coating labeled and formulated to be used over existing rubber based coatings for the repair and maintenance of swimming pools.

(Adopted November 21, 2001)

8-3-256 Temperature-Indicator Safety Coating: A coating labeled and formulated as a color-changing indicator coating for the purpose of monitoring the temperature and safety of the substrate, underlying piping, or underlying equipment, and for application to substrates exposed continuously or intermittently to temperatures above 204°C (400°F).

(Adopted November 21, 2001)

8-3-257 Tint Base: An architectural coating to which colorant is added after packaging in sale units to produce a desired color.

(Adopted November 21, 2001)

8-3-258 Traffic Marking Coating: A coating labeled and formulated for marking and striping streets, highways, or other traffic surfaces including, but not limited to curbs, berms, driveways, parking lots, sidewalks, and airport runways.

(Adopted 5/18/83; Amended, Renumbered 11/21/01)

8-3-259 Undercoater: A coating labeled and formulated to provide a smooth surface for subsequent coats.

(Adopted November 21, 2001)

8-3-260 Varnish: A clear or semi-transparent wood coating, excluding lacquers and shellacs, formulated to dry by chemical reaction on exposure to air. Varnishes may contain small amounts of pigment to color a surface, or to control the final sheen or gloss of the finish.

(Amended, Renumbered 5/18/83; Amended 1/8/86; Amended, Renumbered 11/21/01)

8-3-261 Volatile Organic Compound (VOC): Any organic compound (excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate) which would be emitted during use, application, curing or drying of an architectural coating.

261.1 For purposes of calculating VOC content of a coating, any water or the following non-precursor organic compounds:

acetone

methyl acetate

parachlorobenzotrifluoride (PCBTF)

cyclic, branched or linear, completely methylated siloxanes (VMS)

shall not be considered to be part of the coating.

261.2 For the purposes of calculating VOC content of a low solids coating, any water or non-precursor organic compound listed in subsection 8-3-261.1 shall be considered part of the coating, but shall not be considered part of the VOC content of the coating.

(Adopted 12/20/95; Amended 11/4/98; Amended, Renumbered 11/21/01)

8-3-262 VOC Content: The calculation to determine the VOC content of a coating is found in the Manual of Procedures, Volume III, Laboratory Methods 21, 22 and 31.

(Adopted November 21, 2001)

8-3-263 Waterproofing Sealer: A coating labeled and formulated for application to a porous substrate for the primary purpose of preventing the penetration of water.

(Amended, Renumbered 5/18/83, 11/21/01)

8-3-264 Waterproofing Concrete/Masonry Sealer: A clear or pigmented film-forming coating that is labeled and formulated for sealing concrete and masonry to provide resistance against water, alkalis, acids, ultraviolet light, and staining.

(Adopted November 21, 2001)

8-3-265 Wood Preservative: A coating labeled and formulated to protect exposed wood from decay or insect attack, that is registered with both the U.S. Environmental Protection Agency under the Federal Insecticide, Fungicide, and Rodenticide Act (7 United States Code (U.S.C.) Section 136, *et seq.*) and with the California Department of Pesticide Regulation.

(Adopted 5/18/83; Amended, Renumbered 11/21/01)

8-3-300 STANDARDS

8-3-301 VOC Content Limits: Except as provided in Sections 8-3-302, 303, 307, and 308, no person shall: (i) manufacture, blend, or repackage for sale within the District; (ii) supply, sell, or offer for sale within the District; or (iii) solicit for application or apply within the District, any architectural coating with a VOC content in excess of the corresponding limit specified in the following table. Limits are expressed in grams of VOC per liter of coating as thinned to the manufacturer's maximum recommendation, excluding the volume of any water, exempt compounds, or colorant added to the tint bases. "Manufacturer's maximum recommendation" means the maximum recommendation for thinning that is indicated on the label or lid of the coating container.

<u>Coating Category</u>	<u>Limit</u>	<u>Effective 1/1/2003</u>	<u>Effective 1/1/2004</u>
Flat Coatings	250	100	
Nonflat Coatings	250	150	
Nonflat – High Gloss Coatings	250		
Specialty Coatings:			
Antenna Coatings	530		
Antifouling Coatings	420	400	
Bituminous Roof Coatings	300		
Bituminous Roof Primers	350		
Bond Breakers	600 ⁽²⁾	350	
Clear Wood Coatings:			
Clear Brushing Lacquer	680		
Lacquer (including lacquer sanding sealer)	680	550 ⁽¹⁾	
Sanding sealer	550	350	
Varnish	350		
Concrete Curing Compounds	350		
Dry Fog Coatings	400 ⁽²⁾		
Faux Finishing Coatings	350		
Fire Resistive Coatings	450 ⁽²⁾	350	
Fire Retardant Coatings:			
Clear	850 ⁽²⁾	650	
Opaque	450 ⁽²⁾	350	
Floor Coatings	400	250	
Flow Coatings	420		
Form-Release Compounds	250		
Graphic Arts Coatings (Sign Paints)	500 ⁽²⁾		
High Temperature Coatings	420		
Industrial Maintenance Coatings	420		250
Low Solids Coatings	120		
Magnesite Cement Coatings	450		

<u>Coating Category</u>	<u>Limit</u>	<u>Effective 1/1/2003</u>	<u>Effective 1/1/2004</u>
Mastic Texture Coatings	300 ⁽²⁾		
Metallic Pigmented Coatings	500 ⁽²⁾		
Multi-Color Coatings	580 ⁽²⁾	250	
Pre-Treatment Wash Primers	420		
Primers, Sealers, and Undercoaters	350	200	
Quick-Dry Enamels	400	250	
Quick-Dry Primers, Sealers, Undercoaters	450 ⁽²⁾	200	
Recycled Coatings	250		
Roof Coatings	250 ⁽²⁾		
Rust Preventative Coatings	420	400	
Shellacs:			
Clear	730 ⁽²⁾		
Opaque	550 ⁽²⁾		
Specialty Primers, Sealers and Undercoaters	350		
Stains	350	250	
Swimming Pool Coatings	600 ⁽²⁾	340	
Swimming Pool Repair and Maintenance Coatings	600 ⁽²⁾	340	
Temperature-Indicator Safety Coatings	550		
Traffic Marking Coatings	250	150	
Waterproofing Concrete/Masonry Sealers	400		
Waterproofing Sealers	400	250	
Wood Preservatives:			
Above ground	350		
Below ground	550 ⁽²⁾	350	

⁽¹⁾ A person may add up to 10 percent by volume of VOC to a lacquer to avoid blushing of the finish provided that, (i) the relative humidity at the time of coating application is greater than 70%, (ii) the temperature at the time of coating application is below 18°C (65°F), (iii) the lacquer contains acetone, and (iv) the lacquer contains no more than 550 grams of VOC per liter of coating, less water and exempt compounds, prior to the addition.

⁽²⁾ VOC limit effective April 1, 2002.

(Amended 9/1/82, 5/18/83, 1/8/86, 9/3/86, 11/4/98; Amended, Renumbered 11/21/01)

8-3-302 Most Restrictive VOC Limits: If anywhere on the container of any architectural coating or any label or sticker affixed to the container, or in any sales, advertising or technical literature supplied by a manufacturer or anyone acting on their behalf, any representation is made that indicates that the coating meets the definition of or is recommended for use for more than one of the coating categories listed in the table in Section 8-3-301, then the most restrictive VOC limit shall apply. This Section does not apply to the following coating categories:

- 302.1: Antenna coatings,
- 302.2: Antifouling coatings,
- 302.3: Bituminous roof coatings,
- 302.4: Fire-retardant coatings,
- 302.5: Flow coatings,
- 302.6: High temperature coatings,
- 302.7: Industrial maintenance coatings,
- 302.8: Lacquer coatings (including lacquer sanding sealers),
- 302.9: Low-solids coatings,
- 302.10: Metallic pigmented coatings,

- 302.11: Pretreatment wash primers,
- 302.12: Shellacs,
- 302.13: Specialty primers, sealers and undercoaters,
- 302.14: Temperature-indicator safety coatings, and
- 302.15: Wood preservatives.

(Adopted 4/17/86; Amended 1/8/86; Amended, Renumbered 11/21/01)

8-3-303 Sell-Through of Coatings: Any coating manufactured prior to the January 1, 2003 or January 1, 2004 effective dates that does not comply with the VOC limits effective on those dates may be supplied, offered for sale, or sold for up to three years after the effective dates provided that (i) the coating was in compliance with the VOC limits in effect at the time of manufacture, and (ii) the date or date-code is displayed on the coating container as required by subsection 8-3-401.1. Any coating subject to this Section may be applied at any time after the effective dates.

303.1 Until January 1, 2008, any coating included in an approved Averaging Program that does not comply with the VOC limits in Section 8-3-301 may be supplied, offered for sale or sold for up to three years after the end of the compliance period specified in the approved Averaging Program provided that either the statement: "This product is subject to architectural coatings averaging provisions in California" or a substitute symbol specified by the Executive Officer of the California Air Resources Board is displayed on the coating container. Any coating subject to this subsection may be applied at any time after the period specified in the Averaging Program.

(Adopted November 21, 2001)

8-3-304 Painting Practices: All architectural coating containers shall be closed when not in use. "In use" is the active application of contents to a surface by pouring, siphoning, brushing, rolling, padding, ragging or other means. Architectural coating containers include but are not limited to, drums, buckets, cans, pails, trays and any other application containers. Containers of any VOC-containing materials used for thinning or cleanup shall also be closed when not in use.

(Adopted November 21, 2001)

8-3-305 Prohibition of Excess Thinning: No person who applies or solicits the application of any architectural coating shall apply a coating that is thinned to exceed the applicable VOC limit specified in Section 8-3-301.

(Adopted November 21, 2001)

8-3-306 Rust Preventative Coatings: Effective January 1, 2004, a person shall only apply and solicit the application of rust preventative coatings for non-industrial uses, unless such coatings comply with the VOC limit for industrial maintenance coating as specified in Section 8-45-301.

(Adopted November 21, 2001)

8-3-307: Coatings Not Listed in Section 8-3-301: Any coating that does not meet any of the definitions for a specialty coating listed in Section 8-3-301 shall be classified as a flat, nonflat or nonflat high gloss coating, based on it's gloss, as defined in Section 8-3-221, 234 or 235, and the corresponding VOC limit shall apply.

(Adopted November 21, 2001)

8-3-308: Averaging Compliance Option: Effective January 1, 2003, in lieu of compliance with the specified VOC limits in Section 8-3-301, any of the following coatings may be averaged by the manufacturer such that their actual cumulative emissions over a compliance period not to exceed one year, as calculated from sales of the designated coatings, are less than or equal to the cumulative emissions that would have been allowed under the specified VOC limits, provided that, (i) the manufacturer complies with the provisions of the Manual of Procedures, Volume I, Number 7, and, (ii) the manufacturer maintains and makes available inspection records for at least three years after the end of each compliance period:

- 307.1 Bituminous roof coatings,
- 307.2 Flats,
- 307.3 Floor coatings,
- 307.4 Industrial maintenance coatings,

- 307.5 Nonflats,
- 307.6 Primers, sealers, and undercoaters,
- 307.7 Quick-dry enamels,
- 307.8 Quick-dry primers, sealers, and undercoaters,
- 307.9 Roof coatings,
- 307.10 Rust preventative coatings,
- 307.11 Stains, and
- 307.12 Waterproofing sealers.

This Section and Volume I, Number 7 of the Manual of Procedures: Averaging Provision for Architectural Coatings, shall be effective only until January 1, 2005, after which this compliance option shall no longer be allowed.

(Adopted November 21, 2001)

8-3-309 Limited Allowance, Industrial Maintenance Coatings: Effective January 1, 2004, industrial maintenance coatings with a VOC content of greater than 250 grams VOC per liter but no greater than 340 grams VOC per liter may be manufactured, sold, offered for sale, solicited, and applied in the District provided the user of the coating, or manufacturer or seller on behalf of the user, has petitioned the APCO for use of the coating as per Section 8-3-402 and has received written approval. The APCO shall not approve any petition if the approval, when combined with approvals granted previously during the calendar year, would result in excess emissions of greater than 10 tons per year. Excess emissions are emissions greater than those that would result from an equal volume of coating at the VOC limit of 250 grams per liter. This Section shall not apply to industrial maintenance coatings offered for sale to the general public.

(Adopted November 21, 2001)

8-3-400 ADMINISTRATIVE REQUIREMENTS

8-3-401 Container Labeling Requirements: Each container for any coating subject to this Rule shall display all the information in subsection 8-3-401.1 through 401.3, and, as applicable, the information in subsection 8-3-401.4 through 401.9:

- 401.1 **Date Code:** On the label, lid or bottom; the date the coating was manufactured, or a date code representing the date. If the manufacturer uses a date code, an explanation of each code must be filed with the Executive Officer of the Air Resources Board and be made available to the Air Pollution Control Officer on request.
- 401.2 **Thinning Recommendation:** On the label or lid; a statement of the manufacturer's recommendation regarding thinning of the coating so as not to exceed the VOC limit listed in Section 8-3-301. This requirement does not apply to the thinning of coatings with water. If thinning prior to use is not necessary, the recommendation must specify that the coating is to be applied without thinning.
- 401.3 **VOC Content:** On the container; the maximum or actual VOC content of the coating, as supplied, including the VOC content at maximum thinning as recommended by the manufacturer. VOC content shall be displayed as grams VOC per liter of coating. VOC content may be calculated using product formulation data or shall be determined using the test method specified in Section 8-3-601, 602 or 604.
- 401.4 **For Industrial Maintenance Coatings:** On the label or lid; one or more of the following: (i) "For Industrial Use Only," (ii) "For Professional Use Only," (iii) "Not For Residential Use," or (iv) "Not Intended For Residential Use" shall be prominently displayed.
- 401.5 **For Clear Brushing Lacquers:** Effective January 1, 2003, "For Brush Application Only," and "This Product Must Not Be Thinned Or Sprayed" shall be prominently displayed on the label.
- 401.6 **For Rust Preventative Coatings:** Effective January 1, 2003, "For Metal Substrates Only" shall be prominently displayed on the label.

- 401.7 For Specialty Primers, Sealers, and Undercoaters: Effective January 1, 2003, one of the following: (i) For Blocking Stains, (ii) For Fire-Damaged Substrates, (iii) For Smoke-Damaged Substrates, (iv) For Water-Damaged Substrates, or, (v) For Excessively Chalky Surfaces shall be prominently displayed on the label.
- 401.8 For Quick Dry Enamels: Effective January 1, 2003, "Quick Dry" and the dry hard time shall be prominently displayed on the label.
- 401.9 For Nonflat – High Gloss Coatings: Effective January 1, 2003, "High Gloss" shall be prominently displayed on the label.

(Amended 3/17/82, 12/1/82, 5/18/83, 1/8/86; Amended, Renumbered 11/21/01)

8-3-402 Petition, Limited Allowance for Industrial Maintenance Coatings: A person seeking to use the limited allowance for industrial maintenance coatings as per Section 8-3-309 shall comply with the following requirements:

- 402.1 The petitioner shall certify that complying coatings able to meet the job performance requirements are not available.
- 402.2 The petition shall contain the following information, as applicable: (i) job requirements, and job and site description, (ii) volume of coating required, and, (iii) maximum VOC content of coating to be applied.
- 402.3 If the APCO grants written approval, the approval shall contain volume and allowable VOC content conditions. Until written approval is granted and received by the petitioner, all provisions of this Rule shall apply.

(Adopted November 21, 2001)

8-3-500 MONITORING AND RECORDS

8-3-501 Reporting Requirements: Each manufacturer of the following products shall submit a report to the Executive Officer of the California Air Resources Board on or before April 1 of each calendar year beginning in the year 2004. The report shall contain the following information for the preceding calendar year, but need only be submitted once each year for all districts:

- 501.1 Clear Brushing Lacquers: Number of gallons of clear brushing lacquers sold in California and the method used to calculate California sales.
- 501.2 Rust Preventative Coatings: Number of gallons of rust preventative coatings sold in California and the method used to calculate California sales.
- 501.3 Specialty Primers, Sealers and Undercoaters: Number of gallons of specialty primers, sealers and undercoaters as defined in Section 8-3-252 sold in California and the method used to calculate California sales.
- 501.4 Toxic Compounds: For coatings that contain methylene chloride or perchloroethylene, (i) product brand name and a copy of product label with legible usage instructions, (ii) product category as defined by this Rule to which the product belongs, (iii) total sales in California during the calendar year to the nearest gallon, and (iv) volume percentage, to the nearest 0.10%, of methylene chloride or perchloroethylene in the coating.
- 501.5 Recycled Coatings: Number of gallons of recycled coatings distributed in California and the method used to calculate California distribution. In addition, each manufacturer shall submit a certification of their status as a Recycled Paint Manufacturer, but need only submit a certification once.
- 501.6 Bituminous Coatings: Number of gallons of bituminous roof coatings and bituminous roof primers sold in California and the method used to calculate California sales.

(Adopted November 21, 2001)

8-3-600 MANUAL OF PROCEDURES

8-3-601 Determination of Compliance, Air-Dried Water Reducible Coatings: The means by which compliance of air-dried, water reducible coatings is determined are found in the Manual of Procedures, Volume III, Method 21.

(Amended 3/17/82, 5/18/83)

8-3-602 Determination of Compliance, Air-Dried Solvent Based Coatings: The means by which compliance of air-dried, solvent based coatings is determined are found in the Manual of Procedures, Volume III Method 22.

(Amended 3/17/82, 5/18/83)

8-3-603 Deleted November 21, 2001

8-3-604 Determination of Compliance, Low Solids Architectural Coatings: The means by which compliance of low solids architectural coatings is determined are found in the Manual of Procedures, Volume III, Method 31.

(Adopted November 4, 1998)

8-3-605 Determination of Compliance, Methacrylate Traffic Marking Coatings: Analysis of methacrylate multicomponent coatings used as traffic marking coatings shall be conducted according to a modification of U.S. Environmental Protection Agency Method 24 (40 CFR 59, subpart D, Appendix A). This method has not been approved for methacrylate multicomponent coatings used for purposes other than as traffic marking coatings or for other classes of multicomponent coatings.

(Adopted November 21, 2001)

8-3-606 Incorporated Test Methods: The following test methods are incorporated by reference herein, and shall be used to test coatings subject to provisions of this Rule:

- 606.1 Flame Spread Index: The flame spread index of a fire-retardant coating shall be determined by ASTM Designation E 84-99, "Standard Test Method for Surface Burning Characteristics of Building Materials," (see Section 8-3-220, Fire-Retardant Coating).
- 606.2 Fire Resistance Rating: The fire resistance rating of a fire-resistive coating shall be determined by ASTM Designation E 119-98, "Standard Test Methods for Fire Tests of Building Construction Materials," (see Section 8-3-219, Fire-Resistive Coating).
- 606.3 Gloss Determination: The gloss of a coating shall be determined by ASTM Designation D 523-89 (1999), "Standard Test Method for Specular Gloss," (see Section 8-3-221, 234, 235 and 240, Flat Coating, Nonflat Coating, Nonflat High Gloss Coating, and Quick-Dry Enamels).
- 606.4 Metal Content of Coatings: The metallic content of a coating shall be determined by South Coast Air Quality Management District Method 318-95, "Determination of Weight Percent Elemental Metal in Coatings by X-Ray Diffraction," South Coast Air Quality Management District "Laboratory Methods of Analysis for Enforcement Samples," (see Section 8-3-232, Metallic Pigmented Coating).
- 606.5 Acid Content of Coatings: Measurement of acid content of Pre-Treatment Wash Primers shall be determined by ASTM Designation D 1613-96, "Standard Test Method for Acidity in Volatile Solvents and Chemical Intermediates Used in Paint, Varnish, Lacquer, and Related Products," (see Section 8-3-238, Pre-Treatment Wash Primers).
- 606.6 Drying Times: The set-to-touch, dry-hard, dry-to-touch, and dry-to-recoat times of a coating shall be determined by ASTM Designation D 1640-95, "Standard Test Methods for Drying, Curing, or Film Formation of Organic Coatings at Room Temperature, " (see Section 8-3-240 and 241, Quick-Dry Enamel and Quick-Dry Primer, Sealer, and Undercoater). The tack-free time of a quick-dry enamel coating shall be determined by the Mechanical Test Method of ASTM Designation D 1640-95.
- 606.7 Surface Chalkiness: The chalkiness of a surface shall be determined using ASTM Designation D 4214-98, "Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films," (see Section 8-3-252, Specialty Primer, Sealer, and Undercoater).
- 606.8 Exempt Compounds – Siloxanes: The quantity of cyclic, branched, or linear completely methylated siloxanes shall be analyzed by the Manual of Procedures, Volume III, Laboratory Method 43: "Determination of Volatile

Methylsiloxanes in Solvent-Based Coatings, Inks, and Related Materials,” (see Section 8-3-261, Volatile Organic Compounds).

- 606.9 Exempt Compounds – Parachlorobenzotrifluoride (PCBTF): The quantity of parachlorobenzotrifluoride shall be analyzed by the Manual of Procedures, Volume III, Laboratory Method 41, “Determination of Volatile Organic Compounds in Solvent-Based Coatings and Related Materials Containing Parachlorobenzotrifluoride (see Section 8-3-261, Volatile Organic Compound).
- 606.10 Exempt Compounds – Methyl Acetate: The quantity of methyl acetate shall be determined by ASTM Method D-6133-00: “Standard Test Method for Acetone, PCBTF, Methyl Acetate or t-Butyl Acetate Content of Solvent-Reducible and Water Reducible Paints, Coatings, Resins, and Raw Materials by Direct Injection Into a Gas Chromatograph.” (see Section 8-3-261, Volatile Organic Compound).

(Adopted November 21, 2001)

**REGULATION 8
ORGANIC COMPOUNDS
RULE 4
GENERAL SOLVENT AND SURFACE COATING OPERATIONS**

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**REGULATION 8
ORGANIC COMPOUNDS
RULE 4
GENERAL SOLVENT AND SURFACE COATING OPERATIONS**

8-4-100 GENERAL

8-4-101 Description: The purpose of this Rule is to limit emissions of volatile organic compounds from the use of solvents and surface coatings in any operation other than those specified by other Rules of this Regulation 8. The provisions of this Rule shall apply, but are not limited to, model making, printed circuit board manufacturing and assembly, electrical and electronic component manufacturing, surface coating of test panels, training facilities where the application of coating is for training purposes, stencil coatings, low usage coating activities exempt from other Regulation 8 Rules, coatings specifically exempt from other Regulation 8 Rules or solvent usage not specified by other Regulation 8 Rules.

(Amended 3/17/82; 5/15/96; 10/16/02)

8-4-110 Deleted May 15, 1996

8-4-111 Deleted December 5, 1990

8-4-112 Deleted May 15, 1996

8-4-113 Exemption, Specified Operations: This Rule shall not apply to operations that are subject to the requirements of other Rules of this Regulation 8, or which comply with appropriate limitations of those Rules prior to their effective dates.

8-4-114 Exemption, Aerosol Cans: The provisions of this Rule shall not apply to surface coating operations using non-refillable aerosol containers. Such coating is subject to the provisions of Regulation 8, Rule 49 or to the California Air Resources Board aerosol coating product regulation found in Title 17 of the California Code of Regulations, beginning at Section 94520.

(Adopted 6/20/90; Amended 10/16/02)

8-4-115 Exemption, Film Cleaners: This rule shall not apply to film cleaning operations that use 1,1,1-trichloroethane exclusively.

(Adopted May 15, 1996)

8-4-116 Limited Exemption, Specific Surface Preparation and Cleaning Operations: The surface preparation standards in Section 8-4-313 shall not apply to (i) the surface preparation of electrical and electronic components, precision optics, or numismatic dies; (ii) stripping of cured inks, coatings and adhesives or cleaning of resin, coating, ink and adhesive mixing, molding and application equipment; or, (iii) surface preparation associated with research and development operations; medical device or pharmaceutical manufacturing operations; performance testing to determine coating, adhesive or ink performance; or testing for quality control or quality assurance purposes.

(Adopted October 16, 2002)

8-4-117 Limited Exemption, Operations Subject to Specific Rules: The surface preparation standards in Section 8-4-313 shall not apply to surface preparation of material subject to the following Regulation 8 surface coating rules or made subject to Rule 4 by specific exemption or reference in any of the following rules:

- 117.1 Rule 3: Architectural Coating
- 117.2 Rule 11: Metal Container, Closure and Coil Coating
- 117.3 Rule 12: Paper, Fabric and Film Coating
- 117.4 Rule 13: Light and Medium Duty Motor Vehicle Assembly Plants
- 117.5 Rule 14: Surface Coating of Metal Furniture and Large Appliances
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- 117.17 Rule 45: Motor Vehicle and Mobile Equipment Coating Operations
- 117.18 Rule 50: Polyester Resin Operations

(Adopted October 16, 2002)

8-4-118 Limited Exemption, Production Machinery: Until June 1, 2004, moving and working surfaces of machinery used for product development and in production are not required to comply with the surface preparation standards in Section 8-4-313.

(Adopted October 16, 2002)

8-4-200 DEFINITIONS

8-4-201 Deleted May 15, 1996

8-4-202 Deleted May 15, 1996

8-4-203 Deleted May 15, 1996

8-4-204 Deleted May 15, 1996

8-4-205 Deleted May 15, 1996

8-4-206 Organic Solvents: Organic liquids which are used as diluents, thinners, dissolvers, viscosity reducers, cleaning agents, or for other similar uses, but does not include those used as fuel, antiseptics or anesthetics.

(Renumbered March 17, 1982)

8-4-207 Surface Coating: Any paint, lacquer, varnish, ink, adhesive or similar material.

(Renumbered March 17, 1982)

8-4-208 Deleted May 15, 1996

8-4-209 Deleted May 15, 1996

8-4-209 Deleted May 15, 1996

8-4-210 Deleted May 15, 1996

8-4-211 Key System Operating Parameter: An air pollution abatement equipment operating parameter, such as temperature, flow rate or pressure, that indicates operation of the abatement equipment within manufacturer specifications, and compliance with the standards of this regulation.

(Adopted 6/1/94; Amended 5/15/96)

8-4-212 Solvent Cleaning Operation: The removal of uncured adhesives, inks, coatings, and contaminants including: dirt, soil, and grease from parts, products, tools, machinery, equipment, and general work areas.

(Adopted May 15, 1996)

8-4-213 Source: Any article, machine, equipment, operation, contrivance or related groupings of such which may produce and/or emit air pollutants as specified by the permit to operate.

(Adopted May 15, 1996)

8-4-214 Volatile Organic Compound (VOC): Any organic compound of carbon (excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate) which would be emitted during use of a solvent or other material.

214.1 For purposes of calculating VOC content of a coating, any water or any of the following non-precursor organic compounds:

- acetone
 - methyl acetate
 - parachlorobenzotrifluoride (PCBTF)
 - cyclic, branched or linear, completely methylated siloxanes (VMS)
- shall not be considered part of the coating.

214.2 For the purposes of calculating the VOC content of cleanup and surface preparation solvent, any water or the non-precursor organic compounds listed in subsection 8-4-214.1, above, shall be considered part of the volume of the solvent but shall not be considered part of the VOC content of the solvent.

(Adopted 5/15/96; Amended 10/16/02)

- 8-4-215 Printed Circuit Board Manufacturing and Assembly:** A printed circuit board is an electronic component designed for interconnecting other electronic components. It consists of a deposited conductive material on an insulating surface. When additional components are added to the printed circuit board, it is known as an assembly.
(Adopted May 15, 1996)
- 8-4-216 Test Panel:** A panel used to evaluate coating performance.
(Adopted May 15, 1996)
- 8-4-217 Training Facility:** Any facility which applies coatings for training purposes without receiving compensation for the coating application.
(Adopted May 15, 1996)
- 8-4-218 Stencil Coatings:** Coatings that are applied by template in order to add designs, letters and/or numbers to the products.
(Adopted May 15, 1996)
- 8-4-219 Model Making:** A prototype or product design that is used as a pattern.
(Adopted May 15, 1996)
- 8-4-220 Surface Preparation:** The cleaning of surfaces prior to coating, further treatment, sale, or intended use. Solvent cleaning operations subject to and in compliance with Regulation 8, Rule 16: Solvent Cleaning Operations, are not subject to this Rule.
(Adopted October 16, 2002)
- 8-4-221 Approved Emission Control System:** A system for reducing emissions to the atmosphere, consisting of an abatement device and a collection system, which achieves the abatement efficiency specified in the applicable standards at all times during the operation and meets the requirements of Regulation 2, Rule 1.
(Adopted October 16, 2002)
- 8-4-222 Electrical and Electronic Components:** Components and assemblies of components that generate, convert, transmit, or modify electrical energy. Electrical and electronic components include, but are not limited to, wires, windings, stators, rotors, magnets, contacts, relays, printed circuit boards, printed wire assemblies, wiring boards, integrated circuits, resistors, capacitors and transistors. Cabinets in which electrical and electronic components are housed are not considered electrical and electronic components.
(Adopted October 16, 2002)
- 8-4-223 Precision Optics:** The optical elements used in electro-optical devices that are designed to sense, detect, or transmit light energy, including specific wavelengths of light energy and changes of light energy levels.
(Adopted October 16, 2002)
- 8-4-224 Medical Device:** An instrument, apparatus, implement, machine, contrivance, implant, in vitro reagent or other similar article, including any component or accessory that is, (i) intended for use in the diagnosis of disease or other conditions, or in the cure, mitigation, treatment, or prevention of diseases, or (ii) is intended to affect the structure or any function of the body, or (iii) is defined in the National Formulary or the United States Pharmacopoeia or any supplement to it.
(Adopted October 16, 2002)
- 8-4-225 Medical Device and Pharmaceutical Manufacturing Operations:** Medical devices; pharmaceutical products; and associated manufacturing and product handling equipment and material, work surfaces, maintenance tools and room surfaces that are subject to US FDA current Good Manufacturing/Laboratory Practice, or CDC/NIH guidelines for biological disinfection of surfaces.
(Adopted October 16, 2002)
- 8-4-226: Pharmaceutical Products:** A preparation or compound, which includes any drug, analgesic, decongestant, antihistamine, cough suppressant, vitamin, mineral or herb supplement intended for human or animal consumption and used to cure, mitigate or treat disease or improve or enhance health.
(Adopted October 16, 2002)
- 8-4-300 STANDARDS**
- 8-4-301 Deleted May 15, 1996**

- 8-4-302 Solvents and Surface Coating Requirements:** A person shall not use solvents or apply surface coatings unless one or more of the following requirements are satisfied:
- 302.1 A person shall not emit more than 4,533 kg (5 tons) of volatile organic compounds (VOC) from any source during any calendar year; or
 - 302.2 Emissions are controlled by an approved emission control system with an overall abatement efficiency of 85% on a mass basis. If reduction is achieved by incineration, at least 90% by weight of the organic compound emissions shall be oxidized to carbon dioxide; or
 - 302.3 The coating operation uses a coating with a VOC content less than or equal to 420 grams per liter (3.5 lb/gal) of coating as applied.

(Amended 3/17/82; 6/1/94; 5/15/96; 10/16/02)

8-4-303 Deleted June 1, 1994

8-4-304 Deleted May 15, 1996

8-4-310 Deleted May 15, 1996

8-4-311 Deleted May 15, 1996

8-4-312 Solvent Evaporative Loss Minimization: Unless emissions to the atmosphere are controlled by an approved emission control system with an overall abatement efficiency of at least 85%, any person using organic solvent for surface preparation and cleanup or any person mixing, using or disposing of organic solvent:

- 312.1 Shall use closed containers for the storage or disposal of cloth or paper used for solvent surface preparation and cleanup.
- 312.2 Shall not use organic solvent for the cleanup of spray equipment, including paint lines, with a VOC content in excess of 50 g/l (0.42 lb/gal) unless either, (i) solvent is pressurized through spray equipment with atomizing air off or dispensed from a small non-atomizing container, and collected and stored in a closed container until recycled or properly disposed of offsite, or (ii) a spray gun washer subject to and in compliance with the requirements of Regulation 8, Rule 16 is used.
- 312.3 Shall close containers of solvent or coating when not in use.

(Adopted 5/15/96; Amended 10/16/02)

8-4-313 Surface Preparation Standards: Effective June 1, 2003, no person shall use a solvent with a VOC content that exceeds 50 g/l (0.42 lbs/gal), as applied, for surface preparation in any operation subject to this Rule unless emissions to the atmosphere are controlled to an equivalent level by an approved emission control system with an overall abatement efficiency of at least 85 percent.

(Adopted October 16, 2002)

8-4-500 MONITORING AND RECORDS

8-4-501 Recordkeeping Requirements: Any person using coatings or solvents subject to this Rule shall:

- 501.1 Maintain a current list of coatings and solvents in use that provide all of the data necessary to evaluate compliance, such as VOC content and mix ratios of coatings, catalysts and reducers and density and VOC content of solvent.
- 501.2 Record on an annual basis the quantity of coating applied.
- 501.3 Record the air pollution abatement equipment key system operating parameters on a daily basis.
- 501.4 Record, on a monthly basis, coating usage for coatings subject to subsection 8-4-302.3 and solvents used for surface preparation and clean up.
- 501.5 Records shall be retained and available for inspection by the APCO for the previous 24 -month period.

(Adopted 6/1/94; Amended 5/15/96; 10/16/02)

8-4-502 Burden of Proof: The burden of proof of eligibility for exemption pursuant to Section 8-4-115 is on the applicant. Persons seeking an exemption shall maintain adequate records and furnish them to the APCO upon request.

(Adopted May 15, 1996)

8-4-600 MANUAL OF PROCEDURES

8-4-601 Deleted June 1, 1994

8-4-602 Determination of Emissions: Emissions of volatile organic compounds as specified in Section 8-4-302, 312 and/or 313 shall be measured as prescribed by any of the following methods 1) BAAQMD Manual of Procedures, Volume IV, ST-7, 2) EPA Method 25 or 25A. A source shall be considered in violation if the VOC emissions measured by any of the referenced test methods exceed the standards of this rule. Emissions resulting from the drying of products for the first 12 hours after their removal from any operation, and emissions from clean-up solvent, shall be included when determining compliance with this Rule.

(Amended 3/17/82; 6/1/94; 5/15/96; 10/16/02)

8-4-603 Analysis of Samples: Samples of volatile organic compounds as specified in Section 8-4-302 shall be analyzed as prescribed in the Manual of Procedures, Volume III, Method 21 or 22. Samples of volatile organic compounds as specified in Section 8-4-312 and/or 313 shall be analyzed as prescribed in the Manual of Procedures, Volume III, Method 31 for the determination of VOC.

(Adopted 6/1/94; Amended 5/15/96; 10/16/02)

8-4-604 Analysis of Exempt Compounds: Samples of PCBTF, VMS, and methyl acetate shall be analyzed by the Manual of Procedures, Volume III, Method 41, 43 and by ASTM Method D-6133-00, respectively.

(Adopted October 16, 2002)

**REGULATION 8
ORGANIC COMPOUNDS
RULE 5
STORAGE OF ORGANIC LIQUIDS**

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REGULATION 8
ORGANIC COMPOUNDS
RULE 5
STORAGE OF ORGANIC LIQUIDS

(Adopted January 1, 1978)

8-5-100 GENERAL

8-5-101 Description: The purpose of this Rule is to limit emissions of organic compounds from storage tanks.

Note: New storage tanks may also be subject to Regulation 10 and storage tanks located at bulk plants may also be subject to the requirements of Regulation 8, Rule 6 or Rule 33.

(Amended 9/4/85; 5/4/88; 1/20/93)

8-5-110 Exemptions: This Rule does not apply to emissions from the following sources:

- 110.1 Storage tanks having a capacity of less than 1.0 m³ (264 gal).
- 110.2 Any storage tank installed prior to January 4, 1967, which is not used for storage of gasoline to be dispensed to internal combustion engine fuel tanks, and is either of a capacity of less than 7.6 m³ (2,008 gal), or an underground tank with an offset fill line.
- 110.3 Any above ground gasoline tank of 7.6 m³ (2,008 gal) or less capacity installed and in service prior to January 9, 1976, and equipped with a submerged fill pipe.

(Amended 5/4/88; 1/20/93; 11/27/02)

8-5-111 Limited Exemption, Tank Removal From and Return to Service: The requirements of Sections 8-5-304, 305, 306, 307 and 320 shall not apply to storage tanks during or after tank decommissioning, and shall not apply during temporary removal from service provided that the following is accomplished:

- 111.1 The operator provides notice to the APCO. This notification shall identify the specific requirement for which an exemption is necessary and explain how the planned or performed activities necessarily prevent compliance with those requirements. The notification requirement may be satisfied in any one of the following ways:
 - 1.1 Three days prior to such work being done, written notice is received by the APCO;
 - 1.2 Telephone notification is made to the APCO prior to such work being done, and written notice is received by the APCO within three days after such work has been done.
- 111.2 The tank is in compliance prior to notification. The written notice shall contain a statement that, to the best knowledge of the person providing notification, the tank is in compliance, and the basis for that knowledge.
- 111.3 When the floating roof is resting on the leg supports, the process of filling, emptying, and refilling shall be continuous and shall be accomplished as rapidly as possible.
- 111.4 Vapor recovery shall be used on tanks so equipped during filling and emptying procedures.
- 111.5 Emissions shall be minimized during the period of exemption. As much product as possible shall be drained before any hatches are opened, and tank degassing equipment and an associated approved emission control system shall be connected and operating as soon as possible.
- 111.6 Written notice is not required when returning a tank to service after the above listed work has been completed.
- 111.7 The requirements of Section 8-5-328 are satisfied.

(Amended 1/20/93; 12/15/99; 11/27/02)

8-5-112 Limited Exemption, Tanks in Operation: The requirements of Sections 8-5-304, 305, 306, 307 and 8-5-320 shall not apply to storage tanks during preventative maintenance of a vapor control device, tank roof, roof fitting or tank seal; during primary seal inspection; or during removal and installation of a secondary seal if the following is accomplished:

- 112.1 The operator shall provide notification to the APCO. This notification shall identify the affected tank and the specific requirement for which an exemption is necessary, shall explain how the planned or performed activities necessarily prevent compliance with those requirements, and shall describe the measures to be taken to minimize emissions. For secondary seal installations, the type of installed seal shall be specified. The notification requirement may be satisfied as follows:
- 1.1 Three days prior to such work being done, written notice is received by the APCO; or
 - 1.2 Except for secondary seal replacements, which are subject to subsection 8-5-112.1.1, telephone notification is made to the APCO prior to such work being done, and written notice is received by the APCO within three days after such work has been done.
- 112.2 The tank is in compliance with all District Regulations prior to the commencement of the work and is certified in accordance with Section 8-5-404.
- 112.3 Product shall be moved neither in nor out of the storage tank and emissions shall be minimized.
- 112.4 The time of exemption allowed under this Section does not exceed 7 days.

(Adopted 9/4/85; Amended 5/4/88; 1/20/93; 12/15/99; 11/27/02)

8-5-113 Deleted May 4, 1988

8-5-114 Deleted May 4, 1988

8-5-115 Deleted May 4, 1988

8-5-116 Exemption, Gasoline Storage Tanks at Gasoline Dispensing Facilities: The provisions of this Rule shall not apply to any underground gasoline storage tank located at a gasoline dispensing facility subject to the requirements of Regulation 8, Rule 7.

(Adopted January 20, 1993)

8-5-117 Exemption, Low Vapor Pressure: The provisions of this Rule, except for Section 8-5-307, shall not apply to tanks storing organic liquids with a true vapor pressure of less than or equal to 25.8 mm Hg (0.5 psia) as determined by Sections 8-5-602 or 604.

(Adopted 1/20/93; Amended 11/27/02)

8-5-200 DEFINITIONS

8-5-201 Abatement Efficiency: A comparison of controlled emissions to those emissions which would occur from a fixed or cone roof tank in the same product service without an approved emission control system, expressed as a percentage. Baseline emissions shall be calculated using the criteria in API Bulletin 2518.

(Amended 1/20/93; 11/27/02)

8-5-202 Storage Tank: Any container, reservoir, or tank used for the storage of organic liquids, excluding tanks which are permanently affixed to mobile vehicles such as railroad tank cars, tanker trucks or ocean vessels.

(Adopted 9/4/85; Amended 11/27/02)

8-5-203 Deleted November 27, 2002

8-5-204 Organic Liquid: Any organic compound that exists as a liquid at actual conditions of use or storage.

(Adopted 9/4/85; Amended 1/20/93)

8-5-205 Gasoline: Petroleum distillates used as motor fuel with a Reid vapor pressure greater than 4.0 psia.

(Adopted 9/4/85; Amended 5/4/88)

8-5-206 Gas Tight: A concentration of organic compounds, measured 1 cm or less from any source, of less than 100 ppm (expressed as methane) above background, for any point or item, except for pressure vacuum valves and atmospheric pressure relief devices; and less than 500 ppm (expressed as methane) above background, for pressure vacuum valves and atmospheric pressure relief devices only.

(Adopted 5/4/88; Amended 1/20/93; 11/27/02)

8-5-207 Approved Emission Control System: A system for reducing emissions to the atmosphere that consists of a collection system and an abatement device, which is

approved in writing by the APCO and achieves the overall abatement efficiency specified in the applicable standards section.

(Adopted 1/20/93; Amended 11/27/02)

- 8-5-208 Degassing:** The process of removing organic gases from a tank.
(Adopted January 20, 1993)
- 8-5-209 External Floating Roof Tank:** An open top tank with a storage vessel cover consisting of a double deck or pontoon single deck which rests upon and is supported by the liquid being contained.
(Adopted January 20, 1993)
- 8-5-210 Internal Floating Roof Tank:** A tank with a floating cover or roof which rests upon or is floated upon the liquid being contained, and which also has a fixed roof on top of the tank shell to shield the floating roof from wind, rain and other elements. An external floating roof tank which is retrofitted with a geodesic dome or other fixed roof shall be considered to be an internal floating roof tank for the purposes of this rule.
(Adopted 1/20/93; Amended 11/27/02)
- 8-5-211 True Vapor Pressure:** The vapor pressure of a liquid at storage temperature.
(Adopted 1/20/93; Amended 11/27/02)
- 8-5-212 Organic Compound:** Any compound of carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate.
(Adopted January 20, 1993)
- 8-5-213 Viewport:** An accessible opening in the fixed roof of an internal floating roof tank that measures at least 0.75 meters (30 inches) on each side or at least 0.75 meters (30 inches) in diameter.
(Adopted January 20, 1993)
- 8-5-214 Gauge Float:** A device to indicate the level of liquid within a tank. The float rests on the liquid surface inside a well in the tank.
(Adopted December 15, 1999)
- 8-5-215 Guidepole:** An anti-rotation device that is fixed to the top and bottom of a tank, passing through a well in a floating roof. Guidepoles may be solid or be equipped with slots or holes for gauging purposes.
(Adopted December 15, 1999)
- 8-5-216 Zero Gap Pole Wiper Seal:** A seal with no gap exceeding 0.06 inches between the guidepole or gauge well and pole wiper seal.
(Adopted December 15, 1999)
- 8-5-217 Decommissioning:** The removal of all organic liquid and gases from a storage tank with the intent of no longer using the tank for storage of organic liquids or gases.
(Adopted November 27, 2002)
- 8-5-218 Stock Change:** The removal of organic liquids from a tank prior to refilling the tank with a different organic liquid.
(Adopted November 27, 2002)
- 8-5-219 Tank Cleaning:** The process of washing or rinsing the interior of a storage tank, or removing sludge, or rinsing liquid from a storage tank.
(Adopted November 27, 2002)
- 8-5-220 Temporary Removal From Service:** The removal of organic liquid from a storage tank for tank cleaning, stock change, tank repair, roof repair, or removal of contaminated stock, followed by return to service.
(Adopted November 27, 2002)
- 8-5-221 Liquid Balancing:** The process of reducing the vapor pressure of the contents of a tank by adding lower-vapor pressure liquid without breaking tank vacuum, and, for floating roof tanks, without landing the floating roof on its supports.
(Adopted November 27, 2002)

8-5-300 STANDARDS

- 8-5-301 Storage Tanks Control Requirements:** A person shall not store organic liquid in any storage tank unless such tank is equipped with a vapor loss control device that is specified by the table below for the tank capacity, or for a higher capacity, and for the true vapor pressure of the tank organic liquid contents, or for a higher true vapor pressure.

Tank Capacity	True Vapor Pressure of Tank Organic Contents		
	>0.5 to ≤1.5 psia	>1.5 to <11 psia	≥ 11 psia
≥1.0 m ³ to ≤37.5 m ³ (≥264 gallons to ≤9,906 gallons), aboveground only	Submerged fill pipe, internal floating roof, external floating roof, or approved emission control system	Pressure vacuum valve, internal floating roof, external floating roof, or approved emission control system	Pressure tank or approved emission control system
>37.5 m ³ to <75 m ³ (>9,906 gallons to <19,803 gallons), aboveground only	Submerged fill pipe, internal floating roof, external floating roof, or approved emission control system	Pressure vacuum valve, internal floating roof, external floating roof, or approved emission control system	Pressure tank or approved emission control system
≥75 m ³ to <150 m ³ (≥19,803 gallons to <39,626 gallons)	Submerged fill pipe, internal floating roof, external floating roof, or approved emission control system	Internal floating roof, external floating roof, or approved emission control system	Pressure tank or approved emission control system
≥150 m ³ (≥39,626 gallons)	Internal floating roof, external floating roof, or approved emission control system	Internal floating roof, external floating roof, or approved emission control system	Pressure tank or approved emission control system

(Amended, Renumbered 9/4/85; Amended 5/4/88; 1/20/93; 12/15/99; Amended, Renumbered 11/27/02)

8-5-302 Requirements for Submerged Fill Pipes: A submerged fill pipe must meet either of the following requirements:

- 302.1 Where the tank is filled from the top, the end of the discharge pipe or nozzle must be totally submerged when the liquid level is 15 cm (6 in.) from the bottom of the tank.
- 302.2 Where the tank is filled from the side, the discharge pipe or nozzle must be totally submerged when the liquid level is 46 cm (18 in.) from the bottom of the tank.

(Adopted 9/4/85; Amended, Renumbered 11/27/02)

8-5-303 Requirements for Pressure Vacuum Valves: A pressure vacuum valve must meet the following requirements:

- 303.1 The pressure vacuum valve must be set to either a pressure within 10% of the maximum allowable working pressure of the tank, or at least 25.8 mm Hg (0.5 psig) pressure.
- 303.2 The pressure vacuum valve must be properly installed, properly maintained, and in good operating order, and must remain in a gas tight condition except when operating pressure exceeds the valve set pressure.

(Amended 9/4/85; 5/4/88; 1/20/93; Amended, Renumbered, 11/27/02)

8-5-304 Requirements for External Floating Roofs: An external floating roof must meet the following requirements:

- 304.1 The floating roof fittings must meet the requirements of Section 8-5-320.
- 304.2 The floating roof must be equipped with a primary seal that meets the requirements of Section 8-5-321.
- 304.3 The floating roof must be equipped with a secondary seal that meets the requirements of Section 8-5-322.
- 304.4 The floating roof must rest on the surface of the liquid tank contents, must be properly installed and maintained, and must be in good operating condition. There shall be no liquid tank contents on top of either the primary or secondary seal, or on top of the floating roof (this requirement does not apply to liquid which clings to the inside tank walls as the tank is drained, or to liquid which drips from the tank walls onto the seals).

(Amended, Renumbered 9/4/85; Amended 5/4/88; 1/20/93; Amended, Renumbered 11/27/02)

- 8-5-305 Requirements for Internal Floating Roofs:** An internal floating roof must meet the following requirements:
- 305.1 For a tank with seals installed on or before February 1, 1993, the tank must be equipped with one of the following:
- 1.1 A liquid mounted primary seal, mounted in full contact with the liquid in the annular space between the tank shell and floating roof,
 - 1.2 A metallic shoe primary seal, or
 - 1.3 A vapor mounted primary and a secondary seal
- If sections of seal with a total length equal to or greater than the diameter of the tank are replaced at one time, or if sections of seal with a total cumulative length equal to or greater than 50% of the total seal circumference are replaced over time, then the seal shall be considered to be newly installed and subject to subsection 8-5-305.2.
- 305.2 For a tank with seals installed after February 1, 1993, the tank must be equipped with a liquid mounted or metallic shoe primary seal that meets the requirements of Section 8-5-321 and a secondary seal that meets the requirements of Section 8-5-322.
- 305.3 Internal floating roof tanks which are placed into service or de-gassed after February 1, 1993 shall be equipped with at least 3 viewing ports in the fixed roof of the tank. This requirement shall not apply to external floating roof tanks retrofitted with domes or other fixed roofs after February 1, 1993, as long as the dome consists of translucent panels through which sufficient light passes to allow inspection of the floating roof seal.
- 305.4 The floating roof fittings must meet the requirements of Section 8-5-320.
- 305.5 The floating roof must rest on the surface of the liquid tank contents, must be properly installed and maintained, and must be in good operating condition. There shall be no liquid tank contents on top of either the primary or secondary seal, or on top of the floating roof (this requirement does not apply to liquid which clings to the inside tank walls as the tank is drained, or to liquid which drips from the tank walls onto the seals).
- (Amended, Renumbered 9/4/85; Amended 5/4/88; 1/20/93; Amended, Renumbered 11/27/02)*
- 8-5-306 Requirements for Approved Emission Control Systems:** An Approved Emission Control System must be gas tight. It must also provide an abatement efficiency of at least 95% by weight, except as allowed by subsection 8-5-328.1.2.
- (Amended 1/20/93; Amended, Renumbered 11/27/02)*
- 8-5-307 Requirements for Pressure Tanks and Blanketed Tanks:** A pressure tank must be maintained in a gas tight condition and must maintain working pressures sufficient at all times to prevent organic vapor or gas loss to the atmosphere. Effective July 1, 2003, tanks blanketed with organic gases other than natural gas shall be maintained in a gas tight condition.
- (Adopted 9/4/85; Amended 5/4/88; 1/20/93; Amended, Renumbered 11/27/02)*
- 8-5-310 Deleted May 4, 1988**
- 8-5-311 Deleted November 27, 2002**
- 8-5-312 Deleted January 20, 1993**
- 8-5-313 Deleted January 20, 1993**
- 8-5-314 Deleted January 20, 1993**
- 8-5-320 Tank Fitting Requirements:** The fittings on any floating roof storage tank subject to Section 8-5-304 or 305 shall meet the following conditions:
- 320.1 Deleted November 27, 2002.
- 320.2 All openings through the floating roof, except pressure-vacuum valves and vacuum breaker vents, shall provide a projection below the liquid surface to prevent belching of liquid and reduce escaping organic vapors.
- 320.3 All openings through the floating roof, except floating roof legs, shall be equipped with a gasketed cover, seal or lid, which shall at all times be in a closed position and shall meet either of the following requirements, as applicable, except as provided in subsections 8-5-320.4, 320.5 or 320.6.
- 3.1 The gasketed cover, seal or lid shall have no measurable gap exceeding 0.32 cm (1/8 in.), except when the opening is in use.

- 3.2 For inaccessible openings on internal floating roof tanks, there shall be no visible gaps as viewed from the fixed roof manway or viewports, except when the opening is in use.
- 320.4 Solid sampling or gauging wells, and similar fixed projections through a floating roof such as an anti-rotational pipe, shall meet the following conditions:
 - 4.1 The well shall provide a projection below the liquid surface.
 - 4.2 The well shall be equipped with a cover, seal or lid, which shall at all times be in a closed position with no gap exceeding 0.32 cm (1/8 in.), except when the well is in use.
 - 4.3 The gap between the well and the roof shall be added to the gaps measured to determine compliance of the secondary seal and in no case shall exceed 1.3 cm (1/2 in.).
- 320.5 Slotted sampling or gauging wells, and similar fixed projections through a floating roof such as an anti-rotational pipe, shall meet the following conditions:
 - 5.1 The well shall provide a projection below the liquid surface.
 - 5.2 The well shall be equipped with the following: a sliding cover, a cover gasket, a pole sleeve, pole wiper and an internal float and float wiper designed to minimize the gap between the float and the well, provided that the gap shall in no case exceed 1/2 in., or shall be equipped with a well gasket, a zero gap pole wiper seal and a pole sleeve that projects below the liquid surface.
 - 5.3 The gap between the well and the roof shall be added to the gaps measured to determine compliance of the secondary seal and in no case shall exceed 1.3 cm (1/2 in.).
- 320.6 Any emergency roof drain shall be provided with a slotted membrane fabric cover, or equivalent, that covers at least 90% of the area of the opening.

(Amended 9/4/85; 5/4/88; 1/20/93; 12/15/99; 11/27/02)

8-5-321 Primary Seal Requirements: A person shall not operate a storage tank equipped with a primary seal subject to the requirements of Section 8-5-304 or 305 unless such tank meets the following conditions:

- 321.1 There shall be no holes, tears, or other openings in the primary seal fabric which allow the emission of organic vapors.
- 321.2 The seal shall be either a metallic shoe or a liquid mounted type, except as provided in subsection 8-5-305.1.3.
- 321.3 Metallic-shoe-type seals shall be installed so that one end of the shoe extends into the stored liquid and the other end extends a minimum vertical distance of 61 cm (24 in.) for external floating roofs and 18 inches for internal floating roofs above the stored liquid surface.
 - 3.1 The geometry of the shoe shall be such that the maximum gap between the shoe and the tank shell is no greater than double the gap allowed by the seal gap criteria for a length of at least 46 cm (18 in.) in the vertical plane above the liquid surface.
 - 3.2 For welded tanks, no gap between the tank shell and the primary seal shall exceed 3.8 cm (1-1/2 in.). No continuous gap greater than 0.32 cm (1/8 in.) shall exceed 10% of the circumference of the tank. The cumulative length of all primary seal gaps exceeding 1.3 cm (1/2 in.) shall be not more than 10% of the circumference, and the cumulative length of all primary seal gaps exceeding 0.32 cm (1/8 in.) shall be not more than 40% of the circumference.
 - 3.3 For riveted tanks, no gap between the tank shell and the primary seal shall exceed 6.4 cm (2-1/2 in.). The cumulative length of all primary seal gaps exceeding 3.8 cm (1-1/2 in.) shall be not more than 10% of the circumference.
- 321.4 For resilient-toroid-seal equipped tanks, no gap between the tank shell and the primary seal shall exceed 1.3 cm (1/2 in.). The cumulative length of all gaps exceeding 0.32 cm (1/8 in.) shall be not more than 5% of the circumference.

(Amended 1/20/93; 12/15/99; 11/27/02)

- 8-5-322 Secondary Seal Requirements:** A person shall not operate a storage tank equipped with a secondary seal subject to the requirements of Sections 8-5-304 or 305, unless such tank meets the following conditions:
- 322.1 There shall be no holes, tears, or other openings in the secondary seal fabric which allow the emission of organic vapors.
 - 322.2 The secondary seal shall allow easy insertion of probes up to 3.8 cm (1-1/2 in.) in width in order to measure gaps in the primary seal.
 - 322.3 No gap between the tank shell and the secondary seal shall exceed 1.3 cm (1/2 in.). The cumulative length of all secondary seal gaps exceeding 0.32 cm (1/8 in.) shall be not more than 5% of the circumference of the tank.
 - 322.4 For riveted tanks, the secondary seal shall consist of at least two sealing surfaces, such that the sealing surfaces prevent the emission of organic compounds around the rivets. Serrated sealing surfaces are allowable if the length of serration does not exceed 15.2 cm (6 in.).
 - 322.5 For welded external floating roof tanks with seals installed after September 4, 1985 or welded internal floating roof tanks with seals installed after February 1, 1993, no gap between the tank shell and the secondary seal shall exceed 1.5 mm (0.06 in.). The cumulative length of all secondary seal gaps exceeding 0.5 mm (0.02 in.) shall be not more than 5% of the circumference of the tank excluding gaps less than 5 cm (1.79 in.) from vertical weld seams. If sections of seal with a total length equal to or greater than the diameter of the tank are replaced at one time, or if sections of seal with a total cumulative length equal to or greater than 50% of the total seal circumference are replaced over time, then the seal shall be considered to be newly installed for the purpose of this section.
 - 322.6 The secondary seal shall extend from the roof to the tank shell and shall not be attached to the primary seal.

(Amended 1/20/93; 11/27/02)

8-5-323 Deleted January 20, 1993

8-5-324 Deleted January 20, 1993

8-5-325 Deleted January 20, 1993

8-5-326 Deleted May 4, 1988

8-5-327 Deleted May 4, 1988

8-5-328 Tank Degassing Requirements:

- 328.1 For tanks larger than 75 m³, the emissions of organic compounds resulting from degassing shall be controlled by one of the following methods:
 - 1.1 Liquid Balancing in which the resulting organic liquid has a true vapor pressure less than 0.5 psia, or
 - 1.2 An Approved Emission Control System which collects and processes all organic vapors and gases and has an abatement efficiency of at least 90% by weight. The system shall be operated until the concentration of organic compounds in the tank is less than 10,000 ppm expressed as methane.
- 328.2 For all tanks subject to this rule, tank degassing shall not commence after the District predicts an excess of the Federal or State Ambient Air Quality Standard for ozone for the following day, unless emissions resulting from degassing are controlled by one of the methods in subsection 8-5-328.1.1 or 328.1.2.

(Adopted 1/20/93; Amended 11/27/02)

8-5-329 Deleted November 27, 2002

8-5-330 Deleted November 27, 2002

8-5-400 ADMINISTRATIVE REQUIREMENTS

8-5-401 Inspection Requirements for External Floating Roof Tanks: Tanks subject to the requirements of Section 8-5-304 shall be inspected by the operator as follows:

- 401.1 The entire circumference of each primary and secondary seal shall be inspected for compliance with the requirements of Sections 8-5-321 and 8-5-322 twice per calendar year at 4 to 8 month intervals. If a new primary or secondary seal is installed, or if a primary or secondary seal is repaired, both

seals shall be inspected at the time of the seal installation or repair. Flexible wiper seals shall be inspected when the outer edge of the seal is curved upward.

- 401.2 Tank fittings shall be inspected for compliance with the requirements of Section 8-5-320 twice per calendar year at 4 to 8 month intervals.

(Amended 1/20/93; Amended, Renumbered 11/27/02)

8-5-402 Inspection Requirements for Internal Floating Roof Tanks: Tanks subject to the requirements of Section 8-5-305 shall be inspected by the operator as follows:

402.1 The entire circumference of each primary and secondary seal shall be inspected for compliance with the requirements of Sections 8-5-321 and 8-5-322. The time between inspections shall not exceed 10 years. If a new primary or secondary seal is installed, or if a primary or secondary seal is repaired, both seals shall be inspected at the time of the seal installation or repair. Flexible wiper seals shall be inspected when the outer edge of the seal is curved upward.

402.2 The entire circumference of the outermost seal (secondary seal where so equipped, or primary seal where no secondary seal is required) shall be visually inspected for compliance with the requirements of subsections 8-5-305.1, 8-5-305.2, 8-5-305.3, 8-5-321.1 and 8-5-322.1 twice per calendar year at 4 to 8 month intervals. Flexible wiper seals shall be inspected when the outer edge of the seal is curved upward.

402.3 Tank fittings shall be inspected for compliance with the requirements of Section 8-5-320 twice per calendar year at 4 to 8 month intervals. Standards involving gap measurements shall be checked whenever the tank roof is accessible, but need not be checked more frequently than twice per calendar year.

(Amended 1/20/93; Amended, Renumbered 11/27/02)

8-5-403 Inspection Requirements for Pressure Vacuum Valves: Tanks subject to the requirements of Section 8-5-303 shall be inspected for compliance with the requirements of Section 8-5-303 twice per calendar year at 4 to 8 month intervals.

(Adopted November 27, 2002)

8-5-404 Certification: Within 60 days of any inspection or source test required in Section 8-5-401, 402, 403 or 502, a report shall be submitted which certifies compliance with each individual requirement of these Sections.

(Amended, Renumbered 9/4/85; Amended 5/4/88; 1/20/93; 11/27/02)

8-5-405 Information Required: All reports relating to seal condition and gap measurements shall include the following information:

405.1 Date of inspection.

405.2 Actual gap measurements between the tank shell and seals, both the primary seal and the secondary seal, shall be measured around the full circumference of the tank.

405.3 Data, supported by calculations, showing whether or not the requirements of Sections 8-5-320, 321 and 322 are being met.

(Amended, Renumbered 9/4/85; Amended 5/4/88; 1/20/93)

8-5-410 Deleted May 4, 1988

8-5-500 MONITORING AND RECORDS

8-5-501 Records:

501.1 A person whose tanks are subject to this rule shall keep an accurate record of the type and amount of liquids stored, type of blanket gases used, and the true vapor pressure ranges of such liquids and gases. Effective January 1, 2003, these records shall be kept for at least 24 months.

501.2 For internal and external floating roof tanks, a person who replaces all or part of a primary or secondary seal shall keep an accurate record of the length of seal replaced and the date(s) on which replacement occurred. Effective January 1, 2003, these records shall be kept for at least 10 years.

(Amended 1/20/93; 11/27/02)

8-5-502 Tank Degassing Annual Source Test Requirement: Any person operating an Approved Emission Control System to comply with the requirements of subsection 8-5-328.1.2 shall test the system as prescribed in subsection 8-5-603.2.

(Adopted 1/20/93; Amended 11/27/02)

8-5-503 Portable Hydrocarbon Detector: Any instrument used for the measurement of organic compounds as specified by Sections 8-5-303.2, 306 and 307 shall be a combustible gas indicator that meets the specifications and performance criteria of and has been calibrated in accordance with EPA Reference Method 21 (40 CFR 60, Appendix A).

(Adopted 1/20/93; Amended 11/27/02)

8-5-600 MANUAL OF PROCEDURES

8-5-601 Analysis of Samples, Reid Vapor Pressure: Samples of organic compounds as specified in this Rule shall be analyzed for Reid Vapor Pressure as prescribed in the Manual of Procedures, Volume III, Lab Method 13.

(Amended 9/4/85; 5/4/88)

8-5-602 Analysis of Samples, True Vapor Pressure: Samples of organic compounds not listed in Table I shall be analyzed for true Vapor Pressure at the tank storage temperature as prescribed in the Manual of Procedures, Volume III, Lab Method 28.

(Adopted 9/4/85; Amended 5/4/88)

8-5-603 Determination of Emissions: Emissions of organic compounds shall be determined as follows:

603.1 Emissions of organic compounds as specified in Section 8-5-306 shall be measured as prescribed in the Manual of Procedures, Volume IV, ST-4.

603.2 Emissions of organic compounds as specified in subsection 8-5-328.1.2 shall be measured as prescribed in the Manual of Procedures, Volume IV, ST-7.

(Renumbered 9/4/85; Amended 1/20/93; 11/27/02)

8-5-604 Determination of Applicability: Table I shall be used to determine if a storage tank is subject to the requirements of this rule. For organic compounds not listed in Table I, refer to Sections 8-5-601 or 602.

(Adopted 9/4/85; Amended 5/4/88; 1/20/93)

8-5-605 Pressure-Vacuum Valve Gas Tight Determination: Determination of organic compound leak concentrations as specified by Sections 8-5-303.2, 306 and 307 shall be conducted by EPA Reference Method 21 (40 CFR 60, Appendix A).

(Adopted 1/20/93; Amended 11/27/02)

TABLE I

STORAGE TEMPERATURE VERSUS TRUE VAPOR PRESSURE (TVP)

	Density (lb/gal)	Reference Gravity API	IBP °F	Max. Temp. °F Not to Exceed	
				0.5 Psia TVP	1.5 Psia TVP
Crude Oils:*					
San Joaquin Valley	-	-	390	249	-
Middle Distillates:					
Kerosene	-	42.5	350	195	250
Diesel	-	36.4	372	230	290
Gas Oil	-	26.2	390	249	310
Stove Oil	-	23	421	275	340
Jet Fuels:					
JP-1	-	43.1	330	165	230
JP-3	-	54.7	110	-	25
JP-4	-	51.5	150	20	68
JP-5	-	39.6	355	205	260
JP-7	-	44-50	360	205	260
Fuel Oil:					
No. 1	-	42.5	350	195	250
No. 2	-	36.4	372	230	290
No. 3	-	26.2	390	249	310
No. 4	-	23	421	275	340
No. 5	-	19.9	560	380	465
No. 6	-	16.2	625	450	-
Asphalts:					
60-100 pen.	-	-	-	490	550
120-150 pen.	-	-	-	450	500
200-300 pen.	-	-	-	360	420
Organic Compounds:					
Acetone	6.6	47	133	-	35
Acrylonitrile	6.8	41.8	173	30	62
Benzene	7.4	27.7	176	34	70
Carbon Disulfide	10.6	22.1	116	-	10
Carbon Tetrachloride	13.4	-	170	20	63
Chloroform	12.5	-	142	-	40
Cyclohexane	6.5	49.7	177	30	65
1,2 Dichloroethane	10.5	-	180	35	75
Ethyl Acetate	7.5	23.6	171	38	70
Ethyl Alcohol	6.6	47.0	173	55	85
Isopropyl Alcohol	6.6	47.0	181	62	95
Methyl Alcohol	6.6	47.0	148	30	62
Methyl Ethyl Ketone	6.7	44.3	175	30	70
Toluene	7.3	30	231	75	120
Vinylacetate	7.8	19.6	163	30	65

* True vapor pressure for crude oils should be determined from the specific crude slate.

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

REGULATION 8

ORGANIC COMPOUNDS

RULE 6

ORGANIC LIQUID BULK TERMINALS AND BULK PLANTS

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ORGANIC COMPOUNDS

RULE 6

ORGANIC LIQUID BULK TERMINALS AND BULK PLANTS

8-6-100 GENERAL

8-6-101 Description: The purpose of this rule is to limit emissions of organic compounds as defined in Section 8-6-207 from transfer operations at non-gasoline organic liquid bulk terminals and bulk plants. (Amended March 17, 1982; February 2, 1994)

8-6-110 Exemption, Low Vapor Pressure Organic Liquids: Until December 1, 1994, the requirements in this Rule shall not apply to loading or delivery of any organic liquid having a true vapor pressure less than 77.5 mmHg (1.5 psia). After December 1, 1994, the requirements of this Rule shall not apply to loading and delivery of any organic liquid having a true vapor pressure less than 25.8 mmHg (0.5 psia), as determined by the methods specified in Sections 8-6-603 or 604. (Amended February 2, 1994)

8-6-111 Exemption, Low Throughput: The vapor recovery requirements of subsection 8-6-302.1 do not apply when the total annual throughput of organic liquids with at least 77.5 mmHg (1.5 psia) true vapor pressure transferred into delivery vehicles only is less than 2,271 cubic meters (600,000 gallons) on a facility-wide basis. (Amended February 2, 1994)

8-6-112 Deleted February 2, 1994

8-6-113 Deleted February 2, 1994

8-6-114 Exemption, Maintenance and Repair: The requirements of Section 8-6-306 shall not apply to spills resulting from maintenance or repair operations provided proper operating practices are employed to minimize evaporation of organic compounds into the atmosphere.

8-6-115 Exemption, Bulk Gasoline Distribution Facilities: Gasoline bulk terminals and bulk plants are not subject to the requirements of this rule. Such facilities are subject to the provisions of Regulation 8, Rules 33 or 39. (Adopted November 30, 1983; Amended February 2, 1994)

8-6-116 Exemption, Small Transportable Containers: The requirements of subsection 8-6-302.2 shall not apply to loading organic liquids into any transportable container with a capacity less than 0.114 cubic meters (30 gallons). (Amended February 2, 1994)

8-6-117 Exemption, Liquefied Organic Gases: The requirements of this rule do not apply to transfer operations involving liquefied organic gases such as liquefied petroleum gas (LPG) and halogenated gases. (Amended February 2, 1994)

8-6-200 DEFINITIONS

8-6-201 Bulk Plant: Until December 1, 1994, any storage and distribution facility that receives organic liquid by pipeline, railcar, and/or delivery vehicle; stores it in stationary tanks; and/or mixes it in blending tanks; and/or loads it into delivery vehicles or transportable containers, for delivery to distributors, marketers or any product end user; and which has an annual throughput of not more than 22,710 cubic meters (6,000,000 gallons). After December 1, 1994, the annual throughput shall include organic liquids of at least 25.8 mmHg (0.5 psia) true vapor pressure. (Amended July 2, 1980; February 2, 1994)

8-6-202 Deleted February 2, 1994

8-6-203 Submerged Fill Pipes: Any discharge pipe, lance, or nozzle which meets either of the following conditions:

203.1 Where the vessel is filled from the top, the end of the discharge pipe or nozzle must be submerged when the liquid level is 15 centimeters (6 inches) from the bottom of the vessel. When the vessel is filled from the top with a retractable lance, the lance shall remain below the liquid surface during the transfer operation.

203.2 Where the vessel is filled from the side, the discharge pipe or nozzle must be totally submerged when the liquid level is 46 centimeters (18 inches) from the bottom of the vessel. (Renumbered March 17, 1982; Amended February 2, 1994)

8-6-204 Bulk Terminal: Until December 1, 1994, any storage and distribution facility that receives organic liquid; stores it in stationary tanks; and/or mixes it in blending tanks; and/or loads it into delivery vehicles and transportable containers, for delivery to distributors, marketers or any product end user; and which has an annual throughput of more than 22,710 cubic meters (6,000,000 gallons). After December 1, 1994, the annual throughput shall include organic liquids of at least 25.8 mmHg (0.5 psia) true vapor pressure. (Renumbered March 17, 1982; Amended February 2, 1994)

8-6-205 True Vapor Pressure: The pressure exerted when an organic liquid is in equilibrium with its own vapor at 25°C (77°F). For liquid mixtures, true vapor pressure is the sum of the equilibrium partial pressures exerted by all organic compounds in the liquid and can be estimated using Raoult's Law as follows:



Where:

W_i = Weight of the "i"th organic compound, in grams

W_w = Weight of water, in grams

MW_i = Molecular weight of the "i"th organic compound, in grams/gram-mole

MW_w = Molecular weight of water, in grams/gram-mole

P^* = True vapor pressure of liquid mixture at 25°C, in mmHg

VP_i = Vapor pressure of the "i"th organic compound at 25°C, in mmHg

For organic liquids and organic liquid mixtures to which heat is applied, the true vapor pressure shall be determined at 25°C (77°F) or the actual loading temperature, whichever is higher. (Renumbered March 17, 1982; Amended February 2, 1994)

8-6-206 Vapor Tight: A leak less than 100 percent of the Lower Explosive Limit on a portable hydrocarbon detector measured at a distance of 1 centimeter from the source. (Renumbered March 17, 1982; Amended February 2, 1994)

8-6-207 Organic Compound: Any compound of carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides of carbonates, and ammonium carbonate. (Adopted February 2, 1994)

8-6-208 Loading Equipment: Any combination of loading arms, pumps, flexible hosing, dispensing nozzles, meters, and other piping and valves necessary to fill delivery vehicles or transportable containers with organic liquids. (Adopted February 2, 1994)

8-6-209 Organic Liquid: Any organic compound or mixture of organic compounds that exists in the liquid phase at actual loading conditions. For the purposes of this rule, organic liquids shall not include coatings, adhesives and sealants. (Adopted February 2, 1994)

8-6-210 Transportable Containers: Any portable enclosed vessel such as a tote tank or cylindrical drum, which contains 550 gallons or less and is used to transport and distribute organic liquids. (Adopted February 2, 1994)

8-6-211 Leak Free: An organic liquid leak not exceeding three drops per minute excluding losses which occur upon disconnecting transfer fittings. Such disconnect losses shall not exceed 10 milliliters (ml) during a bottom loading operation or no more than two milliliters (ml) during a top loading operation, averaged over three disconnects. Adopted February 2, 1994)

8-6-212 Delivery Vehicle: Any motor truck or truck trailer equipped with a stationary cargo tank having a capacity more than 550 gallons and designed and built for the transportation of organic liquids. (Adopted February 2, 1994)

8-6-213 Switch Loading: For the purpose of this rule, switch loading refers to the transfer of organic liquids into a delivery vehicle cargo tank, which results in displacement of organic vapors remaining from a previous load. Adopted February 2, 1994)

8-6-214 Vapor Loss Control System: A system for reducing emissions to the atmosphere, consisting of an abatement device and a collection system, which achieves the abatement efficiency or emission limit specified in the applicable standard(s) during the transfer operation and meets the requirements of Regulation 2, Rule 1. Adopted February 2, 1994)

8-6-215 Liquefied Petroleum Gas: A compressed gas composed of one or more of the following flammable hydrocarbons (propane, n-butane, isobutane, propylene, and butylenes), which is used especially as a fuel or as raw material for chemical synthesis. (Adopted February 2, 1994)

8-6-216 Vapor Balance System: A piping system that is designed to collect organic vapors displaced from organic liquid transfer operations, and to route the collected vapors to the vessel from which the liquid being loaded originated. (Adopted February 2, 1994)

8-6-217 Throughput: The total volume of organic liquid transferred into delivery vehicles and transportable containers. The volume of water in an organic liquid/water mixture shall not be considered part of the facility throughput. (Adopted February 2, 1994)

8-6-300 STANDARDS

8-6-301 Bulk Terminal Limitations: A person shall not transfer or allow the transfer of organic liquids from bulk terminal loading equipment unless a vapor loss control system is properly connected and used. Such transfer operations shall not emit into the atmosphere more than 21 grams of organic compounds per cubic meter (0.17 pounds per 1,000 gallons) of organic liquid loaded. Switch loading shall be subject to this standard. (Amended March 17, 1982; February 2, 1994)

8-6-302 Bulk Plant Limitations: A person shall not load or allow the loading of any organic liquid from bulk plant loading equipment unless the following requirements are satisfied:

302.1 Vapor Recovery Requirement: Any emissions displaced while transferring an organic liquid with a

true vapor pressure of at least 77.5 mmHg (1.5 psia) into a delivery vehicle shall be controlled by a vapor balance system or a vapor loss control system, which is properly connected and used during loading. Emissions to atmosphere shall not exceed 44 grams of organic compounds per cubic meter (0.35 pounds per 1,000 gallons) of organic liquid loaded.

302.2 Submerged Fill Requirement: Except as provided in Section 8-6-116, either a submerged fill pipe, bottom filling, or a vapor loss control system shall be used when transferring an organic liquid into a delivery vehicle or transportable container. When a vapor loss control system is used, emissions to atmosphere shall not exceed 44 grams of organic compound per cubic meter (0.35 pounds per 1000 gallons) of organic compound loaded. (Amended July 2, 1980; February 2, 1984)

8-6-303 Deleted February 2, 1994

8-6-304 Deliveries to storage Tanks: A person shall not transfer or allow the transfer of any organic liquid with a true vapor pressure of at least 77.5 mmHg (1.5 psia) into any bulk terminal or bulk plant storage tank having a capacity between 7.6 and 150 cubic meters, (2,008 and 39,630 gallons) inclusive, unless a vapor balance system or vapor loss control system, has been properly installed on the storage tank and is properly connected during delivery. Emissions to atmosphere shall not exceed 21 grams of organic compounds per cubic meter (0.17 pounds per 1,000 gallons) of organic compound loaded. (Amended February 2, 1994)

8-6-305 Delivery Vehicle Requirements: Any delivery vehicle loaded at a terminal or bulk plant which is subject to the requirements of Sections 8-6-301 or 302.1 shall be equipped to allow proper connection to the vapor balance system or vapor loss control system required by the section and shall be maintained to be vapor tight, leak free, and in good working order. (Amended February 2, 1994)

8-6-306 Equipment Maintenance: All equipment associated with organic liquid delivery and loading operations shall be maintained to be vapor tight, leak free and in good working order. (Amended February 2, 1994)

8-6-307 Operating Practices: Any organic liquid subject to this Rule shall not be spilled, discarded in sewers, stored in open containers, or handled in any other manner that would result in evaporation to the atmosphere. (Amended February 2, 1994)

8-6-400 ADMINISTRATIVE REQUIREMENTS

8-6-401 Deleted February 2, 1994

8-6-402 Deleted February 2, 1994

8-6-403 Compliance Schedule: Any person who must install or modify equipment to comply with the requirements of Sections 301, 302 or 304 shall comply with the following increments of progress:

403.1 By June 1, 1994 submit a completed application to the APCO for an Authority to Construct.

403.2 After December 1, 1994 be in final compliance. (Adopted February 2, 1994)

8-6-500 MONITORING AND RECORDS

8-6-501 Records: After December 1, 1994, a person whose loading equipment is subject to this rule shall comply with the following requirements:

501.1 A person shall maintain a current record of the true vapor pressure of each organic liquid and organic liquid mixture.

501.2 A person shall maintain monthly records that provide the throughput (gallons) of each organic liquid and organic liquid mixture transferred into delivery vehicles and transportable containers with at least 25.8

mmHg (0.5 psia) true vapor pressure.

501.3 Such records shall be retained for the previous 24-month period and be available to the APCO upon request. (Adopted February 2, 1994)

8-6-502 Portable Hydrocarbon Detector: Any instrument used for the measurement of organic compounds shall meet the specifications and performance criteria, and shall be calibrated in accordance with EPA Reference Method 21 (40CFR60, Appendix A).(Adopted February 2, 1994)

8-6-503 Burden of Proof: The burden of proof of eligibility for exemption from the requirements of this rule is on the applicant. Persons seeking such an exemption shall maintain adequate records and furnish them to the APCO upon request.(Adopted February 2, 1994)

8-6-600 MANUAL OF PROCEDURES

8-6-601 Efficiency and Rate Determination: The means for determining compliance with Sections 8-6-301, 302, and 304 are set forth in the Manual of Procedures, Volume IV, ST-3 or ST-34. (Amended March 17, 1982; February 2, 1994)

8-6-602 Deleted February 2, 1994

8-6-603 Analysis of Samples, True Vapor Pressure: Samples of organic compounds as specified in Section 8-6-110 shall be analyzed for true vapor pressure at 25°C (77°F), as prescribed in the Manual of Procedures, Volume III, Method 28. For organic liquids and organic liquid mixtures to which heat is applied, the true vapor pressure shall be determined at 25°C (77°F) or the actual loading temperature, whichever is higher.(Adopted March 17, 1982; Amended February 2, 1994)

8-6-604 Determination of Applicability: Any of the following methods may be used to determine if an organic liquid is subject to the requirements of this rule based on its true vapor pressure:

604.1 EPA-450/3-87-026 (Exhibit A-2 in Appendix A or Appendix D), or

604.2 Standard reference texts, or

604.3 For liquid mixtures, use Raoult's Law of Partial Pressures as defined in Section 8-6-205 or ASTM Method D 2879-83. (Adopted February 2, 1994)

**REGULATION 8
ORGANIC COMPOUNDS
RULE 7
GASOLINE DISPENSING FACILITIES**

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**REGULATION 8
ORGANIC COMPOUNDS
RULE 7
GASOLINE DISPENSING FACILITIES**

8-7-100 GENERAL

8-7-101 Description: The purpose of this Rule is to limit emissions of organic compounds from gasoline dispensing facilities.

(Amended 3/17/82; 11/30/83; 10/17/90)

8-7-110 Exemptions

8-7-111 Phase I Exemptions: The following are exempt from Section 8-7-301:

111.1 Storage tanks with an actual capacity of less than 0.95 cubic meters (250 gallons).

111.2 Deleted November 6, 2002

111.3 Storage tanks with a capacity of less than 2.2 cubic meters (550 gallons), used primarily for the fueling of implements of husbandry as defined in Division 16, Chapter 1, of the California Vehicle Code, provided such tanks are equipped with a submerged fill pipe.

111.4 Storage tanks installed before January 1, 1999 where the APCO determines in writing that Phase I vapor recovery is not feasible.

(Amended and Renumbered 11/30/83; 3/4/87; Amended 10/17/90; 6/1/94; 11/17/99; 11/6/02)

8-7-112 Phase II Exemptions: The following are exempt from Sections 8-7-302 and 313. These exemptions shall not apply to tanks equipped with Phase II vapor recovery equipment unless the Phase II equipment has been removed or otherwise decommissioned to the APCO's satisfaction.

112.1 Facilities which are exempt from Phase I.

112.2 Delivery of fuel to a fuel tank of a vehicle belonging to a class of vehicles for which the APCO has determined in writing that fill-neck configuration or location or some other design feature of the class makes application of the requirements of this rule infeasible. This subsection 8-7-112.2 shall not exempt any gasoline dispensing facility from installing and using such vapor recovery systems as required by this Rule.

112.3 Dispensing of gasoline at facilities where the APCO determines in writing that Phase II vapor recovery is not feasible.

112.4 Mobile refueling and any other vehicle to vehicle refueling.

112.5 Tanks installed prior to March 4, 1987 at facilities which exclusively refuel motor vehicle tanks with a capacity of 0.019 cubic meters (5 gallons) or less.

112.6 Facilities which exclusively refuel aircraft or marine vessels.

112.7 Tanks installed prior to March 4, 1987 at facilities with an annual throughput of less than 227 cubic meters (60,000 gallons) where Phase II vapor recovery equipment was not installed prior to July 1, 1983. Should throughput exceed 227 cubic meters (60,000 gallons) in any consecutive 12-month period, this exemption shall no longer apply.

112.8 Deleted March 4, 1987

112.9 Facilities which can demonstrate to the APCO that at least 90% of the vehicles refueled at the facility in any (time period) are owned by a common operator and equipped with onboard refueling vapor recovery (ORVR). This exemption shall not apply to facilities required to have Phase II vapor recovery under state law.

(Amended and Renumbered 11/30/83; 3/4/87; Amended 10/17/90; 6/1/94; 11/17/99; 11/6/02)

8-7-113 Tank Gauging and Inspection Exemption: Any tank may be opened for gauging or inspection when loading operations are not in progress provided that such tank is not pressurized.

(Adopted November 30, 1983)

8-7-114 Stationary Tank Testing Exemption: The requirements of 8-7-301 do not apply to deliveries made to completely fill stationary tanks for the purpose of tank integrity

leak testing, provided that such deliveries do not exceed 3.8 cubic meters (1000 gallons) at each facility.

(Adopted 11/30/83; Amended 11/17/99)

8-7-115 Exemption, Hold Open Latch: The requirements of Section 8-7-314 shall not apply to nozzles which primarily refuel marine vessels or aircraft, or in areas where prohibited by the local fire marshal.

(Adopted November 17, 1999)

8-7-116 Exemption, Periodic Testing Requirements: The Periodic Testing Requirements of subsections 8-7-301.13, 302.14, and 302.15 shall not apply to new or modified equipment subject to start-up test requirements of Section 8-7-406. This exemption applies only to specific tests required to be performed under Section 8-7-406. The equipment remains subject to all other periodic tests required by Sections 8-7-301 and 302. This exemption does not apply to any start-up or periodic testing required otherwise by this regulation, District Permit conditions, applicable CARB Executive Orders, or state law.

(Adopted November 6, 2002)

8-7-117 Limited Testing Frequency Exemption, ISD-Equipped Tanks: Tanks equipped with an in-station diagnostics (ISD) system shall be required to conduct and pass any tests required by subsections 8-7-301.13, 302.14, and 302.15 at least once in the preceding 24-month period rather than at least once in the preceding 12-month period as set forth in those subsections. This limited exemption does not apply to any start-up or periodic testing otherwise required by this regulation, District Permit conditions, applicable CARB Executive Orders, or state law.

(Adopted November 6, 2002)

8-7-200 DEFINITIONS

8-7-201 CARB Certified Vapor Recovery System: A vapor recovery system which has been certified by the California Air Resources Board (CARB) pursuant to Section 41954 of the California Health and Safety Code.

(Adopted 11/30/83; Amended 10/17/90; 11/17/99)

8-7-202 Gasoline: Motor fuel containing any petroleum distillate where the Reid vapor pressure of the fuel is greater than 4.0 pounds.

(Adopted 11/30/83; Amended 10/17/90)

8-7-203 Leak Free: A liquid leak of no greater than three drops per minute.

(Adopted 11/30/83; Amended 10/17/90)

8-7-204 Phase I: Gasoline vapor recovery during transfer of gasoline between any gasoline cargo tank and any stationary tanks at dispensing facilities.

(Adopted 11/30/83; Amended 10/17/90; 11/17/99)

8-7-205 Phase II: Gasoline vapor recovery during motor vehicle refueling operations from stationary tanks at gasoline dispensing facilities.

(Adopted 11/30/83; Amended 11/17/99)

8-7-206 Vapor Tight: one of the following applicable criteria:

- 206.1 A leak of less than 100 percent of the lower explosive limit on a combustible gas detector measured at a distance of 2.5 cm (1 inch) from the source; or
- 206.2 No visible evidence of air entrainment in the sight glasses of liquid delivery hoses or bubbling of applied soap solution; or
- 206.3 Absence of a leak as determined by the Manual of Procedures, Volume IV, ST-30, ST-38 or CARB Method TP-201.3.

(Adopted 11/30/83; Amended 3/4/87; 10/17/90; 6/1/94; 11/17/99; 11/6/02)

8-7-207 Submerged Fill Pipe: Any discharge pipe or nozzle which meets either of the following conditions:

- 207.1 Where the tank is filled from the top, the end of the discharge pipe or nozzle must be totally submerged when the liquid level is 15 cm (6 inches) from the bottom of the tank.
- 207.2 Where the tank is filled from the side, the discharge pipe or nozzle must be totally submerged when the liquid level is 46 centimeters (18 inches) from the bottom of the tank.

(Adopted November 30, 1983)

- 8-7-208 Top Off:** Any attempt to dispense gasoline to a fuel tank after the dispensing nozzle's primary shutoff mechanism has engaged. The filling of a class of vehicle tanks which, because of the configuration of the fill pipe, cause premature activation of the primary shutoff, shall not be considered topping off.
(Renumbered 11/30/83; Amended 11/17/99; 11/6/02)
- 8-7-209 Gasoline Dispensing Facility (GDF):** Any stationary operation which dispenses gasoline directly into the fuel tanks of motor vehicles. This facility shall be treated as a single source which includes all necessary equipment for the exclusive use of the facility, such as nozzles, dispensers, pumps, vapor return lines, plumbing and storage tanks.
(Adopted 3/4/87; Amended 11/17/99)
- 8-7-210 Fuel Tank:** Any container from which gasoline is directly removed for the operation of an engine.
(Adopted November 17, 1999)
- 8-7-211 Gasoline Cargo Tank:** Any mobile container, including associated pipes and fittings, that is used for the transportation of gasoline and would be required to be certified in accordance with Section 41962 of the California Health and Safety Code if used to transport gasoline on a highway.
(Adopted November 17, 1999)
- 8-7-212 Liquid Retain:** Liquid gasoline remaining in or accumulating in the nozzle/hose assembly on the atmospheric side of the vapor check valve after a refueling event.
(Adopted November 17, 1999)
- 8-7-213 Spitting:** Liquid gasoline dispensed from the nozzle spout when the trigger is depressed without the dispenser being activated.
(Adopted 11/17/99; Amended 11/6/02)
- 8-7-214 Hold Open Latch:** A certified device which is an integral part of the nozzle and is manufactured specifically for the purpose of dispensing gasoline without requiring the consumer's continued physical contact with the nozzle during a refueling event.
(Adopted November 17, 1999)
- 8-7-215 Stationary Tank:** Any non-mobile container used for the storage or distribution of gasoline.
(Adopted November 17, 1999)
- 8-7-216 Motor Vehicle:** For the purposes of this rule, all vehicles defined as motor vehicles in Section 415 of the California Motor Vehicle Code plus self propelled mobile equipment, marine vessels, and aircraft.
(Adopted November 17, 1999)
- 8-7-217 Balance System:** A Phase II vapor recovery system operating on the principle of vapor displacement.
(Adopted November 17, 1999)
- 8-7-218 Vacuum-Assist System:** A Phase II vapor recovery system utilizing a vacuum producing device such as, but not limited to, a compressor or turbine to create a vacuum during gasoline dispensing to capture or assist in the capture of gasoline vapors.
(Adopted 11/17/99; Amended 11/6/02)
- 8-7-219 Retail Gasoline Dispensing Facility:** Any gasoline dispensing facility subject to the payment of California sales tax for the sale of gasoline to the public. All other GDFs shall be considered non-retail.
(Adopted November 17, 1999)
- 8-7-220 Mobile Refueler:** A tank truck or trailer transporting gasoline in an onboard storage tank and dispensing it directly into any motor vehicle fuel tank.
(Adopted November 17, 1999)
- 8-7-221 On-Board Refueling Vapor Recovery (ORVR):** A vehicle-based vapor recovery system required by California Code of Regulations, title 13, section 1978, or 40 Code of Federal Regulations Part 86.
(Adopted 11/17/99; Amended 11/6/02)
- 8-7-222 Insertion Interlock:** A CARB-certified mechanism that is an integral part of a bellows-equipped dispensing nozzle that prohibits the dispensing of fuel unless the bellows is compressed.
(Adopted November 17, 1999)

8-7-223 In-Station Diagnostic (ISD) System: Equipment certified by CARB pursuant to Certification Procedure CP-201 to monitor performance of a vapor recovery system at a gasoline dispensing facility.

(Adopted November 6, 2002)

8-7-300 STANDARDS

8-7-301 Phase I Requirements: A person subject to this section shall comply with all of the following requirements:

- 301.1 A person shall not transfer or allow the transfer of gasoline into stationary tanks at a gasoline dispensing facility unless a CARB certified Phase I vapor recovery system is used. Effective June 1, 2000, a person shall not transfer or allow the transfer of gasoline between a cargo tank or a mobile refueler and a stationary tank unless a CARB certified Phase I vapor recovery system is used during each gasoline transfer.
- 301.2 All Phase I vapor recovery systems at gasoline dispensing facilities shall be installed as per the most recent CARB certifications and shall meet the emission limitations of the applicable CARB certification. This standard shall apply to each stationary tank during each bulk gasoline delivery.
- 301.3 All Phase I vapor recovery systems shall be equipped with a submerged fill pipe.
- 301.4 Deleted November 17, 1999
- 301.5 All Phase I vapor recovery equipment shall be maintained to be properly operating as specified by the manufacturer and/or the applicable CARB Executive Order.
- 301.6 All Phase I vapor recovery equipment, except for components with an allowable leak rate, shall be maintained to be leak-free and vapor tight. Components with allowable leak rates, including pressure vacuum relief valves, shall operate within the applicable leakage rate.
- 301.7 All Phase I vapor recovery systems shall have a CARB certified poppetted drybreak or other CARB-certified poppetted fitting on the vapor riser.
- 301.8 Effective June 1, 2000 no coaxial Phase I systems certified by CARB prior to January 1, 1994 may be installed on new or modified tanks.
- 301.9 Effective June 1, 2000, all new Phase I systems must be equipped with a CARB-certified anti-rotational coupler or swivel adapter.
- 301.10 Effective six months after CARB-certification, no person shall install or modify a Phase I vapor recovery system unless the system vapor recovery rate is 98% or the highest vapor recovery rate specified by CARB if the highest rate is less than 98%.
- 301.11 No person shall operate a Phase I system on an underground tank unless the system is equipped with a CARB-certified spill box.
- 301.12 Effective June 1, 2000, or effective as prescribed by California Code of Regulations, title 17, section 94011, whichever is later, no person shall install or operate a spill-box equipped with a drain valve on the vapor pipe of a two-point Phase I system unless the drain valve has been permanently plugged.
- 301.13 Effective June 1, 2003, no person shall operate a gasoline storage tank equipped with a Phase I vapor recovery system without demonstrating compliance with the vapor tightness standards of subsections 8-7-301.6 and 302.5 by conducting and passing a test pursuant to Section 8-7-602 on the tank and any vapor recovery equipment connected to the tank at least once in the preceding 12 month period.

(Adopted 11/30/83; Amended 10/17/90; 11/17/99; 11/6/02)

8-7-302 Phase II Requirements: A person subject to this section shall comply with all of the following requirements:

- 302.1 A person shall not transfer or allow the transfer of gasoline from stationary tanks into motor vehicle fuel tanks at a gasoline dispensing facility unless a CARB certified Phase II vapor recovery system is used during each transfer.

- 302.2 All Phase II vapor recovery systems shall be maintained as per the most recent CARB certifications and the manufacturer's specifications.
- 302.3 All Phase II vapor recovery equipment shall be maintained to be properly operating as specified by the manufacturer and the applicable CARB Executive Order and free of defects as defined in Section 41960.2(c) of the California Health and Safety Code and California Code of Regulations, title 17, section 94006.
- 302.4 Any component identified as defective but that does not substantially impair the effectiveness of the Phase II vapor recovery system pursuant to Section 41960.2 (e) of the California Health and Safety Code and California Code of Regulations, title 17, section 94006 shall be repaired or replaced within seven days.
- 302.5 All Phase II vapor recovery equipment shall be maintained to be both leak-free and vapor tight. This requirement shall not apply to components with an allowable leak rate or at the nozzle/fill-pipe interface.
- 302.6 All bellows-equipped vapor recovery nozzles shall be equipped with an insertion interlock.
- 302.7 Effective June 1, 2000, or effective as prescribed by California Code of Regulations, title 17, section 94011, whichever is later, no person shall install or operate a vapor recovery nozzle on a balance system unless the nozzle is equipped with a built-in vapor check valve. Remote vapor check valves may not be used in conjunction with nozzles with built-in vapor check valves.
- 302.8 All liquid removal devices required by CARB Executive Order shall achieve a minimum liquid removal rate of at least 5 milliliters per gallon dispensed. This standard shall apply at dispensing rates exceeding 5 gallons per minute, or as otherwise specified in the applicable Executive Order.
- 302.9 No person shall install or operate a vapor recovery nozzle unless it is equipped with a coaxial hose.
- 302.10 No person shall install or operate a gasoline dispenser at a gasoline dispensing facility unless the connection between the riser and the dispenser cabinet is constructed from either galvanized piping or flexible tubing that is listed for use with gasoline. The nominal diameter of this connector shall not be less than 1 inch unless otherwise specified by the applicable CARB Executive Order.
- 302.11 No person shall operate a vacuum assist Phase II vapor recovery system installed after June 1, 2000 unless it has been certified by CARB to be compatible with ORVR.
- 302.12 Effective June 1, 2000, liquid retain from any nozzle shall not exceed 100 ml per 1,000 gallons dispensed or the quantity specified in CARB Certification Procedure CP-201, whichever is less. The quantity of liquid retain shall be determined using CARB Test Procedure TP-201.2E or a test procedure that has been determined by CARB to be equivalent to TP-201.2E.
- 302.13 Effective June 1, 2000, spitting from any nozzle shall not exceed 1.0 ml per nozzle per test or the quantity specified in CARB Certification Procedure CP-201, whichever is less. The quantity of spitting shall be determined using CARB Test Procedure TP-201.2D or a test procedure that has been determined by CARB to be equivalent to TP-201.2D.
- 302.14 Effective June 1, 2003, no person shall operate a Balance Phase II vapor recovery system equipped with vapor return piping unless a Backpressure test in accordance with Section 8-7-601 has been conducted and passed in the preceding 12 month period. The vapor return piping shall meet the following standards:
 - 14.1 The dynamic back pressure standard specified in the applicable CARB Executive Order.
 - 14.2 Dynamic back pressures less than or equal to 0.15, 0.45, and 0.95 inches of water when measured at nitrogen flow rates of 20, 60, and 100 CFH respectively for systems subject to a CARB Executive Order that does not specify a backpressure standard.

302.15 Effective June 1, 2003, no person shall operate a Vacuum Assist Phase II vapor recovery system unless the following tests have been conducted and passed in the preceding 12 month period:

15.1 An Air-to-Liquid Volume Ratio (A/L) test conducted in accordance with Section 8-7-604 on all nozzles on a Phase II system for which the applicable CARB Executive Order specifies an A/L standard. The A/L for each nozzle shall be within the range specified in the applicable Executive Order.

15.2 Any other test(s) required to be re-performed on a periodic basis by the CARB Executive Order applicable to the Phase II system. Test results shall be within the limits established in the applicable CARB Executive Order.

(Adopted 11/30/83; Amended 10/17/90; 11/17/99; 11/6/02)

8-7-303 Topping Off: A person shall not top off fuel tanks or other vessels.

(Renumbered 11/30/83; Amended 11/17/99)

8-7-304 Certification Requirements: A person shall not offer for sale, sell or install within the District, any Phase I or Phase II vapor recovery equipment unless such equipment is CARB certified, meets the performance specifications required by the CARB certification procedures and this rule, and is installed in accordance with the most recent applicable CARB Executive Order.

(Amended and Renumbered 11/30/83; Amended 10/17/90; 11/17/99)

8-7-305 Deleted October 17, 1990

8-7-306 Prohibition of Use: Whenever the APCO determines that a Phase II vapor recovery system, or any component thereof, contains a defect specified by CARB pursuant to Section 41960.2(c) of the Health and Safety Code or California Code of Regulations, title 17, section 94006, the APCO shall mark such system or component "Out of Order." No person shall use or permit the use of such marked component or system until it has been repaired, replaced, or adjusted, as necessary, and the APCO has reinspected it or has authorized its use pending reinspection.

(Amended November 6, 2002)

8-7-307 Posting of Operating Instructions: Each gasoline dispensing facility utilizing a Phase II system shall conspicuously post operating instructions specific to the system in use in the gasoline dispensing area. The instructions shall clearly describe how to fuel vehicles correctly with the vapor recovery nozzles utilized at the station. The instructions shall also include a warning that topping off is prohibited, and may result in spillage or recirculation of gasoline. Additionally, the instructions shall include a prominent display of the District's or the CARB's toll free telephone number for complaints.

(Amended 11/30/83; 11/17/99)

8-7-308 Operating Practices: Gasoline shall not be spilled, discarded in sewers, stored in open containers, or handled in any other manner that would result in evaporation to the atmosphere.

(Adopted November 30, 1983)

8-7-309 Contingent Vapor Recovery Requirement: Facilities which are equipped with Phase II vapor recovery must also be equipped with Phase I vapor recovery.

(Adopted 3/4/87; Amended 10/17/90)

8-7-310 Deleted November 17, 1999

8-7-311 Exempt Tank Requirements: Any tank with a capacity greater than 0.95 cubic meter (250 gallons) where Phase I vapor recovery equipment is not required must be equipped with a submerged fill pipe.

(Adopted 10/17/90; Amended 11/17/99)

8-7-312 Deleted November 17, 1999

8-7-313 Requirements for New or Modified Phase II Installations: Effective June 1, 2000 or effective as prescribed by California Code of Regulations, title 17, section 94011, whichever is later, no person shall install or modify a Phase II vapor recovery system unless all new equipment is CARB-certified to meet the following emission limitations without any maintenance being performed on that equipment for 90 days prior to the certification test:

- 313.1 The total emissions of organic compounds from the nozzle/fill pipe interface, storage tank vent pipes, and pressure-related fugitives shall not exceed 0.42 pounds per 1000 gallons gasoline dispensed.
- 313.2 The emissions of organic compounds from spillage shall not exceed 0.42 pounds per 1000 gallons gasoline dispensed.
- 313.3 The emissions of organic compounds from liquid retain and spitting shall not exceed 0.42 pounds per 1000 gallons gasoline dispensed.

(Adopted 11/17/99; Amended 11/6/02)

8-7-314 Hold Open Latch Requirements: A person shall not operate a nozzle that dispenses gasoline at a retail gasoline dispensing facility or a gasoline dispensing facility operated by the state or any county, city and county, or city unless the nozzle is equipped with an operating hold open latch. Any hold open latch determined to be inoperative may be repaired or replaced by the owner or operator within 48 hours of notification by the APCO or fire marshal without any fines or penalty action.

(Adopted November 17, 1999)

8-7-315 Pressure Vacuum Valve Requirements, Underground Storage Tanks: No person shall operate an underground tank dispensing gasoline unless it is equipped with a CARB certified pressure vacuum (P/V) valve on the vent pipe(s). The valve settings shall be three inches of water column plus or minus one-half inch on the pressure side and eight inches of water column plus or minus two inches on the vacuum side or as otherwise specified in the applicable CARB vapor recovery certification.

(Adopted 11/17/99; Amended 11/6/02)

8-7-316 Pressure Vacuum Valve Requirements, Aboveground Storage Tanks and Vaulted Below-Grade Storage Tanks: No person shall operate a stationary aboveground storage tank or vaulted below-grade storage tank dispensing gasoline unless it is equipped with a pressure vacuum (P/V) valve on the vent pipe(s). The valve settings shall be either as specified in the applicable CARB Executive Order or, for uncertified tanks, at least 90% of the tank's maximum allowable working pressure or 25.8 mm Hg (.5 psig).

(Adopted 11/17/99; Amended 11/6/02)

8-7-400 ADMINISTRATIVE REQUIREMENTS

8-7-401 Equipment Installation and Modification: A person shall not install or modify Phase I or Phase II gasoline vapor recovery equipment unless an Authority to Construct has been obtained pursuant to Section 301 of Regulation 2, Rule 1. An Authority to Construct shall not be required for the replacement of existing hoses and/or nozzles, or for other repairs or replacements of like parts, unless the APCO determines that testing is necessary to verify proper installation of the vapor recovery system.

(Adopted 11/30/83; Amended 11/17/99)

8-7-402 Deleted October 17, 1990

8-7-403 Deleted March 4, 1987

8-7-404 Deleted November 17, 1999

8-7-405 Deleted November 17, 1999

8-7-406 Testing Requirements, New and Modified Installations: No person shall operate new or modified gasoline dispensing equipment without complying with the testing and notification requirements of an Authority to Construct. Installations performed without obtaining an Authority to Construct remain subject to performance testing and prompt submission of applicable data. This requirement may be waived in whole or part for equipment installed at sites for the purposes of performance testing by the District or CARB to establish a new or modified executive order.

(Adopted November 17, 1999)

8-7-407 Periodic Testing Requirements: No person shall operate gasoline dispensing equipment equipped with Phase I or Phase II vapor recovery equipment without complying with the applicable periodic testing requirements of Sections 8-7-301 and 302.

(Adopted November 6, 2002)

8-7-408 Periodic Testing Notification and Submission Requirements: District Source Test staff shall be notified by phone, FAX, or email at least 48 hours prior to testing. Test results shall be submitted to the District Source Test Manager no later than 30 days after the test date and include all necessary data and equipment specifications to determine compliance with the applicable standards.

(Adopted November 6, 2002)

8-7-500 MONITORING AND RECORDS

8-7-501 Burden of Proof: The burden of proof of eligibility for exemption from any section of this rule is on the applicant. Persons seeking such an exemption shall maintain adequate records and furnish them to the APCO upon request.

(Adopted 11/30/83; Amended 11/17/99)

8-7-502 Right of Access: Any facility subject to this rule shall maintain on site the means to provide access to any and all components as necessary to determine compliance with the provisions of this rule. Access shall be furnished to the APCO upon request.

(Adopted October 17, 1990)

8-7-503 Record Keeping Requirements:

503.1 All gasoline dispensing facilities shall maintain records of the quantity of gasoline dispensed from the storage tanks during the last 12 month period.

503.2 All gasoline dispensing facilities shall maintain maintenance records detailing the nature and the date of all maintenance activities, including results of all required testing, during the last 12 month period.

503.3 All records required pursuant to subsections 8-7-503.1 and 503.2 shall be retained for 24 months and made available at the gasoline dispensing facility for inspection by the APCO.

(Adopted 11/17/99; Amended 11/6/02)

8-7-600 MANUAL OF PROCEDURES

8-7-601 Determination of Equipment In Compliance with Dynamic Backpressure Requirements: Compliance with the dynamic back pressure standard shall be determined as prescribed in the Manual of Procedures, under the pertinent sections of Volume IV, ST-27 or as prescribed by CARB Test Procedure TP-201.4.

(Amended 11/30/83; 10/17/90; 11/17/99; 11/6/02)

8-7-602 Determination of Equipment in Compliance with Vapor Tightness Requirements: Compliance with the vapor tightness standards shall be determined as prescribed in the Manual of Procedures, Volume IV, ST-30 (underground storage tanks) or ST-38 (vaulted storage tanks) or as prescribed by CARB Test Procedure TP-201.3 (underground tanks) or CARB Test Procedure TP-201.3B (vaulted storage tanks).

(Adopted 11/17/99; Amended 11/6/02)

8-7-603 Determination of Equipment in Compliance with Phase I Vapor Recovery Efficiency: Compliance with subsection 8-7-301.2 shall be determined as prescribed in the Manual of Procedures, Volume IV, ST-36 or as prescribed by CARB Test Procedure TP-201.1.

(Adopted 10/17/90; Renumbered, Amended 11/17/99; Amended 11/6/02)

8-7-604 Determination of Equipment in Compliance with Liquid Removal Requirements: Compliance with subsection 8-7-302.8 shall be determined as prescribed in the Manual of Procedures, Volume IV, ST-37.

(Adopted November 17, 1999)

8-7-605 Determination of Equipment in Compliance with Air to Liquid Volume Ratio (A/L) Requirements: Compliance with the air to liquid volume ratio requirements shall be determined as prescribed in the Manual of Procedures, Volume IV, ST-39 or CARB Test Procedure TP-201.5.

(Adopted 11/17/99; Amended 11/6/02)

8-7-606 Determination of Applicability: To determine the applicability of this Rule, samples of gasoline shall be analyzed as prescribed in the Manual of Procedures, Volume III, Method 13.

(Adopted 10/17/90; Renumbered, Amended 11/17/99)

REGULATION 8

ORGANIC COMPOUNDS

RULE 8

WASTEWATER (OIL-WATER) SEPARATORS

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REGULATION 8

ORGANIC COMPOUNDS

RULE 8

WASTEWATER (OIL-WATER) SEPARATORS

(Adopted January 17, 1979)

8-8-100 GENERAL

8-8-101 Description: The purpose of this Rule is to limit the emissions of precursor organic compounds from wastewater (oil-water) separators, forebays, and air flotation units which remove floating oil, floating emulsified oil, or other liquid precursor organic compounds. (Amended November 1, 1989)

8-8-110 Exemption, Less Than 760 Liters: The requirements of Section 8-8-301 shall not apply to any wastewater separator which processes less than 760 liters (200 gals.) per day of wastewater containing organic liquids. This exemption shall not apply to wastewater separators at petroleum refinery complexes after March 1, 1980.

8-8-111 Deleted November 1, 1989

8-8-112 Exemption, Wastewater Critical OC Concentration And/Or Temperature: The requirements of Sections 8-8-301, 302, 306, 307, and 308 shall not apply to any wastewater separator that processes influent wastewater less than 20 degrees C (68 °F) and/or wastewater comprised of less than 1.0 ppm (volume) critical organic compounds, as defined in Section 8-8-210, dissolved in the water samples, provided that the requirements of Section 8-8-502 are met. (Adopted November 1, 1989)

8-8-113 Exemption, Secondary Wastewater Treatment Processes And Stormwater Sewer Systems: The requirements of Sections 8-8-301, 302, 306, and 308 shall not apply to any secondary wastewater treatment processes or stormwater sewer systems, as defined in Sections 8-8-208 and 216, which are used as a wastewater polishing step or collection of stormwater which is segregated from the process wastewater collection system. (Adopted November 1, 1989)

8-8-114 Exemption, Bypassed Oil-Water Separator or Air Flotation Influent: The requirements of Sections 8-8-301, 302, and 307 shall not apply for wastewater which bypasses either the oil-water separator or air flotation unit provided that: (1) the requirements of Section 8-8-501 are met; and (2) on that day the District did not predict an excess of the Federal Ambient Air Quality Standard for ozone. (Adopted November 1, 1989)

8-8-115 Exemption, Municipal Wastewater Treatment Facilities: The requirements of Sections 8-8-301, 302, 303, 304, 305, 306, 307, and 308 shall not apply to any publicly owned municipal wastewater treatment facility. (Adopted November 1, 1989)

8-8-200 DEFINITIONS

8-8-201 Organic Compounds: For the purposes of this Rule, any organic compound as defined in Section 8-8-210. (Amended November 1, 1989)

8-8-202 Wastewater (Oil-Water) Separator: Any device used to separate liquid organic compounds from oil-water waste streams (excluding Wastewater Separator Forebay, Air Flotation (AF) units, Sludge-dewatering Units, Oil-Water Separator and /or AF Unit Slop Oil Vessels, and Junction Boxes). (Amended November 1, 1989)

8-8-203 Wastewater Separator Forebay: That section of a gravity-type separator which (a) receives the untreated, contaminated wastewater from the preseparator flume, and (b) acts as a header which distributes the influent to the separator channels. (Amended November 1, 1989)

8-8-204 Vapor-tight: The concentration of precursor organic compounds, measured one centimeter from the source, shall not exceed 500 ppm (expressed as methane) above background. (Adopted November 1, 1989)

8-8-205 Oil-Water Separator Slop Oil: Floating oil, flocculant sludge, and solids which accumulate in an oil-water separator or air flotation unit. (Adopted November 1, 1989)

8-8-206 Oil-Water Separator Effluent Channel/Pond: An open channel, trench, pond, or basin which handles wastewater downstream of an oil-water separator that has not been treated by an air flotation unit (usually located between the separator and the air flotation unit). (Adopted November 1, 1989)

8-8-207 Full Contact Fixed Cover: A stationary separator cover which is always in full contact with the liquid surface of the oil-water separator. (Adopted November 1, 1989)

8-8-208 Secondary Treatment Processes: Any wastewater treatment process which is downstream of the air flotation unit, any other biological treatment process at a refinery, or any treatment process which is regulated by the EPA National Categorical Pretreatment Standards. These treatment processes are considered to be wastewater polishing steps and include: activated sludge tanks/basins, trickling or sand filters, aerated lagoons, oxidation ponds, rotating biological contactors, and other biological wastewater treatment processes. (Adopted November 1, 1989)

8-8-209 Air Flotation Unit: Any device, equipment, or apparatus in which wastewater is saturated with air or gas under pressure and removes floating oil, floating emulsified oil, or other floating liquid precursor organic compounds by skimming. Also included in this definition are: induced air flotation units and pre-air flotation unit flocculant sumps, tanks, or basins. (Adopted November 1, 1989)

8-8-210 Critical Organic Compound (OC): Any compound of carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides, carbonates and ammonium carbonate, or non-precursor organic compounds (Methylene chloride, 1,1,1 trichloroethane, 1,1,2 trichlorotrifluoroethane (CFC-113), trichlorofluoromethane (CFC-11), dichlorodifluoromethane (CFC-12), dichlorotetrafluoroethane (CFC-114), and chloropentafluoroethane (CFC-115), emitted during separation, processing, or storage of wastewater, and having a carbon number of C-14 or less (excluding phenolic compounds).(Adopted November 1, 1989)

8-8-211 Wastewater: Any process water which contains oil, emulsified oil, or other organic compounds which is not recycled or otherwise used within a facility. (Adopted November 1, 1989)

8-8-212 Pre-Air Flotation Unit Flocculation Sump, Basin, Chamber, or Tank: Any facility which pretreats the air flotation unit's influent with chemical coagulants, and/or adjusts the influent's pH. (Adopted November 1, 1989)

8-8-213 Oil-Water Separator Slop Oil Vessel: Any vessel which, as its sole function, treats or dewateres oil-water separator slop oil. (Adopted November 1, 1989)

8-8-214 Oil-Water Separator Effluent: Any process wastewater downstream of the oil-water separator that has not been treated by an air flotation unit. (Adopted November 1, 1989)

8-8-215 Sludge-dewatering Unit: Any device which, as its sole function, is used to dewater oil-water separator and air flotation slop oil/sludge. (Adopted November 1, 1989)

8-8-216 Stormwater Sewer System: A drain and collection system designed and operated for the sole purpose of collecting stormwater and which is segregated from the wastewater collection system. (Adopted November 1, 1989)

8-8-217 Junction Box: A manhole or access point to a wastewater sewer system line. (Adopted November 1, 1989)

8-8-218 Sewer Line: A lateral, trunk line, branch line, ditch, channel, or other conduit used to convey wastewater to downstream oil-water separators. (Adopted November 1, 1989)

8-8-300 STANDARDS

8-8-301 Wastewater Separators Greater than 760 Liters per Day and Smaller than 18.9 Liters per Second:

A person shall not operate any wastewater separator and/or forebay with a design rated or maximum allowable capacity greater than 760 liters per day and smaller than 18.9 liters per second (oil-water separators and/or forebays between 200 gals per day to 300 gals per min.) unless such wastewater separator and/or forebay is operated within its design rated or maximum allowable capacity and is equipped with one of the following:

301.1 A solid, gasketed, fixed cover totally enclosing the separator tank, chamber, or basin (compartment) liquid contents, with all cover openings closed, except when the opening is being used for inspection, maintenance, or wastewater sampling. Roof seals, access doors, and other openings shall be checked by visual inspection initially and semiannually thereafter to ensure that no cracks or gaps greater than 0.32 cm (0.125 inch) occur in the roof or between the roof and wall; and that the access doors and other openings are closed and gasketed properly; or

301.2 A floating pontoon or double-deck vapor-tight type cover. All floating roofs must rest entirely on the liquid surface. The floating roof shall consist of two seals, one above the other, the one below shall be referred to as the primary seal, while the other seal shall be referred to as the secondary seal.

2.1 Oil-Water Separator Liquid-Mounted Primary Seal Gap Criteria: No gap between the separator wall and the liquid-mounted primary seal shall exceed 3.8 cm (1.5 inch). No continuous gap greater than 0.32 cm (0.125 inch) shall exceed 10 percent of the perimeter of the separator. The cumulative length of all primary seal gaps exceeding 1.3 cm (0.5 inch) shall be not more than 10 percent of the perimeter and the cumulative length of all primary seal gaps exceeding 0.32 cm (0.125 inch) shall be not more than 40 percent of the perimeter.

2.2 Oil-Water Separator Secondary And Wiper Seals Gap Criteria: No gap between the separator wall and the secondary and wiper seals shall exceed 1.5 mm (0.06 inch). The cumulative length of all secondary and wiper seals gaps exceeding 0.5 mm (0.02 inch) shall be not more than 5 percent of the perimeter of the separator. The secondary and wiper seals must exert a positive pressure against the separator such that the seal surface in contact with the separator wall does not pull away from the separator wall more than the gaps allowed.

2.3 Primary And Secondary Seal Gap Inspection: The primary seal shall be inspected within 60 calendar days after initial installation of the floating roof and once every 5 years thereafter in accordance with the requirements of Subsection 8-8-301.2.2.1. The secondary seal shall be inspected within 60 calendar days after initial installation of the floating roof and once every year thereafter in accordance with the requirements of Subsection 8-8-301.2.2.2. The owner or operator shall make necessary repairs within 30 calendar days of identification of seals not meeting the requirements listed in Subsections 8-8-301.2.1 and 301.2.2.2.; or

301.3 An OC vapor recovery system with a combined collection and destruction efficiency of at least 95 percent, by weight.

301.4 **Deleted October 6, 1993** (Amended November 1, 1989; October 6, 1993)

8-8-302 Wastewater Separators Larger than or Equal to 18.9 Liters per Second: A person shall not operate any wastewater separator and/or forebay with a rated or maximum allowable capacity larger than or equal to 18.9

liters per second (300 gals per min.) unless such wastewater separator and/or forebay is operated within its design rated or maximum allowable capacity and is equipped with one of the following:

302.1 A solid, vapor-tight, full contact fixed cover which totally encloses the separator tank, chamber, or basin (compartment) liquid contents, with all cover openings closed and sealed, except when the opening is being used for inspection, maintenance, or wastewater sampling; or

302.2 A floating pontoon or double-deck vapor-tight type cover. All floating roofs must rest on the liquid surface. The floating roof shall consist of two seals, one above the other, the one below shall be referred to as the primary seal, while the other seal shall be referred to as the secondary seal.

2.1 Oil-Water Separator Liquid-Mounted Primary Seal Gap Criteria: No gap between the separator wall and the liquid-mounted primary seal shall exceed 3.8 cm (1.5 inch). No continuous gap greater than 0.32 cm (0.125 inch) shall exceed 10 percent of the perimeter of the separator. The cumulative length of all primary seal gaps exceeding 1.3 cm (0.5 inch) shall be not more than 10 percent of the perimeter and the cumulative length of all primary seal gaps exceeding 0.32 cm (0.125 inch) shall be not more than 40 percent of the perimeter.

2.2 Oil-Water Separator Secondary And Wiper Seals Gap Criteria: No gap between the separator wall and the secondary and wiper seals shall exceed 1.5 mm (0.06 inch). The cumulative length of all secondary and wiper seals gaps exceeding 0.5 mm (0.02 inch) shall be not more than 5 percent of the perimeter of the separator. The secondary and wiper seals must exert a positive pressure against the separator such that the seal surface in contact with the separator wall does not pull away from the separator wall more than the gaps allowed; or

2.3 Primary And Secondary Seal Gap Inspection: The primary seal shall be inspected within 60 calendar days after initial installation of the floating roof and once every 5 years thereafter in accordance with the requirements of Subsection 8-8-302.2.2.1. The secondary seal shall be inspected within 60 calendar days after initial installation of the floating roof and once every year thereafter in accordance with the requirements of Subsection 8-8-302.2.2.2. The owner or operator shall make necessary repairs within 30 calendar days of identification of seals not meeting the requirements listed in Subsections 8-8-302.2.2.1 and 302.2.2.2.; or

302.3 A vapor-tight fixed cover with an OC vapor recovery system which has a combined collection and destruction efficiency of at least 95 percent, by weight, inspection and access hatches shall be closed except when the opening is being used for inspection, maintenance, or wastewater sampling, or

302.4 A solid, sealed, gasketed, fixed cover which totally encloses the separator tank, chamber, or basin (compartment) liquid contents, with all cover openings closed and sealed, except when the opening is being used for inspection, maintenance, or wastewater sampling. The cover may include a pressure/vacuum valve. The concentration of precursor organic compounds, measured one centimeter from the roof seals, fixed cover, access doors, pressure/vacuum valve, and other openings shall not exceed 1,000 ppm (expressed as methane) above background. Roof seals, fixed cover, access doors, and other openings shall be inspected initially and semiannually thereafter to ensure that there are no emission leaks greater than 1,000 ppm. Any emission leak greater than 1,000 ppm must be reported to the APCO and repaired within 15 days.

302.5 **Deleted October 6, 1993** (Adopted November 1, 1989; Amended October 6, 1993)

8-8-303 Gauging and Sampling Devices: Any compartment or access hatch shall have a vapor tight cover. Any gauging and sampling device in the compartment cover shall be equipped with a vapor tight cover, seal, or lid. The compartment cover and gauging or sampling device cover shall at all times be in a closed position, except when the device is in use for inspection, maintenance, or wastewater sampling. (Amended, Renumbered November 1, 1989)

8-8-304 Sludge-dewatering Unit: Any sludge-dewatering unit, equipment, machinery, apparatus, or device shall

be totally enclosed and vented to a control device which has a minimum combined collection and destruction efficiency of 95 percent by weight; or shall have vapor-tight covers on the unit, conveyer belts, and storage bins or tanks except during inspection, maintenance or when the solids storage bin is in use. (Adopted November 1, 1989; Amended October 6, 1993)

8-8-305 Oil-Water Separator And/OR Air Flotation Unit Slop Oil Vessels: A person shall not store any oil-water separator and/or air flotation unit sludges in an oil-water separator slop oil vessel unless such oil-water separator slop oil vessel is equipped with one of the following:

305.1 A solid, gasketed, fixed cover totally enclosing the vessel liquid contents, with all cover openings closed, except when the opening is being used for inspection, maintenance, or wastewater sampling. The cover may include an atmospheric vent or a pressure/vacuum valve. Roof seals, access doors, and other openings shall be checked by visual inspection initially and semiannually thereafter to ensure that no cracks or gaps greater than 0.32 cm (0.125 inch) occur in the roof or between the roof and wall; and that the access doors and other openings are closed and gasketed properly; or

305.2 An OC vapor recovery system with a combined collection and destruction efficiency of at least 70 percent, by weight.

305.3 **Deleted October 6, 1993** (Adopted November 1, 1989; Amended October 6, 1993)

8-8-306 Oil-Water Separator Effluent Channel, Pond, Trench, or Basin: A person shall not operate any oil-water separator effluent channel, pond, trench, or basin a design rated or maximum allowable capacity greater than 25.2 liters per second (any oil-water separator effluent channel, pond, trench, or basin greater than 400 gals per min) unless such oil-water separator effluent channel, pond, trench, or basin is operated within its design rated or maximum allowable capacity and is equipped with one of the following:

306.1 A solid, gasketed, fixed cover totally enclosing the oil-water separator effluent channel, pond, trench, or basin (compartment) liquid contents, with all cover openings closed, except when the opening is being used for inspection, maintenance, or wastewater sampling. Roof seals, access doors, and other openings shall be checked by visual inspection initially and semiannually thereafter to ensure that no cracks or gaps greater than 0.32 cm (0.125 inch) occur in the roof or between the roof and wall; and that the access doors and other openings are closed and gasketed properly; or

306.2 An OC vapor recovery system with a combined collection and destruction efficiency of at least 70 percent, by weight.

306.3 **Deleted October 6, 1993** (Adopted November 1, 1989; Amended October 6, 1993)

8-8-307 Air Flotation Unit: A person shall not operate any air flotation unit and/or pre-air flotation unit flocculation sump, basin, chamber, or tank with a design rated or maximum allowable capacity greater than 25.2 liters per second (air flotation units and/or pre-air flotation unit flocculation sump, basin, chamber, or tank greater than 400 gals per min.) unless such air flotation unit and/or pre-air flotation unit flocculation sump, basin, chamber, or tank is operated within its design rated or maximum allowable capacity and is equipped with one of the following:

307.1 A solid, gasketed, fixed cover totally enclosing the air flotation and pre-air-flotation-unit flocculation tank, chamber, or basin (compartment) liquid contents, with all cover openings closed, except when the opening is being used for inspection, maintenance, or wastewater sampling. The cover may include an atmospheric vent or pressure/vacuum valve. Roof seals, access doors, and other openings shall be checked by visual inspection initially and semiannually thereafter to ensure that no cracks or gaps greater than 0.32 cm (0.125 inch) occur in the roof or between the roof and wall; and that the access doors and other openings are closed and gasketed properly; or

307.2 An OC vapor recovery system with a combined collection and destruction efficiency of at least 70

percent, by weight.

307.3 Deleted October 6, 1993 (Adopted November 1, 1989; Amended October 6, 1993)

8-8-308 Junction Box: Any junction box shall be equipped with either a solid, gasketed, fixed cover totally enclosing the junction box or a solid manhole cover. Junction boxes may include openings in the covers and vent pipes if the total open area of the junction box does not exceed 81.3 cm² (12.6 in²) and all vent pipes are at least 3 feet in length.(Adopted November 1, 1989; Amended October 6, 1993)

8-8-309 Deleted October 6, 1993

8-8-310 Deleted October 6, 1993

8-8-311 Deleted October 6, 1993

8-8-400 ADMINISTRATIVE REQUIREMENTS

8-8-401 Deleted October 6, 1993

8-8-500 MONITORING AND RECORDS

8-8-501 API Separator or Air Flotation Bypassed Wastewater Records: Any person who bypasses wastewater past their API Separator or Air Flotation unit shall maintain records on the amount of bypassed wastewater, duration, date, causes for bypasses, and dissolved critical OC concentration (volume). These records shall be retained and available for inspection by the APCO for at least 24 months. (Adopted November 1, 1989)

8-8-502 Wastewater Critical OC Concentration And/Or Temperature Records: Any person who exempts their wastewater separator because of either wastewater critical OC concentration or temperature shall sample and test the wastewater initially and semiannually thereafter and maintain records on the date, time of test, location, and wastewater temperature and/or critical OC concentration (volume). These records shall be retained and available for inspection by the APCO for at least 24 months. (Adopted November 1, 1989)

8-8-503 Inspection and Repair Records: Records of inspections and repairs as required by Sections 8-8-301, 302, 305, 306 or 307 shall be retained and made available for inspection by the APCO for at least 24 months. (Adopted October 6, 1993)

8-8-504 Portable Hydrocarbon Detector: Any instrument used for the measurement of organic compounds shall be a gas detector that meets the specifications and performance criteria of and has been calibrated in accordance with EPA Reference Method 21 (40 CFR 60, Appendix A). Adopted June 15, 1994)

8-8-600 MANUAL OF PROCEDURES

8-8-601 Wastewater Analysis for Critical OCs: Samples of wastewater as specified in this rule shall be taken at the influent stream for each unit and analyzed for the concentration of dissolved critical organic compounds as prescribed in the Manual of Procedures, Volume III, Lab Method 33.(Amended November 1, 1989; October 6, 1993)

8-8-602 Determination of Emissions: Emissions of precursor organic compounds as specified in Sections 8-8-301.3, 8-8-302.3, 8-8-304, 8-8-305.2, 8-8-306.2, and 8-8-307.2 shall be measured as prescribed by any of the following methods: 1) BAAMQD Manual of Procedures, Volume IV, ST-7, 2) EPA Method 25, or 25A). A source shall be considered in violation if the VOC emissions measured by any of the referenced test methods exceed the standards of this rule.(Amended November 1, 1989; October 6, 1993, June 15, 1994)

8-8-603 Inspection Procedures: For the purposes of Sections 8-8-301, 302, 303 and 304, leaks shall be measured

using a portable gas detector as prescribed in EPA Reference Method 21 (40 CFR 60, Appendix A). (Adopted June 15, 1994)

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

REGULATION 8

ORGANIC COMPOUNDS

RULE 9

VACUUM PRODUCING SYSTEMS

8-9-100 GENERAL

8-9-101 Description

8-9-110 Ememption, Vacuum Tank Trucks

8-9-111 Exemption, Chemical Plants

8-9-200 DEFINITIONS

8-9-201 Chemical Plants

8-9-202 Petroleum Refinery

8-9-203 Vacuum Producing Systems

8-9-300 STANDARDS

8-9-301 Vacuum Producing Systems

8-9-400 ADMINISTRATIVE REQUIREMENTS

8-9-401 Increments of Progress

8-9-500 MONITORING AND RECORDS (not included)

8-9-600 MANUAL OF PROCEDURES

8-9-601 Determination of Emissions

REGULATION 8

ORGANIC COMPOUNDS

RULE 9

VACUUM PRODUCING SYSTEMS

8-9-100 GENERAL

8-9-101 Description: The purpose of this Rule is to limit emission of precursor organic compounds from vacuum producing systems. (Amended 3/17/82, 7/20/83)

8-9-110 Exemption, Vacuum Tank Trucks: The requirements of Section 8-9-301 shall not apply to vacuum tank trucks which are governed by the requirements of Rule 2 - Miscellaneous, of this Regulation 8.

8-9-111 Exemption, Chemical Plants: The provisions of Section 8-9-301 shall not apply to chemical plants until January 1, 1985. (Adopted 7/20/83)

8-9-200 DEFINITIONS

8-9-201 Chemical Plants: Any facility engaged in producing organic or inorganic chemicals and/or manufacturing products by chemical processes. Any facility or operation that has 28 as the first two digits in their Standard Industrial Classification Code as determined from the Standard Industrial Classification manual published in 1972 by the Executive Office of the President, Office of Management and Budget. Chemical plants may include, but are not limited to the manufacture of: industrial inorganic and organic chemicals; plastic and synthetic resins, synthetic rubber, synthetic and other man made fibers; drugs, soap, detergents and cleaning preparations, perfumes, cosmetics and other toilet preparations; paints, varnishes, lacquers, enamels and allied products; agricultural chemicals; safflower and sunflower oil extracts; re-refining. (Adopted 7/20/83)

8-9-202 Petroleum Refinery: Any facility engaged in producing gasoline, kerosene, distillate fuel oils, residual fuel oils, lubricants or other products through distillation of petroleum or through redistillation, cracking, rearrangement or reforming of unfinished petroleum derivatives. (Adopted 7/20/83)

8-9-203 Vacuum Producing Systems: Vacuum producing systems include, but are not limited to, steam ejectors with contact (barometric) condensers, steam ejectors with surface condensers, and mechanical vacuum pumps.

8-9-300 STANDARDS

8-9-301 Vacuum Producing Systems: The control of precursor organic compound emissions from vacuum producing systems at petroleum refineries and chemical plants shall be accomplished by employing the following equipment and/or strategies:

301.1 Non-Condensable precursor organic emissions from vacuum producing systems must either be controlled and piped to an appropriate firebox or incinerator for combustion, or be collected, compressed, and added to the fuel gas system, or be contained and treated so as to prevent their emission into the atmosphere.

301.2 Hot wells and/or accumulators associated with vacuum system condensers must be covered and the precursor organic vapors must either be incinerated or contained and treated so as to prevent their emission into the atmosphere. (Amended 7/20/83)

8-9-400 ADMINISTRATIVE REQUIREMENTS

8-9-401 Increments of Progress: A person at a chemical plant who must modify existing sources or install new control equipment to comply with the requirements of this Rule shall comply with the following compliance schedule:

401.1 January 1, 1984: Submit to the APCO a final control plan which describes, as a minimum, the steps, including a construction schedule, that will be taken to achieve compliance with such requirements.

401.2 July 1, 1984: Submit a completed application for any Authority to Construct necessary to achieve compliance with such requirements.

401.3 January 1, 1985: Be in compliance with all the requirements of this Rule. (Amended 7/20/83)

8-9-600 MANUAL OF PROCEDURES

8-9-601 Determination of Emissions: Emissions of organic compounds as specified in Section 8-9-301 shall be measure as prescribed in the Manual of Procedures, Volume IV, ST-7. (Adopted 3/17/83)

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

REGULATION 8

ORGANIC COMPOUNDS

RULE 10

PROCESS VESSEL DEPRESSURIZATION

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REGULATION 8

ORGANIC COMPOUND

RULE 10

PROCESS VESSEL DEPRESSURIZATION

8-10-100 GENERAL

8-10-101 Description: The purpose of this Rule is to limit emissions of precursor organic compounds from process vessel depressurization at petroleum refineries and chemical plants. (Amended 3/17/82, 7/20/83)

8-10-110 Exemption, Storage Vessels: The requirements of Section 8-10-301 shall not apply to stationary containers used solely for the storage of an organic liquid

8-10-111 Exemption, Chemical Plants: The provisions of Section 8-10-301 shall not apply to chemical plants until January 1, 1985. (Adopted 7/20/83)

8-10-200 DEFINITIONS

8-10-201 Chemical Plant: Any facility engaged in producing organic or inorganic chemicals and/or manufacturing products by chemical processes. Any facility or operation that has 28 as the first two digits in their Standard Industrial Classification Code as determined from the Standard Industrial Classification Manual published in 1972 by the Executive Office of the President, Office of Management and Budget. Chemical plants may include, but are not limited to the manufacture of: industrial inorganic and organic chemicals; plastic and synthetic resins, synthetic rubber, synthetic and other man made fibers; drugs; soap, detergents and cleaning preparations, perfumes, cosmetics and other toilet preparations; paints, varnishes, lacquers, enamels and allied products; agricultural chemicals; safflower and sunflower oil extracts; re-refining. (Adopted 7/20/83)

8-10-202 Petroleum Refinery: Any facility engaged in producing gasoline, kerosene, distillate fuel oils, residual fuel oils, lubricants or other products through distillation of petroleum or through redistillation, cracking, rearrangement or reforming of unfinished petroleum derivatives. (Adopted 7/20/83)

8-10-203 Process Unit: A manufacturing process which is independent of other processes and is continuous when supplied with a constant feed of raw materials and sufficient storage facilities for the final product. (Adopted 7/20/83)

8-10-204 Process Vessel: Any vessel in which organic compounds are fractionated on more than one tray or on packing, or chemically reacted, or washed or purified. (Renumbered 7/20/83)

8-10-300 STANDARDS

8-10-301 Process Vessel Depressurizing: The control of precursor organic compound emissions from depressurizing any process vessel at a petroleum refinery or a chemical plant during a process unit turnaround shall be accomplished so that the organic compounds, after passing through a knockout pot to remove the condensable fraction, must either be:

301.1 Recovered (add to the fuel gas system) and combusted,

301.2 Controlled and piped to an appropriate firebox or incinerator for combustion,

301.3 Flared,

301.4 Contained and treated so as to prevent their emissions to the atmosphere. Such procedures shall continue until the pressure within the process vessel is as close to atmospheric pressure as practicably possible, in no case shall a process vessel be vented to the atmosphere until the partial pressure of organic compounds in that vessel is less than 1000 mm Hg (4.6 psig).(Amended 3/17/83, 3/20/83)

8-10-400 ADMINISTRATIVE REQUIREMENTS

8-10-401 Turnaround Records: Refinery personnel shall keep records of each process unit turnaround, listing as a minimum:

401.1 The date of unit shutdown and/or depressurizing,

401.2 The approximate process vessel hydrocarbon concentration when the organic emissions were first discharged into the atmosphere, and

401.3 The approximate quantity of total precursor organic compounds emitted into the atmosphere. These records shall be kept for at least two (2) years and be made available to the APCO during any compliance inspection.(Amended 3/17/82, 7/10/83)

8-10-402 Increments of Progress: A person who must modify existing sources or install new control equipment at chemical plants to comply with the requirements of this Rule shall comply with the following compliance schedule:

402.1 January 1, 1984: Submit to the APCO final control plan which describes, as a minimum, the steps, including a construction schedule, that will be taken to achieve compliance with such requirements.

402.2 July 1, 1984: Submit a completed application for any Authority to Construct necessary to achieve compliance with such requirements.

402.3 January 1, 1985: Be in compliance with all the requirements of this Rule. (Amended July 20, 1983)

REGULATION 8
ORGANIC COMPOUNDS
RULE 11
METAL CONTAINER, CLOSURE AND COIL COATING

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- 8-11-202 Coil Coating
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REGULATION 8 ORGANIC COMPOUNDS RULE 11 METAL CONTAINER, CLOSURE AND COIL COATING

(Adopted January 24, 1979)

8-11-100 GENERAL

8-11-101 Description: The purpose of this Rule is to reduce emissions of volatile organic compounds (VOC) from the coating of metal coils, cans, drums, pails, lids and crowns.

8-11-110 Deleted September 20, 1989

8-11-200 DEFINITIONS

8-11-201 Coating Line: An operation or process for applying, drying, baking and/or curing surface coatings, together with associated equipment including a coating applicator, flashoff area and oven.

8-11-202 Coil Coating: Any coating applied to metal sheets or strips which are then rolled into coils for further industrial or commercial use.

8-11-203 Daily Weighted Average: The amount of volatile organic compounds emitted on a given day, considering actual production, VOC content of coatings used, and the degree of control achieved by any abatement equipment on the coating line or lines included in the submitted plan.

8-11-204 End Sealing Compound: A compound which is coated onto can ends and which functions as a gasket when the end is assembled onto the can.

8-11-205 Exterior Base Coating: A coating applied to the exterior of a can body, end, or flat sheet to provide protection to the metal or to provide background for any lithographic or printing operation.

(Amended December 19, 1984)

8-11-206 Exterior Body Spray: A coating sprayed on the exterior of the container body to provide a decorative or protective finish.

8-11-207 Interior Base Coating: A coating applied to the interior of a can body, end, or flat sheet to provide a protective lining between the product and the can.

(Amended December 19, 1984)

8-11-208 Interior Body Spray: A coating sprayed on the interior of the can body to provide a protective film between the product and the can.

8-11-209 Metal Container or Closure Coating: Any coating applied to either the interior or exterior of formed metal cans, drums, pails, lids or crowns or flat metal sheets which are intended to be formed into cans, drums, pails, lids or crowns.

8-11-210 Overvarnish: A coating applied directly over a design coating to reduce the coefficient of friction, to provide gloss and to protect the finish against abrasion and corrosion.

8-11-211 Three-piece Can Side-Seam Spray: A coating sprayed on the exterior and/or interior of a welded, cemented or soldered seam to protect the exposed metal.

8-11-212 Two-piece Can Exterior-End Coating: A coating applied to the exterior bottom end of a can to reduce the coefficient of friction and to provide protection to the metal.

(Amended November 19, 1997)

8-11-213 Deleted September 20, 1989

8-11-214 Deleted September 20, 1989

8-11-215 Volatile Organic Compound: Any organic compound (excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate) which would be emitted during use, application, curing or drying of a solvent or surface coating.

215.1 For purposes of calculating VOC content of a coating, any water or the following non-precursor organic compounds shall not be considered to be part of the coating:

- methylene chloride
- 1,1,1 trichloroethane
- trichlorotrifluoroethane (CFC-113)
- trichlorofluoromethane (CFC-11)
- dichlorodifluoromethane (CFC-12)
- dichlorotetrafluoroethane (CFC-114)
- chloropentafluoroethane (CFC-115)
- acetone
- parachlorobenzotrifluoride (PCBTF)
- cyclic, branched or linear, completely methylated siloxanes (VMS)

(Adopted September 20, 1989; Amended December 20, 1995)

8-11-216 Reconditioned Drums, Pails, or Lids: Any metal container which is reused, recycled or remanufactured.

(Adopted September 20, 1989)

8-11-217 Ink: Any coating used to impart graphical designs, letters, or numerals on the exterior surface of a metal container, closure, or coil.

(Adopted September 20, 1989, amended November 19, 1997)

8-11-218 Food Cans: Any metal container used for the storage of food products intended for human or animal consumption.

(Adopted November 19, 1997)

8-11-300 STANDARDS

8-11-301 Metal Container or Closure Coating Limitations: Except as provided in Sections 8-11-302 and 305, a person shall not apply any metal container or closure coating with a VOC content in excess of the following limits, expressed as grams VOC per liter (pounds VOC per gallon) of coating, as-applied, excluding water:

	Coating Category		Effective July 1, 1998	Effective Jan 1, 2000	Effective Jan 1, 2002
	<u>CANS</u>				
301.1	Sheet basecoat (interior and exterior) and overvarnish	225 (1.9)			
301.2	Deleted September 20, 1989				
301.3	Two-piece can exterior basecoat, overvarnish, and end coating	250 (2.1)			
301.4	Interior body spray				
	4.1 Two-piece cans	510 (4.2)	420 (3.5)		
	4.2 Three-piece cans	510 (4.2)	360 (3.0)		
301.5	Three-piece can side seam spray	660 (5.5)			
301.6	End sealing compound				
	6.1 Food cans	440 (3.7)			20 (0.1)
	6.2 Non-Food cans	440 (3.7)	20 (0.1)		
	6.3 Beverage cans	440 (3.7)	20 (0.1)		
301.7	Exterior body spray	420 (3.5)			
	<u>DRUMS, PAILS AND LIDS</u>				
301.8	Body Spray				
	8.1 Reconditioned Interior	510 (4.2)			
	8.2 Reconditioned Exterior	420 (3.5)			
	8.3 New Interior	510 (4.2)		420 (3.5)	
	8.4 New Exterior	420 (3.5)		340 (2.8)	
301.9	End Sealing Compound				
	9.1 Food Drums	440 (3.7)			60 (0.5)
	9.2 Non-Food Drums	440 (3.7)	60 (0.5)		
301.10	Inks, all applications	300 (2.5)			

(Amended 12/19/84; 9/20/89; 10/6/93; 11/19/97)

8-11-302 Emission Control Device Limitation for Metal Container or Closure Coatings: The use of coatings with VOC contents in excess of the limits specified in Section 8-11-301 shall be allowed, provided emissions of VOC to the atmosphere are controlled to an equivalent level by air pollution abatement

equipment with an abatement device efficiency of at least 90 percent that meets the requirements of Regulation 2, Rule 1.

(Amended September 20, 1989; October 6, 1993)

8-11-303 Coil Coating Limitation: Except as provided in Sections 8-11-304, a person shall not apply any coil coating with a VOC content in excess of 200 grams per liter of coating applied (1.7 lb/gal), excluding water.

(Amended December 19, 1984)

8-11-304 Emission Control Device Limitation for Coil Coating: The requirements of Section 8-11-303 shall not apply to a coil coating line from which emissions of VOC to the atmosphere are controlled to no more than 120 grams per liter of coating applied (1.0 lb/gal), excluding water, by air pollution abatement equipment with an abatement device efficiency of at least 90 percent that meets the requirements of Regulation 2, Rule 1.

(Amended December 19, 1984; September 20, 1989; October 6, 1993)

8-11-305 Alternative Emission Control Plan: The requirements of Sections 8-11-301 shall not apply to any coating line or coating lines which comply with an alternative emission control plan which satisfies all the following requirements:

305.1 Emissions of VOC, on a daily weighted average, shall be no greater than that amount which would result if the affected coating line or lines complied with all applicable requirements of Sections 8-11-301. Air pollution abatement devices used to control VOC emissions must achieve an abatement device efficiency of at least 90 percent and meet the requirements of Regulation 2, Rule 1.

305.2 The plan shall be submitted to the APCO for review and approval on an annual basis.

305.3 The plan shall include methods acceptable to the APCO for demonstrating compliance with the plan on a daily basis. Such demonstration shall include the following:

3.1 List of products which will be coated on each line

3.2 Type of coatings which will be applied on each product

3.3 Amount of those coatings which will be applied on each coating product

3.4 VOC content or equivalent emission level for each coating, per gallon or liter of solids for each coating

3.5 Detailed description of compensation reduction to be achieved for each non-complying product.

305.4 The information required in subsection 305.3 shall be available for inspection by the APCO on each production day and maintained for two years.

305.5 The plan shall contain credit only for reductions achieved on coating lines subject to this Rule and not for emission reductions required by other District rules or regulations.

305.6 Failure to comply with any provision of an approved plan shall constitute a violation of this Rule.

305.7 The person submitting the plans shall retain such records for two years and submit such information on coating usage, coating composition, laboratory analysis, source tests, or other information as required by the APCO to determine compliance with the plan.

305.8 If any District regulation is adopted or amended after approval of the plan, which requires emission reductions which are included in the plan, a new plan shall be submitted which does not include credit for those reductions.

(Amended December 19, 1984; September 20, 1989; October 6, 1993)

8-11-306 Surface Preparation and Cleanup Solvent: The requirements of this Section shall apply to any person using organic solvent for surface preparation or cleanup.

306.1 A person shall use closed containers for storage or disposal of cloth or paper used for solvent surface

preparation and cleanup.

306.2 A person shall store fresh or spent solvent in closed containers.

306.3 A person shall not use organic compounds for the cleanup of spray equipment including paint lines unless equipment for collecting the cleaning compounds and minimizing their evaporation to the atmosphere is used.

(Adopted September 20, 1989)

8-11-400 ADMINISTRATIVE REQUIREMENTS

8-11-401 Deleted September 20, 1989

8-11-402 Operation and Maintenance Plan: Every twelve months, at least 60 days prior to permit renewal, any person subject to the provisions of Section 8-11-302, 304 or 305 where applicable shall submit to the APCO for approval an Operation and Maintenance (O/M) plan. Such plan will contain the following elements:

Afterburner Temperatures:

flame unit: minimum operating temperature

catalytic unit: minimum preheat temperature, temperature increase across catalyst bed

Burner maintenance schedule

Catalyst cleaning/recharging schedule, where applicable

Duct inspection schedule

(Adopted December 19, 1984; Amended September 20, 1989)

8-11-403 Compliance Schedule: Any person subject to the provisions of Section 8-11-504 shall comply with the following increment of progress:

403.1 By January 1, 1990, be in full compliance. (Adopted September 20, 1989)

8-11-500 MONITORING AND RECORDS

8-11-501 Coating Records: Any person subject to Section 8-11-301, 302, 303 or 304 shall comply with the following requirements.

501.1 A person shall maintain a current list of coatings in use which provides all of the coating data necessary to evaluate compliance.

501.2 A person shall maintain records on a daily basis showing the type and amount of each coating used.

501.3 A person shall maintain records on a monthly basis showing the types and amounts of solvent used for surface preparation and cleanup.

501.4 A person shall have available monthly records that provide information on a daily basis of the types of inks used. The amounts of ink used shall be maintained on a monthly basis.

501.5 Such records shall be retained and made available for inspection by the APCO for the previous 24-month period.

(Adopted December 19, 1984; Amended September 20, 1989)

8-11-502 Deleted September 20, 1989

8-11-503 Alternate Emission Control Plan Records: Any person subject to Section 8-11-305 shall comply with the provisions of Section 8-11-501, in addition to the elements already required in subsection 305.3.

503.1 Excess Reporting: Any record showing violation of subsection 305.1 shall be reported by sending a

copy of such record to the Enforcement Division of the District within 96 hours following the occurrence. Such report will include an explanation of the cause of the violation and the corrective action taken.

(Adopted December 19, 1984; Amended September 20, 1989)

8-11-504 Afterburner Temperature, Monitoring: Any person incinerating gases, vapors or gas entrained effluent pursuant to the provisions of Sections 8-11-302, 8-11-304, and, where applicable, 8-11-305 shall install, calibrate and maintain in good working order a device which continuously records the operating temperature of the incineration unit. (Adopted September 20, 1989)

8-11-600 MANUAL OF PROCEDURES

8-11-601 Analysis of Samples: Samples of volatile organic compounds as specified in Sections 8-11-301 and 303 and subsection 8-11-305.7 shall be analyzed as prescribed in the Manual of Procedures, Volume III, Method 21 or 22.

(Adopted March 17, 1982; Amended December 19, 1984)

8-11-602 Determination of Emissions: Emissions of volatile organic compounds as specified in Sections 8-11-302 and 304 and subsection 8-11-305.7 shall be measured as prescribed by any of the following methods 1) BAAQMD Manual of Procedures, Volume IV, ST-7, 2) EPA Method 25 or 25A. When either EPA Method 25 or 25A is used, control device equivalency shall be determined as prescribed in 55 FR 26865 (June 29, 1990). A source shall be considered in violation if the VOC emissions measured by any of the referenced test methods exceed the standards of this rule.

(Adopted March 17, 1982; Amended December 19, 1984; June 15, 1994)

8-11-603 Deleted October 6, 1993

**REGULATION 8
ORGANIC COMPOUNDS
RULE 12
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REGULATION 8
ORGANIC COMPOUNDS
RULE 12
PAPER, FABRIC AND FILM COATING

(Adopted January 17, 1979)

8-12-100 GENERAL

8-12-101 Description: The purpose of this Rule is to limit emissions of volatile organic compounds (VOC) from the application of coatings and adhesives to paper, fabric or films. Any operation which is determined to be exempt from the provisions of this Rule shall be subject to the provisions of Rule 4, if not already subject to another rule of Regulation 8. (Amended June 18, 1986; June 21, 1989)

8-12-110 Exemptions: This Rule shall not apply to the following:

110.1 Any coating line which emits less than 6.5 kg (14.3 pounds) per day.

110.2 Deleted October 6, 1993

110.3 Operations manufacturing converted flexible packaging materials for packaging of food or health care products for human or animal consumption. Such line is subject to Rule 20 of this Regulation unless exempted by that rule.

110.4 Deleted June 21, 1989

110.5 Any coating line where printing or decorative design is applied on the same line. Such line is subject to Rule 20 of this Regulation unless exempted by that rule.

(Amended July 16, 1980; June 18, 1986; June 21, 1989; October 6, 1993)

8-12-200 DEFINITIONS

8-12-201 Approved Emission Control System: A system for reducing emissions of VOC to the atmosphere, consisting of a control device and a collection system, which meets the requirements of Regulation 2, Rule 1, and which satisfies the following conditions:

201.1 The control device shall operate at the efficiency required to meet the standards set forth in Section 301 at all times during normal operation of the equipment being controlled.

201.2 The collection system shall vent all drying oven exhaust to the control device.

201.3 The collection system shall have one or more inlets for collection of fugitive emissions.

201.4 The collection system shall be designed and operated in accordance with good engineering practice for maximum collection of fugitive emissions.

(Adopted June 18, 1986; Amended October 6, 1993)

8-12-202 Coating Line: All operations involved in the application, curing and/or drying of paper, fabric and film coatings or adhesives, which are applied uniformly across the substrate.

(Renumbered June 18, 1986; Amended June 21, 1989)

8-12-203 Converted Flexible Packaging Materials: Any paper, plastic or foil substrate, or any combination of those materials, which is coated, waxed, laminated, printed or otherwise treated for fabrication into bags, pouches or other preformed flexible packages. (Renumbered June 18, 1986)

8-12-204 Fabric Coating: Any decorative or protective coating or reinforcing material applied on or impregnated into textile fabric or vinyl coated textile fabric or vinyl sheets.

(Renumbered June 18, 1986)

- 8-12-205 Film Coating:** Any coating applied in a web coating process on any film substrate other than paper or fabric, including but not limited to typewriter ribbons, photographic film, magnetic tape and metal foil gift wrap. (Renumbered June 18, 1986)
- 8-12-206 Paper Coating:** Any coating applied on or impregnated into paper, including but not limited to adhesive tapes and labels, book covers, post cards, office copier paper, drafting paper and pressure sensitive tape. (Renumbered June 18, 1986)
- 8-12-207 Liquid Leak:** A leak of or greater than four drops per minute.
(Adopted June 21, 1989)
- 8-12-208 Volatile Organic Compounds:** Any organic compound (excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate) which would be emitted during use, application, curing or drying of a solvent or surface coating.
- 208.1 For purposes of calculating VOC content of a coating, any water or the following non-precursor organic compounds shall not be considered to be part of the coating:
- methylene chloride
 - 1,1,1 trichloroethane
 - 1,1,2-trichlorotrifluoroethane (CFC-113)
 - trichlorofluoromethane (CFC-11)
 - dichlorodifluoromethane (CFC-12)
 - dichlorotetrafluoroethane (CFC-114)
 - chloropentafluoroethane (CFC-115)
 - chlorodifluoromethane (HCFC-22)
 - trifluoromethane (HFC-23)
 - acetone
 - parachlorobenzotrifluoride (PCBTF)
 - cyclic, branched or linear, completely methylated siloxanes (VMS)
- (Adopted June 21, 1989, Amended December 20, 1995)
- 8-12-209 Adhesive:** Any substance applied for the primary purpose of bonding surfaces together. (Adopted June 21, 1989)
- 8-12-210 Key System Operating Parameter:** An emission control system operating parameter, such as temperature, flow rate or pressure, that ensures operation of the abatement equipment within manufacturer specifications and compliance with the standards in Section 8-12-301.2. (Adopted June 15, 1994)
- 8-12-300 STANDARDS**
- 8-12-301 Limitations, Coating Lines:** A person subject to the requirements of this Rule shall satisfy one of the following conditions:
- 301.1 Low-Solvent Coating or Adhesive - A person using low-solvent coatings or adhesives to comply with this Rule shall use a coating or adhesive with a VOC content of less than 265 grams per liter of coating applied (2.2 pounds VOC per gallon), excluding water.
- 301.2 Approved Emission Control System - A person using an approved emission control system as defined in this Rule shall collect and reduce VOC emissions to less than 120 grams per liter of coating applied (1.0 pounds VOC per gallon), excluding water.
(Amended June 18, 1986; June 21, 1989)
- 8-12-302 Storage and Mixing Operations:** A person shall not allow any liquid leaks from containers storing organic solvents or from tanks for mixing coatings to be used on any paper, fabric or film coating line. All such containers and tanks shall be covered at all times except when material is being added or removed, when the tank or container is being cleaned, or when the container is empty.
- 8-12-303 Deleted September 20, 1989**
- 8-12-304 Compliance Statement Requirement:** The manufacturer of all coatings and adhesives which are sold for use in paper, fabric and film coating within the District shall include a designation of VOC (as defined in Section 8-12-209) expressed in grams per liter or pounds per gallon on data sheets. (Adopted June 21, 1989)

- 8-12-305 Surface Preparation and Cleanup Solvent:** The requirements of this Section shall apply to any person using cleanup solvent:
- 305.1 A person shall not use open containers for the storage or disposal of cloth or paper impregnated with organic compounds that is used for surface preparation, cleanup or coating removal.
 - 305.2 A person shall not store spent or fresh organic compounds to be used for surface preparation, cleanup or coating removal in open containers.
- (Adopted June 21, 1989)

8-12-500 MONITORING AND RECORDS

- 8-12-501 Coating Records:** Any person subject to Section 8-12-301:
- 501.1 Maintain a current list of coatings or adhesives in use which provides all of the data necessary to evaluate compliance.
 - 501.2 Record on a daily basis the type and amount of each coating or adhesive used.
 - 501.3 Record on a daily basis approved emission control key system operating parameters, as defined in Section 8-12-210, when air pollution abatement equipment is used to comply with the requirements of Section 301.2.
 - 501.4 Records shall be retained and available for inspection by the APCO for the previous 24-month period.
- (Adopted June 18, 1986; Amended June 21, 1989; June 15, 1994)

8-12-502 Deleted September 20, 1989

8-12-600 MANUAL OF PROCEDURES

8-12-601 Analysis of Samples: Samples of volatile organic compounds as specified in subsection 8-12-301.1 shall be analyzed as prescribed in the Manual of Procedures, Volume III, Methods 21 or 22. (Adopted March 17, 1982, Amended June 18, 1986)

8-12-602 Determination of Emissions: Emissions of volatile organic compounds as specified in subsections 8-12-110.1, 301.2 or 303.7 shall be measured as prescribed any of the following methods: 1) BAAQMD Manual of Procedures, Volume IV, ST-7, 2) EPA Method 25 or 25A. When either EPA Method 25 or 25A is used, control device equivalency shall be determined as prescribed in 55 FR 26865 (June 29, 1990). A source shall be considered in violation if the VOC emissions measured by any of the referenced test methods exceed the standards of this rule.

(Adopted March 17, 1982; Amended June 18, 1986; June 15, 1994)

**REGULATION 8
ORGANIC COMPOUNDS
RULE 13
LIGHT AND MEDIUM DUTY MOTOR VEHICLE ASSEMBLY PLANTS**

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REGULATION 8
ORGANIC COMPOUNDS
RULE 13
LIGHT AND MEDIUM DUTY MOTOR VEHICLE ASSEMBLY PLANTS

(Adopted January 24, 1979)

8-13-100 GENERAL

8-13-101 Description: The purpose of this Rule is to limit emissions of volatile organic compounds (VOC) from operations at light- and medium-duty motor vehicle assembly plants.

8-13-110 Deleted September 20, 1989

8-13-111 Deleted September 20, 1989

8-13-200 DEFINITIONS

8-13-201 Coating Line: That portion of a motor vehicle assembly plant where surface coatings are applied, dried and/or cured on such vehicles or vehicle components.

(Amended September 20, 1989)

8-13-202 Electrophoretic Primer: Any primer applied by dipping the component in a coating bath with an electrical potential difference between the component and the bath.

8-13-203 Light- and Medium-Duty Motor Vehicles: All passenger cars, light-duty trucks and medium-duty vehicles as defined in Section 1900, Title 13, California Code of Regulations.

(Amended September 20, 1989)

8-13-204 Primer: All coatings under the topcoat.

8-13-205 Primer Surfacer: Any primer coating applied over an electrophoretic primer for the primary purpose of establishing film build.

(Amended September 20, 1989)

8-13-206 Spray Primer: Any primer, including sealers and adhesives, except primer surfacer.

(Amended September 20, 1989)

8-13-207 Topcoat: The final coating or series of coatings applied for the purpose of establishing the final color and/or protective surface, including ground coat, basecoat/clearcoat systems and paint sealer materials.

(Amended September 20, 1989)

8-13-208 Deleted September 20, 1989

8-13-209 Transfer Efficiency: The ratio of coating solids applied on the object being coated to the total volume of coating solids sprayed in the operation, expressed as a percentage as demonstrated pursuant to Section 8-13-603.

(Adopted November 17, 1982; Amended September 20, 1989)

8-13-210 Volatile Organic Compound: Any organic compound (excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate) which would be emitted during use, application, curing or drying of a solvent or surface coating.

210.1 For purposes of calculating VOC content of a coating, any water or any of the following non-precursor organic compounds shall not be considered to be part of the coating:

methylene chloride

1,1,1 trichloroethane

trichlorotrifluoroethane (CFC-113)

trichlorofluoromethane (CFC-11)

dichlorodifluoromethane (CFC-12)

dichlorotetrafluoroethane (CFC-114)

chloropentafluoroethane (CFC-115)

acetone

parachlorobenzotrifluoride (PCBTF)

cyclic, branched or linear, completely methylated siloxanes (VMS)

(Adopted September 20, 1989, Amended December 20, 1995)

- 8-13-211 Final Repair Coat:** Any incidental coating applied to a fully assembled vehicle or vehicle part subsequent to the overall vehicle or vehicle part coating for the purpose of repairing minor imperfections or mechanical damage incurred prior to intended use.
(Adopted September 20, 1989; Amended June 15, 1994)
- 8-13-212 Flexible Parts Coatings:** Any coating intended for use on a part or product designed to withstand significant deformation without apparent damage, such as flexible automobile bumpers.
(Adopted September 20, 1989)
- 8-13-213 Flow Control Material:** Solvent added to the electrophoretic primer coating tank for the purpose of stabilizing flow of the tank mixture.
(Adopted September 20, 1989)
- 8-13-214 Off-Line Automotive Coatings:** Incidental coating of automobile components which does not occur on the vehicle body coating line(s).
(Adopted September 20, 1989)
- 8-13-215 Key System Operating Parameter:** An air pollution abatement equipment operating parameter, such as temperature, flow rate or pressure, that ensures operation of the abatement equipment within manufacturer specifications and compliance with the standards in Sections 8-13-306, 307, and 308.
(Adopted June 15, 1994)

8-13-300 STANDARDS

8-13-301 Deleted September 20, 1989

- 8-13-302 Final Limits, Topcoat, Spray Primer, Primer Surfacer:** For each operation as defined pursuant to Section 8-13-603, a person shall not discharge into the atmosphere VOC emissions in excess of:
- 302.1 1.80 kilograms of VOC per liter (15.0 lbs/gal) of applied coating solids from each spray primer operation.
 - 302.2 1.80 kilograms of VOC per liter (15.0 lbs/gal) of applied coating solids from each primer surfacer operation.
 - 302.3 1.80 kilograms of VOC per liter (15.0 lbs/gal) of applied coating solids from each topcoat operation.
(Amended September 20, 1989)

8-13-303 Final Repair Coat Limitation: A person shall not apply on any light- or medium-duty vehicle coating line any final repair coat with a VOC content in excess of 580 grams per liter of coating applied, excluding water (4.8 lbs/gal), on a daily weighted average basis.
(Amended September 20, 1989; October 6, 1993)

8-13-304 Deleted September 20, 1989

8-13-305 Deleted September 20, 1989

8-13-306 Limits, Electrophoretic Primer: A person shall not apply to any part or product subject to this Rule any electrophoretic primer which has a VOC content in excess of 145 grams per liter (1.2 lbs/gal) of coating applied, excluding water, unless emissions to the atmosphere are controlled to an equivalent level by use of an air pollution abatement device with an abatement device efficiency of at least 90% that meets the requirements of Regulation 2, Rule 1.

(Adopted September 20, 1989; Amended October 6, 1993)

8-13-307 Limits, Flexible Parts Coatings: A person shall not apply to any flexible part or product subject to this Rule any coating which has a VOC content in excess of the following limits expressed as grams of VOC per liter (lbs VOC per gal) of coating applied, excluding water, unless emissions to the atmosphere are controlled to an equivalent level by use of an air pollution abatement device with an abatement device efficiency of at least 90% that meets the requirements of Regulation 2, Rule 1:

- 307.1 flexible primer 490 grams/liter (4.1 lbs/gal)
- 307.2 color topcoat 450 grams/liter (3.8 lbs/gal)
- 307.3 basecoat/clearcoat 540 grams/liter (4.5 lbs/gal)
(combined system)

(Adopted September 20, 1989; Amended October 6, 1993)

8-13-308 Limits, Off-Line Coatings: A person shall not apply to any part or product subject to this Rule any off-line coating which has a VOC content in excess of 340 grams per liter (2.8 lbs/gal) of coating applied, excluding water, unless emissions to the atmosphere are controlled to an equivalent level by use of an air pollution abatement

device with an abatement device efficiency of at least 90% that meets the requirements of Regulation 2, Rule 1.

(Adopted September 20, 1989; Amended October 6, 1993)

8-13-309 Surface Preparation and Cleanup Solvent: The requirements of this Section shall apply to any person using solvent for surface preparation and cleanup.

309.1 A person shall use closed containers for the storage or disposal of cloth or paper used for solvent surface preparation and cleanup.

309.2 A person shall store fresh or spent solvent in closed containers.

309.3 A person shall not use organic compounds for the cleanup of spray equipment, including paint lines, unless equipment for collecting the organic compounds and minimizing their evaporation to the atmosphere is used.

(Adopted September 20, 1989)

8-13-400 ADMINISTRATIVE REQUIREMENTS

8-13-401 Deleted November 17, 1982

8-13-402 Deleted September 20, 1989

8-13-403 Deleted September 20, 1989

8-13-404 Deleted September 20, 1989

8-13-405 Deleted September 20, 1989

8-13-406 Compliance Verification: Any person subject to the provisions of Section 8-13-302 shall submit to the APCO for approval an initial Compliance Verification for topcoat applications on or before April 1, 1990, and a second Compliance Verification for all other coating applications on or before October 1, 1990. Subsequent Compliance Verifications shall be submitted to the APCO for approval on or before April 1 every year thereafter. A new Compliance Verification must be submitted within 180 days of a significant modification to coatings or application equipment. A Compliance Verification shall include the following elements:

406.1 Amount of each coating used.

406.2 VOC content of each coating used in grams per liter or pounds per gallon.

406.3 Percent solids by volume of each coating used.

406.4 Transfer efficiency for the application of each coating used.

406.5 Calculations based on the above elements which verify compliance with the applicable standard.

(Adopted September 20, 1989)

8-13-500 MONITORING AND RECORDS

8-13-501 Usage Records, Electrophoretic Primer: Any person using electrophoretic primer shall maintain records of all materials added to primer coating tank, including amount added, VOC content of material added and date added. These records shall be available for inspection for a period of two years. VOC content of electrophoretic primer shall be calculated as a monthly average, based on all materials added and their respective VOC contents. Flow-control material added during downtime periods of seven or more consecutive days for purposes of stabilizing the tank mixture may be excluded from the VOC content calculation.

(Adopted November 17, 1982; Amended September 20, 1989)

8-13-502 Deleted September 20, 1989

8-13-503 Usage Records, Coatings: Any person subject to Sections 8-13-302, 8-13-303, 8-13-307, 8-13-308, and 8-13-309 shall comply with the following requirements:

503.1 The person shall maintain and have available during an inspection, a current list of coatings in use which provides all of the coating data necessary to evaluate compliance including the following information, as applicable:

a. Coating, catalyst and reducer used

b. Mix ratio of components used

c. VOC content of coating as applied

503.2 A person shall have monthly records that provide the following information on a daily basis, as applicable:

a. Type of coating used

- b. Mix ratio of materials added to coating
- c. Quantity of each coating applied
- d. VOC content of each coating as applied

503.3 The person shall maintain records on a monthly basis showing the type and amount of solvent used for cleanup and surface preparation.

503.4 Such records shall be retained and available for inspection by the APCO for the previous 24-month period. (Adopted September 20, 1989)

8-13-504 Air Pollution Abatement Equipment, Recordkeeping Requirements: Any person operating air pollution abatement equipment to comply with Sections 8-13-306, 307 and 308, in addition to Section 8-13-503 shall record an applicable key system operating parameter(s) on a daily basis. (Adopted June 15, 1994)

8-13-600 MANUAL OF PROCEDURES

8-13-601 Analysis of Samples: Samples of volatile organic compounds as specified in Section 8-13-300 shall be analyzed as prescribed in the Manual of Procedures, Volume III, Method 21 or 22. (Adopted March 17, 1982)

8-13-602 Determination of Emissions: Emissions of volatile organic compounds as specified in Sections 8-13-306, 8-13-307, and 8-13-308 shall be measured as prescribed by any of the following methods 1) BAAQMD Manual of Procedures, Volume IV, ST-7, 2) EPA Method 25 or 25A. When either EPA Method 25, or 25A is used, control device equivalency shall be determined as prescribed in 55 FR 26865 (June 29, 1990). A source shall be considered in violation if the VOC emissions measured by any of the referenced test methods exceed the standards of this rule.

(Adopted March 17, 1982; Amended September 20, 1989; June 15, 1994)

8-13-603 Determination of Compliance, including Transfer Efficiency: Determination of compliance, including transfer efficiency, to verify compliance with Section 8-13-302 and for reporting under subsection 8-13-406.4 shall be as prescribed in EPA Protocol for Determining the Daily Volatile Organic Compound Emission Rate of Automobile and Light-Duty Truck Topcoat Operations, dated December 1988.

(Adopted September 20, 1989)

**REGULATION 8
ORGANIC COMPOUNDS
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SURFACE PREPARATION AND COATING OF LARGE APPLIANCES AND
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REGULATION 8
ORGANIC COMPOUNDS
RULE 14
SURFACE PREPARATION AND COATING OF LARGE APPLIANCES AND
METAL FURNITURE

(Adopted March 7, 1979)

8-14-100 GENERAL

8-14-101 Description: The purpose of this Rule is to limit emissions of volatile organic compounds (VOC) from the surface preparation and coating of large appliances and metal furniture. Any operation which is determined to be exempt from the provisions of this Rule shall be subject to the provisions of Rule 4, if not already subject to another rule of Regulation 8.

(Amended 12/19/84; 6/7/89; 10/16/02)

8-14-110 Exemption, Low Usage Coatings: The requirements of Sections 8-14-301 and 302 shall not apply to the use of any coating used in volumes less than 75.7 liters (20 gal) in any one calendar year, provided the requirements in Section 8-14-402 are satisfied. A person shall be limited to 208.1 liters (55 gallons) total coating per year under this exemption.

(Amended 12/19/84; 1/7/87; 6/7/89; 6/1/94)

8-14-111 Exemption Touch-up: The provisions of this Rule shall not apply to touch-up operations.

(Amended 3/3/82; 1/7/87)

8-14-112 Exemption, Adhesives: The provisions of this Rule shall not apply to the application of adhesives.

(Adopted January 7, 1987)

8-14-113 Exemption, Aerosol Cans: The provisions of this Rule shall not apply to coating operations employing hand-held aerosol cans. Such coating is subject to the provisions of Regulation 8, Rule 49 or to the California Air Resources Board aerosol coating product regulation found in Title 17 of the California Code of Regulations, beginning at Section 94520.

(Adopted 1/7/87; Amended 6/20/90; 10/16/02)

8-14-114 Exemption Powder Coatings: The requirements of Sections 8-14-302 and 310 shall not apply to the use of any powder coating provided the emission of VOC to the atmosphere does not exceed that which is equivalent to the use of coatings which comply with those limits.

(Adopted 1/7/87; Amended 4/1/87; 6/7/89)

8-14-115 Deleted April 1, 1987

8-14-116 Deleted April 1, 1987

8-14-117 Deleted April 1, 1987

8-14-118 Deleted April 1, 1987

8-14-119 Deleted April 1, 1987

8-14-120 Limited Exemption, Specific Surface Preparation and Cleaning Operations: The surface preparation standards in Section 8-14-321 shall not apply to (i) surface preparation of electrical and electronic components, (ii) stripping of cured inks, coatings and adhesives or cleaning of resin, coating, ink and adhesive mixing, molding and application equipment, or (iii) surface preparation associated with research and development operations; performance testing to determine coating, adhesive or ink performance; or testing for quality control or quality assurance purposes.

(Adopted October 16, 2002)

8-14-200 DEFINITIONS

8-14-201 Air-Dried Coatings: Any coating which is not heated above 90°C (194°F) for the purpose of curing or drying.

- 8-14-202 Baked Coatings:** Any coating which is cured or dried in an oven where the oven air temperature exceeds 90°C (194°F).
(Amended December 19, 1984)
- 8-14-203 Deleted June 7, 1989**
- 8-14-204 Large Appliances:** Doors, cases, lids, panels and interior support parts of residential or commercial washers, dryers, ranges, refrigerators, freezers, water heaters, dishwashers, trash compactors, air conditioners and other similar products.
- 8-14-205 Metal Furniture:** Includes tables, chairs, waste baskets, beds, dishes, lockers, benches, shelving, file cabinets, room dividers, drapery hardware, window blinds and shades or other similar products or parts used to fabricate such products.
(Amended January 7, 1987)
- 8-14-206 Volatile Organic Compound:** Any organic compound (excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate) which would be emitted during use, application, curing or drying of a solvent or surface coating.
- 206.1 For purposes of calculating VOC content of a coating, any water or any of the following non-precursor organic compounds:
acetone
methyl acetate
parachlorobenzotrifluoride (PCBTF)
cyclic, branched or linear, completely methylated siloxanes (VMS)
shall not be considered to be part of the coating.
- 206.2 For the purposes of calculating the VOC content of a surface preparation or cleaning solvent, any water or the non-precursor organic compounds listed in subsection 8-19-206.1, above, shall be considered part of the volume of solvent but shall not be considered part of the VOC content of the solvent.
(Amended 1/7/87; 6/7/89; 12/20/95; 10/16/02)
- 8-14-207 Touch-up:** That portion of the surface preparation or coating operation which is incidental to the main coating process but necessary to cover minor imperfections or mechanical damage incurred prior to intended use.
(Amended 12/19/84; 1/7/87; 10/16/02)
- 8-14-208 Transfer Efficiency:** The ratio of the amount of coating solids adhering to the object being coated to the total amount of coating solids used in the application process, expressed as a percentage.
(Amended 3/3/82; 1/7/87)
- 8-14-209 Pretreatment Wash Primer:** Any coating which contains a minimum of 0.5% acid by weight, is necessary to provide surface etching and is applied directly to bare metal surfaces to provide corrosion resistance and adhesion.
(Adopted 1/7/87; Amended 6/7/89)
- 8-14-210 Powder Coating:** Any coating applied as a dry (without solvent or other carrier), finely divided solid which, when melted and fused, adheres to the substrate as a paint film.
(Adopted January 7, 1987)
- 8-14-211 Adhesive:** Any coating which is applied for the purpose of bonding surfaces together.
(Adopted January 7, 1987)
- 8-14-212 Solar Absorbant Coating:** Any coating which has as its primary purpose the absorption of solar radiation.
(Adopted January 7, 1987)
- 8-14-213 Heat-Resistant Coating:** Any coating which during normal use must withstand temperatures of at least 204°C (400°F).
(Adopted January 7, 1987)
- 8-14-215 Metallic Topcoats:** Any coating which contains more than 5 g/l (0.042 lb/gal) of metal particles, as identified on a technical or material safety data sheet, as applied, where such metal particles are visible in the dried film.
(Adopted 1/7/87; Amended 6/1/94)
- 8-14-216 High-Gloss Coating:** Any coating which achieves at least 85% reflectance on a 60° meter when tested by ASTM Method D-523-1989.
(Adopted 1/7/87; Amended 6/7/89; 10/6/93)
- 8-14-217 Deleted June 7, 1989**

- 8-14-218 High-Volume, Low-Pressure (HVLP) Spray:** Equipment used to apply coating by means of a gun which is designed to be operated and which is operated between 0.1 and 10.0 psig air atomizing pressure measured dynamically at the center of the air cap and at the air horns.
(Adopted 6/7/89; Amended 10/6/93; 10/16/02)
- 8-14-219 Electrostatic Application:** The application of charged atomized paint droplets which are deposited by electrostatic attraction.
(Adopted June 7, 1989)
- 8-14-220 Key System Operating Parameter:** An air pollution abatement equipment operating parameter, such as temperature, flow rate or pressure, that ensures operation of the abatement equipment within manufacturer specifications and compliance with the standards in Sections 8-14-302, and 310.
(Adopted June 1, 1994)
- 8-14-221 Approved Emission Control System:** A system for reducing emissions to the atmosphere, consisting of an abatement device and a collection system, which achieves the abatement efficiency specified in the applicable standards at all times during the operation and meets the requirements of Regulation 2, Rule 1.
(Adopted October 16, 2002)
- 8-14-222 Surface Preparation:** The cleaning of large appliances and metal furniture prior to coating, further treatment, sale, or intended use. Surface preparation of large appliances and metal furniture subject to and in compliance with Regulation 8, Rule 16: Solvent Cleaning Operations, is not subject to the surface preparation standards in this Rule.
(Adopted October 16, 2002)
- 8-14-223 Electrical and Electronic Components:** Components and assemblies of components that generate, convert, transmit, or modify electrical energy. Electrical and electronic components include, but are not limited to, wires, windings, stators, rotors, magnets, contacts, relays, printed circuit boards, printed wire assemblies, wiring boards, integrated circuits, resistors, capacitors and transistors. Cabinets in which electrical and electronic components are housed are not considered electrical and electronic components.
(Adopted October 16, 2002)
- 8-14-300 STANDARDS**
- 8-14-301 Deleted June 7, 1989**
- 8-14-302 Limits:** A person shall not apply to any large appliance or metal furniture part or product any coating with a VOC content in excess of the following limits, expressed as grams of VOC per liter of coating applied, excluding water, unless emissions to the atmosphere are controlled to an equivalent level by air pollution abatement equipment with an abatement device efficiency of at least 85% that meets the requirements of Regulation 2, Rule 1.
- | | |
|--------------------------|-------------------------------|
| 302.1 Baked Coatings | 275 grams/liter (2.3 lbs/gal) |
| 302.2 Air-Dried Coatings | 340 grams/liter (2.8 lbs/gal) |
- (Amended 3/3/82; 12/19/84; 1/7/87; 6/7/89; 10/6/93)*
- 8-14-303 Deleted June 7, 1989**
- 8-14-304 Transfer Efficiency:** All persons subject to this Rule shall use a method of coating application with a transfer efficiency of 65% or greater. Application by properly operated electrostatic application or HVLP spray, flow coat, roller coat, dip coat including electrodeposition and brush coat will serve to comply with this section.
(Amended 3/3/82; 12/19/84; 6/7/89)
- 8-14-305 Deleted October 6, 1993**
- 8-14-306 Deleted June 7, 1989**
- 8-14-307 Deleted June 7, 1989**
- 8-14-308 Prohibition of Specification:** No person shall require for use or specify the application of a coating or solvent subject to this Rule if such use or application results in a violation of any of the provisions of this Rule. The prohibition of this Section shall apply to all written or oral contracts under the terms of which any coating or solvent is to be applied to any large appliance for metal furniture product at any physical location within the District.

(Adopted 1/7/87; Amended 6/7/89; 10/16/02)

8-14-309 Compliance Statement Requirement: The manufacturer of coatings or solvents subject to this Rule shall include a designation of VOC as defined in Section 8-14-206.

(Adopted 6/7/87; Amended 4/1/87; 6/7/89; 10/16/02)

8-14-310 Specialty Coating Limitations: A person shall not apply to any large appliance or metal furniture any specialty coating with a VOC content in excess of the following limits, expressed as grams of VOC per liter (lb VOC per gal) of coating applied, excluding water, unless emissions to the atmosphere are controlled to an equivalent level by air pollution abatement equipment with an abatement device efficiency of at least 85% that meets the requirements of Regulation 2, Rule 1.

		<u>Baked</u>	<u>Air-Dried</u>
310.1	High-Gloss	360 (3.0)	420 (3.5)
310.2	Heat-Resistant	360 (3.0)	420 (3.5)
310.3	Metallic Topcoat	360 (3.0)	420 (3.5)
310.4	Pretreatment Wash Primer	420 (3.5)	420 (3.5)
310.5	Solar Absorbant	360 (3.0)	420 (3.5)

(Adopted 4/1/87; Amended 6/7/89; 10/6/93)

8-14-320 Solvent Evaporative Loss Minimization: Unless emissions to the atmosphere are controlled by an approved emission control system with an overall abatement efficiency of at least 85%, any person using organic solvent for surface preparation or cleanup:

- 320.1 Shall use closed containers for the storage or disposal of cloth or paper used for solvent surface preparation and cleanup.
- 320.2 Shall close containers of fresh or spent solvent, coating or catalyst when not in use.
- 320.3 Shall not use volatile organic compounds for the cleanup of spray equipment including paint lines with a VOC content in excess of 50 g/l (0.42 lbs/gal) unless the VOC can be pressurized through spray equipment with the atomizing air off and collected and stored in a closed container until recycled or properly disposed of offsite.

(Adopted 6/7/89; Amended 10/16/02)

8-14-321 Surface Preparation Standards: Effective June 1, 2003, no person shall use a surface preparation solvent with a VOC content that exceeds 50 g/l (0.42 lbs/gal) for surface preparation of any metal part or product unless emissions to the atmosphere are controlled to an equivalent level by an approved emission control system with an abatement device efficiency of at least 85 percent that meets the requirements of Regulation 2, Rule 1.

(Adopted October 16, 2002)

8-14-400 ADMINISTRATIVE REQUIREMENTS

8-14-401 Deleted December 19, 1984

8-14-402 Low Usage Coating Petition: Any person seeking to satisfy the conditions of Section 8-14-110 shall comply with the following requirements:

- 402.1 The user or specifier shall petition the APCO in writing that substitute complying coatings are not available.
- 402.2 If the APCO grants written approval, such petition will be repeated on an annual basis.
- 402.3 If the APCO grants written approval, such approval shall contain volume and VOC limit conditions.
- 402.4 Records shall be maintained as in Section 8-14-501.

(Adopted 3/3/82; Amended 12/19/84; 1/7/87; 6/7/89; 10/6/93)

8-14-403 Deleted June 7, 1989

8-14-500 MONITORING AND RECORDS

8-14-501 Coating Records: Any person using coatings or solvents subject to this Rule shall:

- 501.1 Maintain a current list of coatings in use which provides all of the coating data necessary to evaluate compliance, including the following information, as applicable:
 - a. coating, catalyst and reducer used
 - b. quantity of each coating applied
 - c. VOC content of coating as applied
 - d. VOC content of surface preparation and clean up solvent, as applied.
- 501.2 Record on a daily basis the following information, as applicable:
 - a. coating and mix ratio of components in the coating used
 - b. quantity of each coating applied
 - c. identification of specialty coating limit category
 - d. oven temperature
- 501.3 Record on a monthly basis the type and amount of surface preparation and clean up solvent unless more frequently specified in permit conditions imposed per Regulation 2-1-403.
- 501.4 Retain and have the records available for inspection by the APCO for two years.

(Adopted 12/19/84; Amended 1/7/87; 4/1/87; 6/7/89; 6/1/94; 10/16/02)

8-14-502 Deleted October 6, 1993

8-14-503 Air Pollution Abatement Equipment, Recordkeeping Requirements: Any person operating air pollution abatement equipment to comply with Sections 8-14-302, 310, 320 and/or 321, in addition to Section 8-14-501 shall record key system operating parameters on a daily basis.

(Adopted 6/1/94; Amended 10/16/02)

8-14-600 MANUAL OF PROCEDURES

8-14-601 Analysis of Samples: Samples of volatile organic compounds as specified in Sections 8-14-302 and 310 shall be analyzed as prescribed in the Manual of Procedures, Volume III, Method 21 or 22.

(Adopted 3/17/82; Amended 12/19/84; 1/7/87; 4/1/87; 6/7/89)

8-14-602 Determination of Emissions: Emissions of volatile organic compounds as specified in Sections 8-14-302, 310, 320 and/or 321 shall be measured as prescribed by any of the following methods: 1) BAAQMD Manual of Procedures, Volume IV, ST-7, 2) EPA Method 25 or 25A. When either EPA Method 25 or 25A is used, control device equivalency shall be determined as prescribed in 55 FR 26865 (June 29, 1990). A source shall be considered in violation if the VOC emissions measured by any one of the referenced test methods exceed the standards of this rule.

(Adopted 3/17/82; Amended 12/19/84; 1/7/87; 6/7/89; 6/1/94; 10/16/02)

8-14-603 Determination of Acid Content: Measurement of acid content as specified in Section 8-14-209 shall be determined in accordance with ASTM Method D-1613-96.

(Adopted 10/6/93; Amended 10/16/02)

8-14-604 Analysis of Solvent Samples: Samples of volatile organic compounds as specified in Section 8-14-320 or 321 shall be analyzed as prescribed in the Manual of Procedures, Volume III, Method 31.

(Adopted October 16, 2002)

8-14-605 Analysis of Exempt Compounds: Samples of PCBTF, VMS, and methyl acetate shall be analyzed by the Manual of Procedures, Volume III, Method 41, 43 and by ASTM Method D-6133-00, respectively.

(Adopted October 16, 2002)

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

REGULATION 8

ORGANIC COMPOUNDS

RULE 15

EMULSIFIED AND LIQUID ASPHALTS

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REGULATION 8

ORGANIC COMPOUNDS

RULE 15

EMULSIFIED AND LIQUID ASPHALTS

(Adopted March 21, 1979)

8-15-100 GENERAL

8-15-101 Description: The purpose of this Rule is to limit the emissions of volatile organic compounds caused by the use of Emulsified and Liquid asphalt in paving materials and paving and maintenance operations. (Amended September 16, 1987)

8-15-110 Deleted September 16, 1987

8-15-111 Deleted September 16, 1987

8-15-112 Exemptions, Cool Weather: The requirements of Section 8-15-302 (medium-cure liquid asphalt) shall not apply when the National Weather Service forecasts that atmospheric temperature for the 24-hour period following application will not exceed 10°C (50°F). (Amended September 16, 1987)

8-15-200 DEFINITIONS

8-15-201 Asphalt: The dark brown to black cementitious material (solid or liquid) of which the main constituents are bitumens which occur naturally or as a residue of petroleum refining.

8-15-202 Liquid Asphalt: Any asphalt which has been liquified by blending with petroleum solvents. (Amended September 16, 1987)

8-15-203 Emulsified Asphalt: Any asphalt liquified with water containing an emulsifier.

8-15-204 Medium-cure Liquid Asphalt: A liquid asphalt which meets the standard specifications of ASTM Designation D2027. (Amended September 16, 1987)

8-15-205 Paving Material: A mixture consisting mainly of an asphalt and aggregate.

8-15-206 Paving and Maintenance Operations: All activities involved in the new construction and maintenance

of roadways and parking areas.

8-15-207 Deleted September 16, 1987

8-15-208 Rapid-cure Liquid Asphalt: A liquid asphalt which meets the standard specifications of ASTM Designation D2028. (Amended September 16, 1987)

8-15-209 Slow-cure Liquid Asphalt (Road Oil): A liquid asphalt which meets the standard specifications of ASTM Designation D2026. For purposes of this Regulation, Road Oil and Slow-cure Liquid Asphalt shall be synonymous. (Amended September 16, 1987)

8-15-300 STANDARDS

8-15-301 Rapid-cure Liquid Asphalt: A person shall not use any rapid-cure liquid asphalt in paving material or in paving and maintenance operations. (Amended September 16, 1987)

8-15-302 Medium-cure Liquid Asphalt: A person shall not use, except as provided in Section 8-15-112, any medium-cure liquid asphalt in paving material or in paving and maintenance operations. (Amended September 16, 1987)

8-15-303 Emulsified Asphalt: A person shall not use any emulsified asphalt containing petroleum solvents in excess of 3% by volume in paving material or in paving and maintenance operations. (Amended September 16, 1987)

8-15-304 Slow-cure Liquid Asphalt (Road Oil): A person shall not use any slow-cure liquid asphalt which contains more than 0.5 percent by volume of petroleum solvents which boil at less than 260oC (500oF) as determined by ASTM Distillation Method D402 in paving material or in paving and maintenance operations. (Adopted September 16, 1987)

8-15-305 Prohibition of Manufacture and Sale: No person shall manufacture, offer for sale or sell a liquid asphalt or emulsified asphalt product if such product is prohibited by any of the provisions of this rule. The prohibition of this section shall apply to the manufacture and sale of any liquid asphalt or emulsified asphalt product which will be applied at any physical location within the District. (Adopted September 16, 1987)

8-15-306 Prohibition of Specification: No person shall require for use or specify the application of a liquid asphalt or emulsified asphalt product if such product is prohibited by any of the provisions of this rule. The prohibition of this Section shall apply to all written or oral contracts under the terms of which any liquid asphalt or emulsified asphalt product is to be applied at any physical location within the District. (Adopted September 16, 1987)

8-15-500 MONITORING AND RECORDS

8-15-501 Records: Any person who manufactures, sells, or offers for sale liquid asphalts and emulsified asphalts which contain solvents shall comply with the following requirements:

501.1 Maintain records showing the types and amounts of liquid asphalts and emulsified asphalts which contain solvents produced, sold, or applied, and the destination of these products.

501.2 Such records shall be retained and available for inspection by the APCO for the previous 24-month period. (Adopted September 16, 1987; Amended June 1, 1994)

8-15-600 MANUAL OF PROCEDURES

8-15-601 Analysis of Liquid Asphalt Samples: Samples of volatile organic compounds as specified in Sections 8-15-301, 302 and 304 shall be analyzed in accordance with ASTM Distillation Method D402. (Adopted

September 16, 1987)

8-15-602 Analysis of Emulsified Asphalt Samples: Samples of volatile organic compounds as specified in Section 8-15-303 shall be analyzed in accordance with ASTM Distillation Method D244. (Adopted September 16, 1987)

**REGULATION 8
ORGANIC COMPOUNDS
RULE 16
SOLVENT CLEANING OPERATIONS**

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**REGULATION 8
ORGANIC COMPOUNDS
RULE 16
SOLVENT CLEANING OPERATIONS**

(Adopted March 7, 1979)

8-16-100 GENERAL

8-16-101 Description: The purpose of this Rule is to limit emissions from solvent cleaning operations as defined in Section 8-16-220. Any operation which is determined to be exempt from the provisions of this Rule shall be subject to the provisions of Rule 4, if not already subject to another Rule of Regulation 8.

(Amended 7/3/85; 8/2/89; 9/16/98)

8-16-110 Deleted, September 16, 1998

8-16-111 Exemption, Wipe Cleaning: The requirements of Section 8-16-301 through 304 of this Rule shall not apply to any solvent cleaning operation using only wipe cleaning. In addition to any VOC limitations in other Regulation 8 rules, wipe cleaning is subject to the requirements of Section 8-16-501.3, and may be subject to VOC limitations in other Regulation 8 rules.

(Amended 7/3/85; 9/16/98; 10/16/02)

8-16-112 Exemption, Semiconductor Solvent Cleaners: The requirements of this Rule shall not apply to solvent sinks with less than 10 gallons of capacity, enclosed solvent cleaners or solvent vapor dryers at semiconductor manufacturing operations, which are subject to the requirements of Regulation 8, Rule 30.

(Adopted 7/3/85; Amended 3/16/88; 8/2/89; 9/16/98)

8-16-113 Exemption, Aerospace Stripping Operations: The requirements of this Rule shall not apply to stripping operations in aerospace assembly and component coating operations, which are subject to the requirements of Regulation 8, Rule 29.

(Adopted July 3, 1985)

8-16-114 Exemption, Emulsion or Solution Cleaners: The requirements of this rule shall not apply to solvent cleaning operations which employ only emulsion or solution cleaners, each containing less than one percent of volatile organic compounds by weight.

(Adopted 3/16/88; Amended 8/2/89; 9/16/98; 10/16/02)

8-16-115 Limited Exemption, Small, Unheated Solvent Cleaning Equipment: Except for the requirements in subsections 8-16-303.1, 303.3.1, and 303.3.2, the requirements of this Rule shall not apply to equipment or operations that use unheated solvent and that contain less than 3.785 liters (1 gal) of solvent, including volume in any remote reservoir, or have an evaporative area of less than 929 cm² (144 in² or 1 ft²).

(Adopted 3/16/88; Amended 8/2/89; 9/16/98; 10/16/02)

8-16-116 Exemption, Vapor Phase Solder Reflow Operations: The requirements of this Rule shall not apply to vapor phase solder reflow operations in printed circuit board manufacture and assembly operations, which are subject to the requirements of Regulation 8, Rule 4.

(Adopted March 16, 1988)

8-16-117 Exemption, Dry Cleaning Operations: The requirements of this Rule shall not apply to dry cleaning operations subject to Regulation 8, Rule 17 or Regulation 11, Rule 16.

(Adopted 8/2/89; Amended 9/16/98)

8-16-118 Limited Exemption, Compounds with Low Volatility: Solvent cleaning operations utilizing a compound with low volatility shall not be subject to the following requirements:

118.1 Conveyorized Solvent Cleaners: Subsections 302.3, and 302.5.

118.2 Cold Cleaners: Subsection 303.4.

(Adopted 8/2/89; Amended 10/16/02)

8-16-119 Limited Exemption, Sealed Chamber Solvent Cleaners: The requirements of subsections 302.1.6 and 302.3.2 shall not apply to the sealed chamber portion of conveyorized solvent cleaners.

(Adopted August 2, 1989)

8-16-120 Exemption, Stripping Operations: The requirements of this Rule shall not apply to stripping operations such as dry film stripping operations in printed circuit board manufacturing. These operations are subject to the requirements of Regulation 8, Rule 4. Tank type stripping operations in aerospace assembly and component coating operations are subject to the requirements of Regulation 8, Rule 29.

(Adopted September 16, 1998)

8-16-121 Limited Exemption, Single Cold Cleaner: Until June 1, 2003, the VOC content limitation in Section 8-16-303.5 for cleaning solutions used in cold cleaners does not apply to one cold cleaner per facility, provided that annual solvent loss from that cold cleaner does not exceed 20 gallons per year.

(Adopted 9/16/98; Amended 10/16/02)

8-16-122 Limited Exemption, Permitted Cold Cleaners: Until June 1, 2003, the VOC content limitation in Section 8-16-303.5 for cleaning solutions used in cold cleaners does not apply to any cold cleaner for which a District permit to operate has been obtained pursuant to Regulation 2, Rule 1.

(Adopted 9/16/98; Amended 10/16/02)

8-16-123 Limited Exemption, Specific Cleaning Operations: Effective June 1, 2003, Section 8-16-303.5 shall not apply to (i) the cleaning of aerospace components, electrical and electronic components, precision optics, medical devices, or cleaning of resin, coating, ink and adhesive mixing, molding and application equipment; or (ii) cleaning associated with research and development operations; performance testing to determine coating, adhesive or ink performance; or testing for quality control or quality assurance purposes.

(Adopted October 16, 2002)

8-16-124 Limited Exemption, Low VOC Cleaning Operations: The recordkeeping requirements of Section 8-16-501 shall not apply to any cold cleaners that comply with Section 8-16-303.5.1. However, they are subject to Section 8-16-502.

(Adopted October 16, 2002)

8-16-200 DEFINITIONS

8-16-201 Approved Emission Control Device: A device for reducing emissions of volatile organic compounds (VOC) to the atmosphere, consisting of a control device and a collection system, which meets the requirements of Regulation 2, Rule 1 and which satisfies the following conditions:

201.1 The control device shall achieve the control efficiency specified in the applicable standards section at all times during normal operation of the equipment being controlled.

201.2 The collection system shall have a ventilation rate of 15-20 m³/min per m² (49.2-65.6 ft³/min per ft²) of solvent cleaner opening unless necessary to meet OSHA requirements and have one or more inlets for collection of emissions or meet the requirements of Regulation 2, Rule 1.

201.3 The collection system shall be designed and operated in accordance with good engineering practice for maximum collection of emissions.

(Adopted 8/2/89; Amended 9/16/98)

8-16-202 Airless Solvent Cleaner: Any enclosed solvent cleaner that is automatically operated, seals at a differential pressure of 26 torr or less prior to the introduction of solvent vapor into the cleaning chamber, and maintains differential pressure under vacuum during all cleaning and drying cycles.

(Adopted September 16, 1998)

8-16-203 Airtight Solvent Cleaner: Any enclosed solvent cleaner that is automatically operated and seals at a differential pressure no greater than 0.5 psi during all cleaning and drying cycles.

(Adopted September 16, 1998)

8-16-204 Cold (Non-boiling) Cleaner: Any solvent cleaner excluding conveyorized solvent cleaners and vapor solvent cleaners, including, but not limited to, spray sinks, spray booths, spray gun washers and batch-loaded dip tanks.

(Amended 7/3/85; 8/2/89; 9/16/98)

- 8-16-205 Compounds with Low Volatility:** For the purpose of this rule, solvents with an initial boiling point (IBP) greater than 120°C (248°F) and where the initial boiling point exceeds the maximum operating temperature of a solvent cleaning operation by at least 100°C (180°F), shall be considered a low-volatile solvent.
(Adopted August 2, 1989)
- 8-16-206 Condenser Flow Switch:** A safety switch which shuts off sump heat if condenser water fails to circulate or rises above the designated operating temperature.
(Adopted July 3, 1985)
- 8-16-207 ConveyORIZED Solvent Cleaner:** Any continuously loaded, conveyORIZED cold or vapor solvent cleaner, including but not limited to gyro, vibra, monorail, cross-rod, mesh, belt and strip cleaners. Strip cleaners clean material by drawing the strip itself through the unit for cleaning prior to coating or other fabrication processes.
(Amended 3/16/88; 8/2/89)
- 8-16-208 Enclosed Solvent Cleaner:** A solvent cleaner consisting of sealed tanks and a drained spray chamber including, but not limited to, spray gun cleaners, closed loop processors, and spray processors.
(Adopted September 16, 1998)
- 8-16-209 Evaporative Area:**
- 209.1 Cold Cleaner:
 - 1.1 General: The surface area of the top of the solvent.
 - 1.2 Enclosed Reservoir: The surface area of the solvent sink or work area.
 - 209.2 Vapor Solvent Cleaner: The surface area of the top of the solvent vapor-air interface.
 - 209.3 ConveyORIZED Solvent Cleaner:
 - 3.1 Cold Cleaner: Definition in subsection 209.1.
 - 3.2 Vapor Solvent Cleaner: Definition in subsection 209.2.
- (Adopted August 2, 1989)*
- 8-16-210 Freeboard Chiller:**
- 210.1 Cold Cleaners: A condenser mounted in the freeboard area which provides a chilled air blanket above the solvent to reduce emissions.
 - 210.2 Vapor Solvent Cleaner: A secondary condenser mounted above the primary condenser which provides a chilled air blanket above the solvent vapor air-interface to reduce emissions.
 - 210.3 ConveyORIZED Solvent Cleaner:
 - 3.1 Cold Cleaner: Definition in subsection 210.1.
 - 3.2 Vapor Solvent Cleaner: Definition in subsection 210.2.
- (Adopted August 2, 1989)*
- 8-16-211 Freeboard Height:**
- 211.1 Cold Cleaner: The vertical distance from the top of the evaporative area to the top of the cold cleaner.
 - 211.2 Vapor Solvent Cleaner: The vertical distance from the evaporative area (solvent vapor-air interface) to the top of the solvent cleaner.
 - 211.3 ConveyORIZED Solvent Cleaner: The vertical distance from the top of the evaporative area to the bottom of the lowest opening in the solvent cleaner.
(Amended August 2, 1989)
- 8-16-212 Freeboard Ratio:** The freeboard height divided by the smaller of the length or width of the solvent cleaner evaporative area.
(Amended August 2, 1989)
- 8-16-213 Initial Boiling Point:** Boiling point of a solvent as defined by ASTM D-1078-93.
(Adopted 8/2/89; Amended 9/16/98)
- 8-16-214 Liquid Solvent Leak:** A liquid leak of 3 or more drops per minute.
(Adopted 8/2/89; Amended 10/16/02)
- 8-16-215 Makeup Solvent:** Makeup solvent is solvent added to the solvent cleaning operation less the amount of solvent collected from the solvent cleaning operation.
(Adopted 7/3/85; Amended 8/2/89; 9/16/98)
- 8-16-216 National Emission Standards for Hazardous Air Pollutants (NESHAP): Halogenated Solvent Cleaners:** Any solvent cleaner using any of the following six

halogenated solvents: methylene chloride, perchloroethylene, trichloroethylene, 1,1,1-trichloroethane, carbon tetrachloride and chloroform.

(Adopted September 16, 1998)

8-16-217 Remote Reservoir: A liquid solvent tank which is completely enclosed except for a solvent return opening no larger than 100 cm² which allows used solvent to drain into it from a separate solvent sink or work area and which is not accessible for soaking parts.

(Adopted 3/16/88; Amended 8/2/89; 9/16/98)

8-16-218 Sealed Chamber Solvent Cleaner: A conveyORIZED solvent cleaner in which all spraying and most vapor generating activity is fully contained inside the machine and completely isolated from the outside environment.

(Adopted August 2, 1989)

8-16-219 Solvent: Organic compounds which are used as diluents, thinners, dissolvers, viscosity reducers, cleaning agents or for other similar uses.

(Adopted August 2, 1989)

8-16-220 Solvent Cleaning Operations: For the purpose of this rule, a solvent cleaning operation is any process, including wipe cleaning, used to clean or dry metal and non-metal surfaces typically using a cold, vapor or conveyORIZED solvent cleaner.

(Adopted September 16, 1998)

8-16-221 Solvent Loss: All solvent emitted to atmosphere including, but not limited to, carry out, drag out, working and idling emissions.

(Adopted September 16, 1998)

8-16-222 Solvent Vapor Dryer: A vapor solvent cleaner in which solvents are volatilized to displace water in precision parts drying.

(Adopted September 16, 1998)

8-16-223 Spray Gun Cleaner: A solvent cleaner used to clean spray application equipment.

(Adopted September 16, 1998)

8-16-224 Spray Safety Switch: A safety switch which cuts off the pump of the spray applicator if the vapor level drops below a specified level.

(Adopted July 3, 1985)

8-16-225 Stripping: The removal of cured coatings, inks, adhesives or maskants. Examples include, but are not limited to wood furniture stripping, metal parts stripping and dry film stripper operations.

(Adopted September 16, 1998)

8-16-226 Vapor Concentration Exhaust Sensor: A sensor in the exhaust duct that causes the controller to shut down the unit based on the vapor concentration level registering in the duct.

(Adopted September 16, 1998)

8-16-227 Vapor Level Control Thermostat: A safety switch which turns off the sump heater if the thermostat senses the temperature rising above the designed operating level at the air-vapor interface.

(Adopted 7/3/85; Amended 3/16/88)

8-16-228 Vapor Solvent Cleaner: Any solvent cleaner that cleans through the condensation of hot solvent vapor on colder parts and boils liquid solvent producing solvent vapor that is used during the cleaning or drying cycle.

(Amended 8/2/89; 9/16/98)

8-16-229 Volatile Organic Compound (VOC): Any organic compound of carbon (excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate) which would be emitted during use, processing, application, or drying of a solvent, or other material. The test methods specified in Section 8-16-602 shall be used to determine compliance with the VOC content standards in Section 8-16-303.5.1.

(Adopted 8/2/89; Amended 10/16/02)

8-16-230 Waste Solvent Residue: Sludge which may contain dirt, oil, metal parts, and/or other undesirable waste products concentrated after heat distillation of the waste solvent either in the solvent cleaner itself or after distillation in a separate still.

(Adopted 7/3/85; Amended 8/2/89)

8-16-231 Water Flow Loss Sensor: A sensor that indicates loss of incoming water flow to the condenser and stops processing to solvent vapor dryers. It is equivalent to a condenser flow switch.

(Adopted September 16, 1998)

8-16-232 Wipe Cleaning: That method of cleaning which utilizes a material such as a rag wetted with a solvent, coupled with a physical rubbing process to remove contaminants from surfaces.

(Amended July 3, 1985)

8-16-233 Repair and Maintenance Cleaning: Cleaning of a part or object that occurs after its original manufacture or after its intended use and that is intended to repair, maintain, or return the object or part to use. Cleaning of equipment that is used in a manufacturing process is considered repair and maintenance cleaning. Facilities that perform repair and maintenance cleaning include, but are not limited to, automotive repair facilities.

(Adopted October 16, 2002)

8-16-234 Automotive Repair Facility: A facility which repairs or services automobiles or other motor vehicles, including, but not limited to, motorcycle, industrial truck, farm equipment, earth moving equipment, or other mobile equipment. Repair activities include, but are not limited to, exhaust systems repair, tire retreading and/or repair, glass replacement, transmission repair, general maintenance and/or repair, and automotive equipment parts and components repair. For the purposes of this Rule, automotive painting is not considered a repair activity.

(Adopted October 16, 2002)

8-16-235 Aerospace Components: The fabricated part, assembly of parts or completed unit of any aircraft, helicopter, missile or space vehicle. For the purposes of this Rule, an aerospace component shall include any aerospace prototype or test model.

(Adopted October 16, 2002)

8-16-236 Electrical and Electronic Components: Components and assemblies of components that generate, convert, transmit, or modify electrical energy. Electrical and electronic components include, but are not limited to, wires, windings, stators, rotors, magnets, contacts, relays, printed circuit boards, printed wire assemblies, wiring boards, integrated circuits, resistors, capacitors and transistors. Cabinets in which electrical and electronic components are housed are not considered electrical and electronic components.

(Adopted October 16, 2002)

8-16-237 Precision Optics: The optical elements used in electro-optical devices that are designed to sense, detect, or transmit light energy, including specific wavelengths of light energy and changes of light energy levels.

(Adopted October 16, 2002)

8-16-238 Medical Devices: An instrument, apparatus, implement, machine, contrivance, implant, in vitro reagent or other similar article, including any component or accessory that is (i) intended for use in the diagnosis of disease or other conditions, or in the cure, mitigation, treatment, or prevention of diseases, or (ii) is intended to affect the structure or any function of the body, or (iii) is defined in the National Formulary or the United States Pharmacopoeia or any supplement to it.

(Adopted October 16, 2002)

8-16-239 Key System Operating Parameter: An operating parameter of an approved emission control device, such as temperature, flow rate or pressure, that ensures operation of the equipment within manufacturer specifications and compliance with the standards in subsections 8-16-301.4.3, 302.5.3, or 303.4.4.

(Adopted October 16, 2002)

8-16-300 STANDARDS

8-16-301 Vapor Solvent Cleaner Requirements: Any person who operates a vapor solvent cleaning device shall conform to the following requirements:

301.1 General Operating Requirements:

- 1.1 The vapor solvent cleaning equipment and emission control device shall be operated and maintained in proper working order.
- 1.2 Liquid solvent leaks shall be repaired immediately or the equipment shall be shut down.

- 1.3 Solvent, including waste solvent, shall not be stored or disposed of in a manner that will cause or allow evaporation into the atmosphere.
- 1.4 Waste solvent residues shall be disposed of by one of the following methods:
 - a. Where residues are treated prior to further offsite treatment, such residues shall be stored in covered containers to minimize evaporation prior to service pick-up.
 - b. Where residues are treated prior to final disposal at an appropriate waste disposal facility, such residues shall not contain more than 10 percent solvent by volume and shall be stored in covered containers.
- 1.5 Devices designed to cover the solvent shall not be removed except to process work or to perform maintenance.
- 1.6 Solvent carry-out shall be minimized by the following methods:
 - a. Rack parts for best drainage,
 - b. Vertical speed of a powered hoist, if one is used, shall not be more than 3.3 m/min (11 ft/min) when lowering and raising the parts,
 - c. Retain the workload in the vapor zone until condensation ceases,
 - d. For manual loading/unloading tip out any pools of solvent on the cleaned parts before removal, and
 - e. Do not remove parts from the solvent cleaner until visually dry.
- 1.7 If a solvent spray is utilized, all spraying must be done at least 10 cm (4 in) below the top of the vapor level or the spray must be totally enclosed during the washing, rinsing, and drying process. The stream pressure shall be low enough to prevent liquid splashing outside the container.
- 1.8 Ventilation fans shall not be positioned in such a way to disturb the vapor zone.
- 1.9 If a water separator is present, water shall not be visually detectable in the solvent returning from the water separator to the solvent cleaner.
- 1.10 The solvent cleaning of porous or absorbent materials in vapor solvent cleaners is prohibited.
- 1.11 The workload shall not occupy more than half the solvent cleaner's evaporative area.
- 301.2 Vapor Solvent Cleaner General Equipment Requirements shall include all of the following:
 - 2.1 A container for the solvent and the articles being cleaned.
 - 2.2 An apparatus, cover, or enclosed reservoir which reduces solvent evaporation when not processing work in the solvent cleaner. The cover must be designed to easily open and close without disturbing the vapor zone. Where a solvent cleaner is subject to Section 301.4.1 and the evaporative area is greater than 1.0 m² (10.8 ft²), the cover must be powered.
 - 2.3 A method for draining cleaned parts, so that drained solvent is returned to the container
 - 2.4 A permanent, conspicuous label summarizing the applicable operating requirements contained in subsection 301.1.
- 301.3 Excluding enclosed solvent cleaners, Vapor Solvent Cleaner safety switches shall include all of the following:
 - 3.1 Condenser flow switch (except where non-water refrigerant is used) or a water flow loss sensor,
 - 3.2 Deleted September 16, 1998
 - 3.3 Spray safety switch when a spray wand is used.
 - 3.4 Vapor level control thermostat, or a vapor concentration exhaust sensor.

- 301.4 Vapor Solvent Cleaners shall not operate without one of the following control devices:
 - 4.1 A physically verifiable, freeboard ratio greater than or equal to 0.75.
 - 4.2 A freeboard chiller where the chilled air blanket temperature measured in °F at the coldest point on the vertical axis in the center of the solvent cleaner shall be no greater than 30 percent of the initial boiling point of the solvent used or 40°F.
 - 4.3 An approved emission control device with a control efficiency of 90 percent or more on a mass basis.
 - 4.4 An enclosed design in which the cover or door opens only when the dry part is entering or exiting the solvent cleaner unless the cleaner is an airless or airtight solvent cleaner.
- 301.5 Deleted March 16, 1988

(Amended 1/8/86; 3/16/88; 8/2/89; 6/15/94; 9/16/98; 10/16/02)

8-16-302 ConveyORIZED Solvent Cleaner Requirements: Any person who operates a conveyORIZED solvent cleaning device shall conform to the following requirements:

- 302.1 General Operating Requirements:
 - 1.1 The solvent cleaning equipment and emission control shall be operated and maintained in proper working order.
 - 1.2 Liquid solvent leaks shall be repaired immediately or the equipment shall be shut down.
 - 1.3 Solvent, including waste solvent, shall not be stored or disposed of in a manner that will cause or allow evaporation into the atmosphere.
 - 1.4 Waste solvent residues shall be disposed of by one of the following methods:
 - a. Where residues are treated prior to further offsite treatment such residues shall be stored in covered containers to minimize evaporation prior to service pick-up.
 - b. Where residues are treated prior to final disposal at an appropriate waste disposal facility, such residues shall not contain more than 10 percent solvent by volume and shall be stored in covered containers.
 - 1.5 Devices designed to cover the solvent shall not be removed except to process work or to perform maintenance.
 - 1.6 If a solvent spray is utilized in a conveyORIZED vapor solvent cleaner, all spraying must be done within the vapor zone. If a solvent flow is utilized in a conveyORIZED cold solvent cleaner, only a continuous fluid stream shall be used (not a fine, atomized, or shower type spray) unless an approved emission control device is used with a control efficiency of 90 percent or more on a mass basis. The stream pressure used in either type of conveyORIZED degreaser shall be low enough to prevent liquid splashing outside the container.
 - 1.7 Solvent carry out shall be minimized by using one or more of the following methods, where applicable:
 - a. For Strip Cleaners:
 - (1) vertical conveyor speed shall be less than 3.3 m/min (11 ft/min), or
 - b. For Non-strip cleaners:
 - (1) vertical conveyor speed shall be less than 3.3 m/min (11 ft/min), and
 - (2) parts shall be racked for best drainage.
 - 1.8 Other Operating Requirements for ConveyORIZED Solvent Cleaners:
 - a. Ventilation fans shall not be positioned in such a way as to direct air flow over the solvent cleaner openings.
 - b. Water shall not be visually detectable in solvent returning from the water separator to the solvent cleaner.

- 1.9 The solvent cleaning of porous or absorbent materials in conveyORIZED degreasers is prohibited.
- 302.2 ConveyORIZED Solvent Cleaner General Equipment Requirements shall include all of the following:
 - 2.1 A container for the solvent and the articles being cleaned.
 - 2.2 An apparatus, cover, or enclosed reservoir which reduces solvent evaporation when not processing work in the degreaser.
 - 2.3 A method for draining cleaned parts, so that drained solvent is returned to the container.
 - 2.4 A permanent, conspicuous label summarizing the applicable operating requirements contained in subsection 302.1.
- 302.3 ConveyORIZED Solvent Cleaners using a volatile solvent shall include all of the following safety switches:
 - 3.1 Condenser flow switch except where non-water refrigerant is used.
 - 3.2 Spray safety switch.
 - 3.3 Vapor level control thermostat.
- 302.4 ConveyORIZED Solvent Cleaner Control Devices shall include the following:
 - 4.1 A drying tunnel or other means, such as a rotating basket, sufficient to prevent cleaned parts from carrying out solvent liquid or vapor, and
 - 4.2 Minimized entrances and exits which silhouette the work loads such that the average clearance between parts being conveyed and the edge of the solvent cleaner opening is less than 10 cm (4 in) or less than 10 percent of the opening width.
 - 4.3 Down-time covers for closing off the entrance and exit during shutdown hours, or an equivalent device that covers at least 90 percent of the opening.
- 302.5 ConveyORIZED Solvent Cleaners shall not operate without one of the following control devices:
 - 5.1 A freeboard ratio greater than or equal to 0.75.
 - 5.2 A freeboard chiller where the chilled air blanket temperature measured in °F at the coldest point on the vertical axis in the center of the solvent cleaner shall be no greater than 30 percent of the initial boiling point of the solvent used or 40°F.
 - 5.3 An approved emission control device with a control efficiency of 90 percent or more on a mass basis.
 - 5.4 Deleted August 2, 1989
- 302.6 Deleted March 16, 1988

(Adopted 7/3/85; Amended 1/8/86; 3/16/88; 8/2/89; 6/15/94; 9/16/98; 10/16/02)

8-16-303 Cold Cleaner Requirements: Any person who operates a cold solvent cleaning device shall conform to the following requirements.

- 303.1 General Operating Requirements:
 - 1.1 The solvent cleaning equipment and emission control shall be operated and maintained in proper working order.
 - 1.2 Liquid solvent leaks shall be repaired immediately or the equipment shall be shut down.
 - 1.3 Solvent, including waste solvent, shall not be stored or disposed of in a manner that will cause or allow evaporation into the atmosphere.
 - 1.4 Waste solvent residues shall be disposed of by one of the following methods:
 - a. Where residues are treated prior to further offsite treatment such residues shall be stored in covered containers to minimize evaporation prior to service pick-up.
 - b. Where residues are treated prior to final disposal at an appropriate waste disposal facility, such residues shall not contain more than 10 percent solvent by volume and shall be stored in covered containers.

- 1.5 Devices designed to reduce solvent evaporation shall not be removed except to process work or to perform maintenance. Where a compound with low volatility or a VOC content that does not exceed 50 g/l (0.42 lb/gal) is being used, enclosed (remote) reservoirs are deemed equivalent equipment to closed covers.
- 1.6 If a solvent flow is utilized, only a continuous fluid stream shall be used (not a fine, atomized, or shower type spray), unless an approved emission control device is used with a control efficiency of 90 percent or more on a mass basis, or unless the solvent spray is totally enclosed during the washing, rinsing and drying process.
- 303.2 Cold Cleaner Operating Requirements:
 - 2.1 Cleaned parts shall be drained until dripping ceases.
 - 2.2 Solvent agitation shall be accomplished only by pump recirculation or by means of a mixer. Air agitation shall not be used.
 - 2.3 The solvent cleaning of porous or absorbent materials in cold cleaners is prohibited.
- 303.3 Cold Cleaner General Equipment Requirements shall include all of the following:
 - 3.1 A container for the solvent and the articles being cleaned.
 - 3.2 An apparatus, cover, or enclosed (remote) reservoir which reduces solvent evaporation when not processing work in the solvent cleaner. If a compound with low volatility or a VOC content that does not exceed 50 g/l (0.42 lb/gal) is not being used or the solvent is agitated or heated, the cover must be designed so that it can be operated with one hand.
 - 3.3 A method for draining cleaned parts, so that drained solvent is returned to the container. If a compound with low volatility or a VOC content that does not exceed 50 g/l (0.42 lb/gal) is not being used, then the drainage facility must be internal so that the parts are enclosed while draining. The drainage facility may be external where the internal type cannot fit into the cleaning system.
 - 3.4 A permanent, conspicuous label summarizing the applicable operating requirements contained in subsection 303.1.
- 303.4 Except as provided in Section 8-16-303.5, cold cleaners shall not operate without one of the following control devices:
 - 4.1 A freeboard ratio greater than or equal to 0.75 where the maximum solvent reservoir capacity is clearly marked by a suitable mechanical or physical means.
 - 4.2 A water cover, provided the solvent is insoluble in and heavier than water.
 - 4.3 A freeboard chiller where the chilled air blanket temperature measured in °F at the coldest point on the vertical axis in the center of the solvent cleaner shall be no greater than 30 percent of the initial boiling point of the solvent used or 40°F.
 - 4.4 An approved emission control device which has a control efficiency of 90 percent or more on a mass basis.
 - 4.5 An enclosed design in which the cover or door opens only when the dry part is entering or exiting the cold cleaner unless the cleaner is an airtight solvent cleaner.
- 303.5 Any person using a cold cleaner for repair and maintenance cleaning shall comply with one of the following requirements:
 - 5.1 The VOC content of the cleaning solution shall not exceed 50 g/l (0.42 lb/gal); or
 - 5.2 The cleaning solution shall be branched, cyclic, or linear completely methylated siloxane (VMS); or
 - 5.3 The portion of the cleaning solution that is not VMS shall not exceed a VOC content of 50 g/l (0.42 lb/gal); or

5.4 The source complies with subsection 8-16-303.4.4.

(Adopted 7/3/85; Amended 1/8/86; 3/16/88; 8/2/89; 9/16/98; 10/16/02)

8-16-304 National Emission Standards for Hazardous Air Pollutants (NESHAP): Halogenated Solvent Cleaner Requirements: In addition to the requirements of this Rule, solvent cleaning equipment that contains any one or a combination of the halogenated solvents specified in Section 8-16-216 at a total concentration of 5 percent or more by weight is also subject to the federal requirements contained in 40 Code of Federal Regulations, Part 63, Subpart T. Buckets, pails, or beakers with capacities of 2 gallons or less are not subject to the federal requirements.

(Amended, Renumbered 7/3/85; Amended 3/16/88; 9/16/98)

8-16-305 Compliance Statement Requirement: The manufacturer of any solution used to comply with subsection 8-16-303.5 shall provide, on the container or as an accompanying data sheet, a designation of VOC content of the solvent (as defined in Section 8-16-229), including any dilution ratio necessary to achieve compliance with the standards in subsection 8-16-303.5.

(Adopted October 16, 2002)

8-16-400 ADMINISTRATIVE REQUIREMENTS

8-16-401 Deleted March 16, 1988

8-16-402 Deleted March 16, 1988

8-16-403 Deleted September 16, 1998

8-16-404 Deleted August 2, 1989

8-16-500 MONITORING AND RECORDS

8-16-501 Solvent Records: Any person subject to the requirements of this Rule shall keep the following records:

501.1 Deleted September 16, 1998

501.2 On a facility-wide, monthly basis, records showing the type and total amount of make-up solvent used in all solvent cleaning operations subject to this rule regardless of the number of cleaning operations involved.

501.3 On a monthly basis, records showing the type and amount of solvent subject to Section 8-16-111.

501.4 For solvent vapor dryers and enclosed solvent cleaners, monthly records of the type and total amount of makeup solvent on a per source basis.

501.5 Records shall be retained and available for inspection by the APCO for the previous 24-month period.

501.6 Information, such as purchase orders or hazardous waste manifests, that will allow the APCO to verify compliance with the solvent loss limitation in Section 8-16-121.

(Adopted 7/3/85; Amended 3/16/88; 8/2/89; 9/16/98; 10/16/02)

8-16-502 Burden of Proof: Any person claiming exemption pursuant to Section 8-16-114, 115, or 118 or a recordkeeping exemption pursuant to Section 8-16-124 shall have information available such as product data or material safety data sheets that would allow the APCO to verify the eligibility for the exemption.

(Adopted October 16, 2002)

8-16-503 Approved Emission Control Device, Recordkeeping Requirements: Any person operating air pollution abatement equipment to comply with subsections 8-16-301.4.3, 302.5.3 or 303.4.4 shall record applicable key system operating parameters on a daily basis.

(Adopted October 16, 2002)

8-16-600 MANUAL OF PROCEDURES

8-16-601 Determination of Emissions: Emissions of organic compounds as specified in subsections 301.4.3, 302.5.3, or 303.4.4 shall be measured as prescribed by any of the following methods: 1) BAAQMD Manual of Procedures, Volume IV, ST-7, 2) EPA

Method 25 or 25A. A source shall be considered in violation if the VOC emissions measured by any of the referenced test methods exceed the standards of this rule.

(Amended 7/3/85; 3/16/88; 6/15/94; 9/16/98)

8-16-602 Analysis of Samples: Samples of organic compounds shall be analyzed using EPA Method 24, by the following applicable methods:

- 602.1 Manual of Procedures, Volume III, Method 31 for the determination of percent VOC by weight and VOC content as specified in Sections 8-16-114, and 303.5.
- 602.2 Manual of Procedures Volume III, Method 21 or 22 for the determination of percent solvent by volume as specified in subsections 8-16-301.1.4, 302.1.4 and 303.1.4.
- 602.3 ASTM D-1078-93 for the determination of initial boiling point as specified in Section 8-16-205.
- 602.4 Manual of Procedures, Volume III, Method 43 for the determination of volatile methylsiloxanes (VMS) as specified in subsections 8-16-303.5.2 and 303.5.3.

(Adopted 7/3/85; Amended 3/16/88; 8/2/89; 9/16/98; 10/16/02)

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

REGULATION 8

ORGANIC COMPOUNDS

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REGULATION 8

ORGANIC COMPOUNDS

RULE 17

PETROLEUM DRY CLEANING OPERATIONS

(Adopted May 21, 1980)

8-17-100 GENERAL

8-17-101 Description: The purpose of this Rule is to limit the emissions of petroleum solvents used in dry cleaning facilities. (Amended March 20, 1985)

8-17-110 Exemption, Other Solvent: This Rule shall not apply to dry cleaning facilities that do not use petroleum solvent. (Amended March 20, 1985)

8-17-111 Exemption, Small Users: The provisions of Section 8-17-302 shall not apply to petroleum dry cleaning facilities installed prior to September 5, 1990, consuming less than 10,000 liters (2,642 gallons) of petroleum solvent per year, provided the requirements of Section 8-17-501 are met. (Amended March 20, 1985, September 5, 1990)

8-17-200 DEFINITIONS

8-17-201 Petroleum Solvent: A clear petroleum distillate having a minimum flash point of 38°C (100°F) and the following distillation ranges: not less than 50 % over at 177°C (350°F), 90% over at 190°C (375°F), and the end point not higher than 210°C (410 °F). The distillation is performed at standard conditions.

8-17-202 Dry Cleaning Facility: Any facility engaged in the cleaning of fabrics or leather. The facility includes, but is not limited to washers, dryers, filters, purification systems, holding tanks, pumps, attendant piping and valves. (Adopted March 20, 1985)

8-17-203 Solvent Recovery Dryer: A class of dry cleaning dryers that employ a condenser to condense and recover solvent vapors evaporated in a closed loop stream of heated air, together with the piping and ductwork used in the installation of this device. (Adopted March 20, 1985)

8-17-204 Cartridge Filter: A discrete filter unit containing filter paper and activated carbon that traps and removes contaminants from petroleum solvent, together with the piping and ductwork used in the installation of this device.

8-17-205 Dry Weight of Articles Cleaned: The weight of articles prior to being cleaned in a petroleum solvent washer. (Adopted September 5, 1990)

8-17-206 Solvent Liquid Leak: A liquid leak of more than 3 drops per minute. (Adopted September 5, 1990)

8-17-207 Solvent Vapor Leak: A vapor leak which is a visible mist. (Adopted September 5, 1990)

8-17-208 Transfer Cart: A cart or container used for the transfer of wet articles from the washer to the dryer that has walls and a lid which is impervious to the solvent. (Adopted September 5, 1990)

8-17-300 STANDARDS

8-17-301 Operating Requirements: A person shall not operate any petroleum dry cleaning facility unless all of the following requirements are satisfied:

301.1 There is no solvent liquid or solvent vapor leaking from any portion of the equipment or the leaking equipment shall not be operated.

301.2 Solvents and spent solvents are stored in closed containers, which may be equipped with vents approved by the Air Pollution Control Officer.

301.3 All washer and dryer traps, access doors, and other parts of these pieces of equipment, where solvent may be exposed to the atmosphere, are kept closed at all times except when required for proper operation or maintenance.

301.4 Cartridge filters are drained in the filter housing for at least 12 hours or placed in an enclosed device including a solvent recovery dryer until dry before being discarded.

301.5 All wastes from dry cleaning facilities must be maintained and transported in sealed containers and disposed of in accordance with Department of Health Services regulations.

301.6 Articles which have been cleaned must be transferred to the dryer within five minutes after they are removed from the washer, or shall be stored in closed transfer carts. (Amended March 20, 1985, September 5, 1990)

8-17-302 Emission Control Requirements: A person shall not operate any petroleum dry cleaning facility unless one of the following requirements is satisfied:

302.1 Add-On-Control Device: All exhaust gases from drying tumblers, washers, and cabinets are vented through an approved and properly functioning control device, which reduces the total emissions of precursor organic compounds by at least 85 percent by weight.

302.2 Solvent Recovery Dryer: A solvent recovery dryer that recovers at least 85% of petroleum solvent by weight shall be installed. For the purpose of determining compliance with the 85% recovery efficiency of this subsection, 3 kilograms of petroleum solvent emitted per 100 kilograms dry weight of articles cleaned shall be deemed to be in compliance. In addition, the petroleum solvent flow rate from the water separator of such recovery dryer shall not exceed 15 milliliters per minute at the termination of the recovery cycle.

302.3 Deleted September 5, 1990 (Amended March 20, 1985, September 5, 1990)

8-17-303 Solvent Filtration Requirement: A person shall not operate any solvent filtration system unless one of the following requirements is satisfied:

303.1 Reduce the total volatile organic compound content in all filtration wastes to

1.1 1 kilogram or less per 100 kilograms dry weight of articles cleaned, before disposal, and exposure to the atmosphere, or

1.2 No more than 0.25 kilograms of solvent per kilogram of solvent still or filter waste.

303.2 Install and operate a cartridge filter system. (Adopted March 20, 1985, September 5, 1990)

8-17-400 ADMINISTRATIVE REQUIREMENTS

8-17-401 Deleted September 5, 1990

8-17-402 Deleted September 5, 1990

8-17-500 MONITORING AND RECORDS

8-17-501 Small User Records: Any person seeking to satisfy the condition of Section 8-17-111 shall maintain purchase records showing amounts of solvent purchased and solvent remaining in inventory. Such records shall be retained and available for inspection by the APCO for the previous 24-month period. (Adopted September 5, 1990)

8-17-502 Solvent Filtration Records: Any person electing to be regulated by Subsection 8-17-303.1.1 shall maintain records of pre-washed weight of articles cleaned per load. Such records shall be retained and available for inspection by the APCO for the previous 24-month period. (Adopted September 5, 1990)

8-17-600 MANUAL OF PROCEDURES

8-17-601 Determination of Emissions: Emissions of organic compounds as specified in Section 8-17-302 shall be measured as prescribed in the Manual of Procedures, Volume IV, ST-7, dated November 1, 1989. (Amended September 5, 1990)

8-17-602 Analysis of Solvent Filtration Wastes: Samples of solvent filtration wastes as specified in subsection 8-17-303.1 shall be analyzed as prescribed in the Manual of Procedures, Volume III, Method 38. (Adopted September 5, 1990)

**REGULATION 8
ORGANIC COMPOUNDS
RULE 18
EQUIPMENT LEAKS**

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**REGULATION 8
ORGANIC COMPOUNDS
RULE 18
EQUIPMENT LEAKS**

(Adopted October 1, 1980)

8-18-100 GENERAL

8-18-101 Description: The purpose of this Rule is to limit emissions of organic compounds, including methane, from leaking equipment at petroleum refineries, chemical plants, bulk plants and bulk terminals including, but not limited to: valves, connectors, pumps, compressors, pressure relief devices, diaphragms, hatches, sight-glasses, fittings, sampling ports, meters, pipes, and vessels.

(Amended 3/17/82; 3/4/92; 1/7/98)

8-18-110 Exemption, Controlled Seal Systems and Pressure Relief Devices: Except for Section 8-18-603, the provisions of this Rule shall not apply to seal systems and pressure relief devices vented to a vapor recovery or disposal system which reduces the emissions of organic compounds from the equipment by 95% or greater.

(Amended, Renumbered January 7, 1998)

8-18-111 Exemption, Small Facilities: The provisions of this rule shall not apply to facilities which have less than 100 valves or less than 10 pumps and compressors. Such facilities are subject to the requirements of Regulation 8, Rule 22.

(Adopted 3/4/92; Amended, Renumbered 1/7/98)

8-18-112 Exemption, Bulk Plant and Terminal Loading Racks: The provisions of this rule shall not apply to those connections at the interface between the loading rack and the vehicle being loaded.

(Adopted 3/4/92; Amended, Renumbered 1/7/98)

8-18-113 Limited Exemption, Initial Boiling Point: The provisions of Sections 8-18-400 shall not apply to equipment which handle organic liquids having an initial boiling point greater than 302° F.

(Adopted 3/4/92; Amended, Renumbered 1/7/98)

8-18-114 Limited Exemption, Research and Development: The provisions of Section 8-18-401, 402 and 502 shall not apply to research and development plants which produce only non-commercial products solely for research and development purposes.

(Adopted 3/4/92; Amended, Renumbered 1/7/98)

8-18-115 Limited Exemption, Storage Tanks: The provisions of this rule shall not apply to appurtenances on storage tanks including pressure relief devices, which are subject to requirements contained in Regulation 8, Rule 5: Storage of Organic Liquids.

(Adopted January 7, 1998)

8-18-116 Limited Exemption, Vacuum Service: The provisions of Section 8-18-400 and 502 shall not apply to equipment in vacuum service.

(Amended January 7, 1998)

8-18-117 Limited Exemption, Visual Inspection: The provisions of Section 8-18-403 shall not apply to days when a facility is not staffed.

(Amended, Renumbered January 7, 1998)

8-18-118 Deleted January 7, 1998

8-18-200 DEFINITIONS

8-18-201 Background: The ambient concentration of total organic compounds determined at least 3 meters (10 feet) upwind from the equipment to be inspected and not influenced by any specific emission point as indicated by a hydrocarbon analyzer specified by Section 8-18-501.

(Amended March 4, 1992)

8-18-202 Bulk Plants and Terminals: A distribution facility which is subject to Regulation 8, Rule 6, 33 or 39.

(Amended, Renumbered January 7, 1998)

8-18-203 Chemical Plant: Any facility engaged in producing organic or inorganic chemicals and/or manufacturing chemical products by chemical processes. Any facility or

operation that has 28 as the first two digits in their Standard Industrial Classification Code as determined from the Standard Industrial Classification Manual. Chemical plants include facilities that manufacture chemical products by chemical processes such as: industrial inorganic and organic chemicals; plastic and synthetic resins, synthetic rubber, synthetic and other man made fibers; drugs; soap, detergents and cleaning preparations, perfumes, cosmetic and other toilet preparations; paints, varnishes, lacquers, enamels and allied products; agricultural chemicals; safflower and sunflower oil extracts; re-refining. (Renumbered and Amended January 7, 1998)

- 8-18-204 Connection:** Flanged, screwed, or other joined fittings used to connect equipment.
(Amended, Renumbered January 7, 1998)
- 8-18-205 Equipment:** All components including, but not limited to: valves, pumps, compressors, pressure relief devices, diaphragms, hatches, fittings, sampling ports, pipes, plugs, open-ended lines, gages or sight-glasses.
(Amended, Renumbered January 7, 1998)
- 8-18-206 Inaccessible Equipment:** Any equipment located over 13 feet above the ground when access is required from the ground; or any equipment located over 6.5 feet away from a platform when access is required from a platform.
(Amended, Renumbered January 7, 1998)
- 8-18-207 Inspection:** The determination of the concentration of total organic compounds leaking from equipment using EPA Reference Method 21 as required by Section 8-18-501.
(Amended, Renumbered January 7, 1998)
- 8-18-208 Leak:** The concentration of total organic compounds measured above background, measured 1 centimeter or less from the leak, expressed as methane and measured using EPA Reference Method 21.
(Amended, Renumbered January 7, 1998)
- 8-18-209 Leak Minimization:** Reducing the leak to the lowest achievable level using best modern practices and without shutting down the process the equipment serves.
(Renumbered 3/17/82; Amended 3/4/92; 1/7/98)
- 8-18-210 Leak Repair:** The tightening, adjustment, or addition of packing material, or the replacement of the equipment, which reduces the leakage to the atmosphere below the applicable standard in Section 8-18-300.
(Renumbered 3/17/82; Amended 3/4/92; 1/7/98)
- 8-18-211 Liquid Leak:** Dripping of liquid at a rate of greater than 3 drops per minute and a concentration of total organic compounds greater than the applicable leak standard in Section 8-18-300.
(Amended, Renumbered January 7, 1998)
- 8-18-212 Organic Compound:** Any compound of carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate.
(Amended, Renumbered January 7, 1998)
- 8-18-213 Petroleum Refinery:** Any facility that processes petroleum products as defined in Standard Industrial Classification Manual as Industry No. 2911, Petroleum Refining.
(Amended, Renumbered January 7, 1998)
- 8-18-214 Pressure Relief Device:** The automatic pressure-relieving device actuated by the static pressure upstream of the device including, but not limited to pressure relief valves and rupture disks.
(Amended, Renumbered January 7, 1998)
- 8-18-215 Process Unit:** A manufacturing process which is independent of other processes and is continuous when supplied with a constant feed or raw materials and has sufficient storage facilities for product.
(Amended, Renumbered January 7, 1998)
- 8-18-216 Quarter:** One of the four consecutive 3-month divisions of the calendar year beginning on January 1.
(Amended, Renumbered January 7, 1998)
- 8-18-217 Reinspection:** Any inspection following the minimization or repair of leaking equipment.
(Amended, Renumbered January 7, 1998)
- 8-18-218 Rupture Disc:** The thin metal diaphragm held between flanges.
(Amended, Renumbered January 7, 1998)
- 8-18-219 Total Organic Compounds:** The concentration of organic compounds as indicated by a hydrocarbon analyzer as specified by Section 8-18-501, including methane.

- (Amended, Renumbered January 7, 1998)*
- 8-18-220 Turnaround:** The scheduled shutdown of a process unit for maintenance and repair work.
- (Amended, Renumbered January 7, 1998)*
- 8-18-221 Valve:** Any device that regulates the flow of process material by means of an external actuator acting to permit or block passage of liquids or gases.
- (Amended, Renumbered January 7, 1998)*
- 8-18-222 Weephole:** A drain hole in the discharge horn of a pressure relief device.
- (Adopted January 7, 1998)*
- 8-18-223 Deleted January 7, 1998**
- 8-18-224 Deleted January 7, 1998**
- 8-18-300 STANDARDS**
- 8-18-301 General:** Except for valves, pumps and compressors, connections and pressure relief devices subject to the requirements of Sections 8-18-302, 303, 304, 305 and 306, a person shall not use any equipment that leaks total organic compounds in excess of 100 ppm unless the leak has been discovered by the operator, minimized within 24 hours and repaired within 7 days.
- (Amended 7/15/81; 3/17/82; 9/6/89; 3/4/92; 1/7/98)*
- 8-18-302 Valves:** A person shall not use any valve that leaks total organic compounds in excess of 100 ppm unless the leak has been discovered by the operator, minimized within 24 hours and repaired within 7 days; or if the leak has been discovered by the APCO, repaired within 24 hours.
- (Adopted 3/4/92; Amended 1/7/98)*
- 8-18-303 Pumps and Compressors:** A person shall not use any pump or compressor that leaks total organic compounds in excess of 500 ppm unless the leak has been discovered by the operator, minimized within 24 hours and repaired within 7 days; or if the leak has been discovered by the APCO, repaired within 24 hours.
- (Adopted 3/4/92; Amended 1/7/98)*
- 8-18-304 Connections:** A person shall not use any connection that leaks total organic compounds in excess of 100 ppm unless one of the following conditions are met:
- 304.1 The leak has been discovered by the operator, minimized within 24 hours and repaired within 7 days; or
- 304.2 The connection is inspected as required by Section 8-18-401.6 and:
- 2.1 If the leak is discovered by the operator, minimized within 24 hours and repaired within 7 days; or
- 2.2 If the leak has been discovered by the APCO, repaired within 24 hours.
- (Adopted 3/4/92; Amended 1/7/98)*
- 8-18-305 Pressure Relief Devices:** A person shall not use any pressure relief device that leaks total organic compounds in excess of 500 ppm unless the leak has been discovered by the operator, minimized within 24 hours and repaired within 15 days; or if the leak has been discovered by the APCO, repaired within 7 days.
- (Amended January 7, 1998)*
- 8-18-306 Non-repairable Equipment:** Any valve, pressure relief device, pump or compressor which cannot be repaired as required by Section 8-18-302, 303 or 305, must comply with the following conditions:
- 306.1 The valve, pressure relief device, pump or compressor must be repaired or replaced within 5 years or at the next scheduled turnaround, whichever date comes first.
- 306.2 The number awaiting repair shall not exceed the percentage expressed in the table below or 1 piece of equipment.

Equipment	Total Number of Non-repairable Equipment Allowed (%)
Valves	0.5%
Pressure Relief Devices	1%
Pumps and Compressors	1%

306.3 In lieu of compliance solely with Sections 8-18-306.2 and not with any other requirements of this rule, the valve, pressure relief device, pump or compressor must meet the following conditions:

- 3.1 The valve, pressure relief device, pump or compressor must be measured for mass emissions within 7 days after the leak is discovered;
- 3.2 The equipment's mass emission measurement must be less than the applicable standard in the table below and the corresponding total number of non-repairable equipment, including non-repairable equipment from Section 8-18-306.2, are less than the standards in the table below.

Equipment	Mass Emission Standard	Total Number of Non-repairable Equipment Allowed (%)
Valves	0.1 lb/day	1.0%
Pressure Relief Devices	0.2 lb/day	5%
Pumps and Compressors	0.2 lb/day	5%

3.3 If the valve, pressure relief device, pump or compressor's mass emission measurement is greater than 15 lb/day total organic compounds, the valve, pressure relief device, pump or compressor must be repaired within 7 days after the mass emission measurement is determined.

(Adopted 3/4/92, Amended 1/7/98)

8-18-307 Liquid Leak: A person shall not use any equipment that leaks liquid as defined in Section 8-18-211, unless the leak has been discovered by the operator, minimized within 24 hours and repaired within 7 days.

(Adopted 3/4/92; Amended 1/7/98)

8-18-308 Alternate Compliance: The requirements of Sections 8-18-301, 302, 303, 304, 305, 306 and 307 shall not apply to any facility which complies with an alternative emission reduction plan that satisfies all the requirements in Sections 8-18-405 and 406.

(Adopted January 7, 1998)

8-18-400 ADMINISTRATIVE REQUIREMENTS

8-18-401 Inspection: Any person subject to this Rule shall comply with the following inspection requirements:

- 401.1 All connections that have been opened during a turnaround shall be inspected for leaks within 90 days after start-up is completed following a turnaround.
- 401.2 Except as provided under Subsection 8-18-401.3, 404, 405, and 406 all valves, pressure relief devices, pumps or compressors subject to this Rule shall be inspected quarterly.
- 401.3 Inaccessible valves and pressure relief devices subject to this Rule shall be inspected at least once a year.
- 401.4 Any equipment subject to this Rule may be inspected at any time by the APCO.
- 401.5 Any equipment found to have a leak in excess of the standard in Section 8-18-300 shall be reinspected within 24 hours after leak repair or minimization.
- 401.6 Any connection that is inspected annually or that is part of an APCO and EPA approved connection inspection program is subject to the provisions of Subsection 8-18-304.2.
- 401.7 Any pressure relief device equipped with a weep hole shall be inspected quarterly at the outlet of the weep hole if the horn outlet is inaccessible.
- 401.8 Any pressure relief device that releases to the atmosphere shall be inspected within 5 working days after the release event.

(Amended 3/17/82; 9/3/86; 9/6/89; 3/4/92; 1/7/98)

8-18-402 Identification: Any person subject to this Rule shall comply with the following identification requirements:

402.1 All valves, pressure relief devices, pumps and compressors shall be identified with a unique permanent identification code approved by the APCO. This identification code shall be used to refer to the valve, pressure relief device, pump or compressor location. Records for each valve, pressure relief device, pump or compressor shall refer to this identification code.

402.2 All equipment with a leak in excess of the applicable leak limitation in Section 8-18-300 shall be tagged with a brightly colored weatherproof tag indicating the date the leak was detected.

(Amended 3/4/92; 1/7/98)

8-18-403 Visual Inspection Schedule: All pumps and compressors subject to this rule shall be visually inspected daily for leaks. If a leak is observed, the concentration of organic compounds shall be determined.

(Renumbered January 7, 1998)

8-18-404 Alternative Inspection Schedule: The inspection frequency for valves may change from quarterly to annually provided all of the conditions in Subsection 404.1 and 404.2 are satisfied.

404.1 The valve has been operated leak free for five consecutive quarters; and

404.2 Records are submitted and approval from the APCO is obtained.

404.3 The valve remains leak free. If a leak is discovered, the inspection frequency will revert back to quarterly.

(Adopted January 7, 1998)

8-18-405 Alternate Emission Reduction Plan: Any person may comply with Section 8-18-308 by developing and submitting an alternate emission reduction plan to the APCO that satisfies all of the following conditions:

405.1 The plan shall contain all information necessary to establish, document, measure progress and verify compliance with an emission reduction level set forth in this rule.

405.2 All emission reductions must be achieved solely from equipment and connections subject to this rule.

405.3 Public notice and a 60-day public comment period shall be provided.

405.4 Following the public comment period, the plan shall be submitted to and approved in writing by the EPA, Region IX prior to the APCO approval of the plan.

405.5 An alternate emission reduction plan must provide for emission reductions equal to or greater than required by the specific limits in this rule.

(Adopted 1/7/98; Amended 11/27/02)

8-18-406 Interim Compliance: A facility is subject to the limits contained in Sections 8-18-301, 302, 303, 304, 305, 306 and 307 until receipt of the written approvals of both the APCO and the EPA of an Alternate Emission Reduction Plan that complies with Section 8-18-405.

(Adopted 1/7/98; Amended 11/27/02)

8-18-500 MONITORING AND RECORDS

8-18-501 Portable Hydrocarbon Detector: Any instrument used for the measurement of organic compounds shall be a combustible gas indicator that has been approved by the APCO and meets the specifications and performance criteria of and has been calibrated in accordance with EPA Reference Method 21 (40 CFR 60, Appendix A).

(Amended 3/17/82; 9/6/89; 3/4/92)

8-18-502 Records: Any person subject to the requirements of this rule shall maintain records that provide the following information:

502.1 For equipment subject to Section 8-18-402.1, the equipment identification code, equipment type and the location of the equipment.

502.2 The date of all inspections and reinspections and the corresponding leak concentrations measured as specified by Section 8-18-401.

- 502.3 Records shall be maintained for at least 5 years and shall be made available to the APCO for inspection at any time.
- 502.4 Records of all non-repairable equipment subject to the provisions of Section 8-18-306 shall be maintained, submitted to the District quarterly and contain the equipment identification code, equipment type, equipment location, leak concentration measurement and date, last process unit turnaround date, and total number of non-repairable equipment awaiting repair.

(Adopted 3/4/92; Amended 1/7/98)

8-18-600 MANUAL OF PROCEDURES

8-18-601 Analysis of Samples: Samples of organic compounds as defined in Section 8-18-113 shall be analyzed for Initial Boiling Point as prescribed in ASTM D-1078- 98 or ASTM D-86. (Adopted March 17, 1982; Amended March 4, 1992; January 7, 1998)

8-18-602 Inspection Procedure: Inspections of equipment shall be conducted as prescribed by EPA Reference Method 21 (40 CFR 60, Appendix A).

(Adopted 9/6/89; Amended 3/4/92; 1/7/98)

8-18-603 Determination of Control Efficiency: The control efficiency as specified by Section 8-18-110 shall be determined by any of the following methods: 1) BAAQMD Manual of Procedures, Volume IV, ST-7, 2) EPA Method 25 or 25A. A source shall be considered in violation if the VOC emissions measured by any of the referenced test methods exceed the standards of this rule.

(Renumbered and Amended January 7, 1998)

8-18-604 Determination of Mass Emissions: The mass emission determination as specified by Section 8-18-306 shall be determined using by any of the following methods: 1) EPA Protocol for Equipment Leak Emission Estimates, Chapter 4, Mass Emission Sampling, (EPA-453/R-95-017) November, 1995 or 2) a method determined to be equivalent by the EPA and approved by the APCO.

(Adopted January 7, 1998)

**REGULATION 8
ORGANIC COMPOUNDS
RULE 19
SURFACE PREPARATION AND COATING OF MISCELLANEOUS METAL
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**REGULATION 8
ORGANIC COMPOUNDS
RULE 19
SURFACE PREPARATION AND COATING OF MISCELLANEOUS METAL
PARTS AND PRODUCTS**

(Adopted January 9, 1980)

8-19-100 GENERAL

8-19-101 Description: The purpose of this Rule is to limit the emission of volatile organic compounds from the surface preparation and coating of miscellaneous metal parts and products as defined in Section 8-19-204. Any operation which is determined to be exempt from the provisions of this Rule shall be subject to the provisions of Rule 4, if not already subject to another rule of Regulation 8.

(Amended 12/19/84; 10/16/02)

8-19-110 Exemption, Low Usage Coatings: The requirements of Sections 8-19-302 and 312 shall not apply to the use of any coating used in volumes less than 75.7 liters (20 gal) in any one calendar year, provided the requirements in Section 8-19-405 are satisfied. A person shall be limited to 378.5 liters (100 gal) total coating per year under this exemption.

(Amended 12/19/84; 12/18/85; 6/7/89; 2/3/93)

8-19-111 Exemption, Adhesives: The provisions of this Rule shall not apply to the application of adhesives. The application of adhesives is subject to the requirements of Regulation 8, Rule 51.

(Amended 12/19/84; 12/18/85; 2/3/93)

8-19-112 Exemption, Touch-up: The provisions of this Rule shall not apply to touch-up operations.

(Amended December 18, 1985)

8-19-113 Exemption, Specific Operations: The provisions of this Rule shall not apply to the coating of the following types of products, which may be subject to other rules of Regulation 8.

113.1 Light-duty and medium-duty motor vehicles (original equipment manufacturing) (Rule 13)

113.2 Metal containers and closures (cans, drums, lids, etc.) and metal coil (Rule 11)

113.3 Magnet wire for use in electrical machinery (Rule 26)

113.4 Metal furniture or large appliances (Rule 14)

113.5 Aircraft or aerospace vehicles (Rule 29)

113.6 Motor vehicle and mobile equipment coating operations (Rule 45)

113.7 Marine vessels and component parts (Rule 43).

113.8 Stationary structures and their appurtenances which require architectural coatings, except where baked coatings are applied (Rule 3)

113.9 Magnetic data storage disks (Rule 38)

113.10 Test panels for evaluation of coating performance (Rule 4)

(Amended 12/2/81; 12/19/84; 12/18/85; 1/7/87; 4/1/87; 6/7/89; 2/3/93; 10/16/02)

8-19-114 Exemption, Aerosol Cans: The provisions of this Rule shall not apply to coating operations employing hand-held aerosol cans. Such coating is subject to the provisions of Regulation 8, Rule 49 or to the California Air Resources Board aerosol coating product regulation found in Title 17 of the California Code of Regulations, beginning at Section 94520.

(Amended 12/2/81; 12/19/84; 12/18/85; 6/20/90; 10/16/02)

8-19-115 Deleted April 1, 1987

8-19-116 Deleted January 7, 1987

8-19-117 Exemption, Stencil Coatings: The requirements of this Rule shall not apply to coatings that are applied by template in order to add designs, letters and/or numbers to the products.

(Adopted December 2, 1985)

8-19-118 Deleted April 1, 1987

- 8-19-119 Deleted April 1, 1987**
- 8-19-120 Exemption, Powder Coatings:** The requirements of Sections 8-19-302 and 312 shall not apply to the use of any powder coating provided the emission of VOC to the atmosphere does not exceed that which is equivalent to the use of coatings which comply with those limits.
(Adopted 12/19/84; Amended 4/1/87; 6/7/89)
- 8-19-121 Deleted April 1, 1987**
- 8-19-122 Deleted December 18, 1985**
- 8-19-123 Exemption, Solid Film Lubricant:** The provisions of this Rule shall not apply to any solid film lubricant.
(Adopted December 19, 1984)
- 8-19-124 Deleted January 7, 1987**
- 8-19-125 Deleted April 1, 1987**
- 8-19-126 Deleted April 1, 1987**
- 8-19-127 Deleted April 1, 1987**
- 8-19-128 Deleted April 1, 1987**
- 8-19-129 Deleted April 1, 1987**
- 8-19-130 Exemption, Cathode Coatings:** The provisions of this Rule shall not apply to any electrical cathode coating.
(Adopted December 18, 1985)
- 8-19-131 Exemption, Chemical Milling Maskant Coatings:** The provisions of this Rule shall not apply to any chemical milling maskant coating.
(Adopted December 18, 1985)
- 8-19-132 Deleted April 1, 1987**
- 8-19-133 Exemption, Spray Application Equipment:** The requirements of Section 8-19-313 shall not apply to the following operations:
- 133.1 The application of coatings to achieve a two-tone finish.
 - 133.2 The application of cutback asphalt coatings.
 - 133.3 The application of solvent-borne coatings with a solids content of at least 60 percent by volume to achieve a smooth finish on flat, front panels specified by original equipment manufacturers of computer, electronics and medical instrumentation equipment. This exemption only applies to coatings subject to the limits of Section 8-19-302.
 - 133.4 The application of coatings to the inner surface area of pipes which require a spray gun nozzle extension.
 - 133.5 The application of pretreatment wash primers.
 - 133.6 The application of a textured finish coat.
- (Adopted February 3, 1993)*
- 8-19-134 Limited Exemption, Coating Records:** The requirements of subsection 8-19-501.2 shall not apply to individual source operations using less than 75.7 liters (20 gal) of coating in any calendar year, unless otherwise specified in permit conditions pursuant to Regulation 2-1-403. A person shall maintain monthly records of coating usage under this exemption.
(Adopted February 3, 1993)
- 8-19-135 Exemption, Printed Circuit Boards:** The requirements of this Rule shall not apply to coatings applied to assembled printed circuit boards. This coating operation is subject to Regulation 8, Rule 4.
(Adopted February 3, 1993)
- 8-19-136 Limited Exemption, Specialty Coatings:** The requirements of Section 8-19-312 shall not apply to the following specialty coatings, provided that the VOC of those coatings does not exceed the following VOC limits and provided that the requirements of Section 8-19-407 are met.
- | | |
|--------------------------------------|-----------|
| 136.1 High Performance Architectural | 750 (6.2) |
| 136.2 Pretreatment Wash Primer | 780 (6.5) |
| 136.3 Silicone Release | 700 (5.8) |
| 136.4 Extreme Performance | 750 (6.2) |
| 136.5 High Temperature | 550 (4.6) |
- Any person seeking to use a coating subject to subsection 8-19-136.4 shall be limited to 3785 liter (1000 gal) of coating in any calendar year.
(Adopted June 15, 1994)

8-19-137 Limited Exemption, Specific Surface Preparation and Cleaning Operations: The surface preparation standards in Section 8-19-321 shall not apply to (i) the surface preparation of electrical and electronic components or medical devices, (ii) surfaces prepared for adhesive bonding of dissimilar substrates, (iii) stripping of cured inks, coatings and adhesives or cleaning of resin, coating, ink and adhesive mixing, molding and application equipment, or (iv) surface preparation associated with research and development operations; performance testing to determine coating, adhesive or ink performance; or testing for quality control or quality assurance purposes.

(Adopted October 16, 2002)

8-19-138 Limited Exemption, Military Components: The requirements of Section 8-19-321 shall not apply to the surface preparation of any military component for which a contract exists that specifies the use of an organic solvent that does not comply with the standards in Section 8-19-321, provided that contract has been entered into prior to December 1, 2005.

(Adopted October 16, 2002)

8-19-200 DEFINITIONS

8-19-201 Air-Dried Coatings: Any coating which is not heated above 90°C (194°F) for the purpose of curing or drying.

8-19-202 Baked Coatings: Any coating which is cured or dried in an oven where the oven air temperature exceeds 90°C (194°F).

8-19-203 Deleted June 7, 1989

8-19-204 Miscellaneous Metal Part or Product: Any metal part or product, except for those specified in Section 8-19-113.

8-19-205 Deleted December 18, 1985

8-19-206 Deleted June 7, 1989

8-19-207 Touch-up: That portion of the surface preparation and coating operation which is incidental to the main coating process but necessary to cover minor imperfections or mechanical damage incurred prior to intended use.

(Amended 12/19/84; 12/18/85; 10/16/02)

8-19-208 Transfer Efficiency: The ratio of the amount of coating solids adhering to the object being coated to the total amount of coating solids used in the application process, expressed as a percentage.

8-19-209 Camouflage Coating: A coating applied on military equipment to conceal such equipment from detection.

(Amended December 2, 1981)

8-19-210 Pretreatment Wash Primer: Any coating which contains a minimum of 0.5% acid by weight, is necessary to provide surface etching and is applied directly to bare metal surfaces to provide corrosion resistance and adhesion.

(Adopted 12/19/84; Amended 6/7/89)

8-19-211 Powder Coating: Any coating applied as a dry (without solvent or other carrier), finely divided solid which, when melted and fused, adheres to the substrate as a paint film.

(Adopted December 19, 1984)

8-19-212 Volatile Organic Compound: Any organic compound (excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate) which would be emitted during use, application, curing or drying of a solvent or surface coating.

212.1 For purposes of calculating VOC content of a coating, any water or any of the following non-precursor organic compounds:

acetone

methyl acetate

parachlorobenzotrifluoride (PCBTF)

cyclic, branched or linear, completely methylated siloxanes (VMS)

shall not be considered to be part of the coating.

212.2 For the purposes of calculating the VOC content of a surface preparation or cleaning solvent, any water or the non-precursor organic compounds listed in

subsection 8-19-212.1, above, shall be considered part of the volume of solvent but shall not be considered part of the VOC content of the solvent.

(Adopted 12/19/84; Amended 6/7/89; 2/3/93; 12/20/95; 10/16/02)

8-19-213 Solid Film Lubricant: A very thin coating consisting of an organic binder system containing as its chief pigment material one or more of molybdenum disulfide, graphite, polytetrafluoroethylene (PTFE) or other solids that act as a dry lubricant between meeting surfaces.

(Adopted 12/19/84; Amended 2/3/93)

8-19-214 Adhesive: Any coating which is applied for the purpose of bonding surfaces together.

(Adopted December 18, 1985)

8-19-215 Motor Vehicle: A vehicle which is self-propelled and is a device by which any person or property may be propelled, moved or drawn upon a highway, excepting a device moved by human power or used exclusively upon stationary rails or tracks.

(Adopted January 7, 1987)

8-19-216 Solar Absorbant Coating: Any coating which has as its primary purpose the absorption of solar radiation.

(Adopted December 18, 1985)

8-19-217 Heat-Resistant Coating: Any coating which during normal use must withstand temperatures of at least 204°C (400°F).

(Adopted December 18, 1985)

8-19-218 High-Gloss Coating: Any coating which achieves at least 85 percent reflectance on a 60° meter when tested by ASTM Method D-523-1989.

(Adopted 12/18/85; Amended 6/7/89; 2/3/93)

8-19-219 Extreme Performance Coating: Any coating which during intended use is exposed to one or more of the following conditions:

219.1 Repeated heavy abrasion, including mechanical wear and repeated scrubbing with industrial grade solvents, detergents, cleaners or abrasive scouring agents

219.2 Repeated exposure to temperatures in excess of 121°C (250°F), or below 0°C (32°F) or high vacuum conditions

219.3 Chronic exposure to corrosive, caustic or acidic agents, chemicals, chemical fumes, chemical mixtures or solution.

(Adopted December 18, 1985)

8-19-220 Cathode Coating: Any coating which has as its primary purpose the coating of electrical cathodes.

(Adopted December 18, 1985)

8-19-221 Chemical Milling Maskant Coating: Any coating which is applied to a component to protect areas when performing chemical milling, anodizing, aging, bonding, plating, etching, and/or other chemical surface operations on the component.

(Adopted December 18, 1985)

8-19-222 Non-Skid Coating: Any coating which has as its primary purpose the creation of traction to prevent slippage.

(Adopted December 18, 1985)

8-19-223 Silicone Release Coating: Any coating which contains silicone resin and has as its primary function the release of food products from metal surfaces such as baking pans.

(Adopted December 18, 1985)

8-19-224 Metallic Topcoat: Any coating which contains more than 5 g/l (.042 lb/gal) of metal particles as identified on a technical or material safety data sheet, as applied, where such metal particles are visible in the dried film.

(Adopted 12/18/85; Amended 1/7/87; 2/3/93)

8-19-225 High Performance Architectural Coating: Any coating applied to architectural subsections and which is required to meet the specifications of Architectural Aluminum Manufacturer's Association's publication number AAMA 605.2-1980.

(Adopted April 1, 1987)

8-19-226 Deleted February 3, 1993

8-19-227 Deleted February 3, 1993

8-19-228 High-Temperature Coating: Any coating applied to a substrate which during normal use must withstand temperatures of at least 538°C (1000°F).

(Adopted 6/7/89; Amended 2/3/93)

- 8-19-229 Electrostatic Spray:** Equipment used to apply coating by charging atomized particles that are deposited by electrostatic attraction.
(Adopted February 3, 1993)
- 8-19-230 High-Volume, Low-Pressure (HVLP) Spray:** Equipment used to apply coating by means of a gun which is designed to be operated and which is operated between 0.1 and 10.0 psig air atomizing pressure measured dynamically at the center of the air cap and at the air horns.
(Adopted 2/3/93; Amended 10/16/02)
- 8-19-231 Detailing Gun:** Small air-spray equipment, including air brushes, that operate at no greater than 5 cfm air flow and no greater than 50 psig air pressure.
(Adopted February 3, 1993)
- 8-19-232 Cutback Asphalt Coating:** A protective coating consisting of a liquified asphalt blend of asphaltic cement (semi-solid residue from the distillation of crude oil) and volatile petroleum distillates which is applied to large metal pipes to prevent corrosion.
(Adopted February 3, 1993)
- 8-19-233 Smooth Finish:** An industrial class 'A' surface coating finish that is characterized by a homogeneous, uninterrupted surface film without any imperfections such as orange peel. This type of finish is not intended to have a subsequent textured finish coat applied.
(Adopted February 3, 1993)
- 8-19-234 Two-Tone Finish:** A surface coating finish where one color coating is applied adjacent to a previously coated substrate of a different color, without the use of a maskant. The interface between the two coatings is a clear division of colors without any overlap.
(Adopted February 3, 1993)
- 8-19-235 Approved Emission Control System:** A system for reducing emissions to the atmosphere, consisting of an abatement device and a collection system, which achieves the abatement efficiency specified in the applicable standards at all times during the operation and meets the requirements of Regulation 2, Rule 1.
(Adopted February 3, 1993)
- 8-19-236 Textured Finish Coat:** Any non-smooth, patterned surface that is intentionally produced and applied as a final coat by spraying drops of coating over a previously applied base coating.
(Adopted February 3, 1993)
- 8-19-237 Mold Release Coating:** A temporary protective coating with a solids content of less than 120 grams solids per liter (1 pound solids per gallon) that reduces or prevents adhesion between the mold surface and the surface being molded.
(Adopted February 3, 1993)
- 8-19-238 Key System Operating Parameter:** An emission control system operating parameter, such as temperature, flow rate or pressure, that ensures operation of the abatement equipment within manufacturer specifications and compliance with the standards in Sections 8-19-302, 312, 313, 320 and/or 321.
(Adopted 6/15/94; Amended 10/16/02)
- 8-19-239 Surface Preparation:** The cleaning of metal parts and products prior to coating, further treatment, sale, or intended use. Surface preparation of metal parts subject to and in compliance with Regulation 8, Rule 16: Solvent Cleaning Operations, is not subject to the surface preparation standards in this Rule.
(Adopted October 16, 2002)
- 8-19-240 Electrical and Electronic Components:** Components and assemblies of components that generate, convert, transmit, or modify electrical energy. Electrical and electronic components include, but are not limited to, wires, windings, stators, rotors, magnets, contacts, relays, printed circuit boards, printed wire assemblies, wiring boards, integrated circuits, resistors, capacitors and transistors. Cabinets in which electrical and electronic components are housed are not considered electrical and electronic components.
(Adopted October 16, 2002)
- 8-19-241 Medical Device:** An instrument, apparatus, implement, machine, contrivance, implant, in vitro reagent or other similar article, including any component or accessory that is (i) intended for use in the diagnosis of disease or other conditions, or in the cure, mitigation, treatment, or prevention of diseases, or (ii) is intended to

affect the structure or any function of the body, or (iii) is defined in the National Formulary or the United States Pharmacopoeia or any supplement to it.

(Adopted October 16, 2002)

8-19-300 STANDARDS

8-19-301 Deleted June 7, 1989

8-19-302 Limits: Except as otherwise provided by this Rule, a person shall not apply to any miscellaneous metal part or product any coating with a VOC content in excess of the following limits, expressed as grams of VOC per liter of coating applied, excluding water, unless emissions to the atmosphere are controlled to an equivalent level by air pollution abatement equipment with an abatement device efficiency of at least 85 percent that meets the requirements of Regulation 2, Rule 1.

302.1 Baked Coatings 275 grams/liter (2.3 pounds/gallon)

302.2 Air-Dried Coating 340 grams/liter (2.8 pounds/gallon)

302.3 Deleted January 7, 1987

(Amended 12/2/81; 12/19/84; 12/18/85; 1/7/87; 4/1/87; 6/7/89; 2/3/93)

8-19-303 Deleted February 3, 1993

8-19-304 Deleted June 7, 1989

8-19-305 Deleted June 7, 1989

8-19-306 Deleted January 7, 1987

8-19-307 Prohibition of Specification: No person shall require for use or specify the application of a coating or solvent subject to this Rule if such use or application results in a violation of any of the provisions of this Rule. The prohibition of this Section shall apply to all written or oral contracts under the terms of which any coating or solvent is to be applied to any miscellaneous metal part or product at any physical location within the District.

(Adopted 12/19/84; Amended 12/18/85; 6/7/89; 10/16/02)

8-19-308 Compliance Statement Requirement: The manufacturer of coatings and solvents subject to this Rule shall provide on the coating container or as an accompanying data sheet, a designation of VOC (as defined in Section 8-19-212), expressed in grams per liter or pounds per gallon of coating. The designation shall include the VOC content of the coating as supplied and at the maximum recommended thinning ratio to maintain compliance with the VOC limits of this Rule.

(Adopted 12/19/84; Amended 12/18/85; 6/7/89; 2/3/93; 10/16/02)

8-19-309 Deleted April 1, 1987

8-19-310 Deleted April 1, 1987

8-19-311 Deleted June 7, 1989

8-19-312 Specialty Coating Limitations: Except as provided in Section 8-19-136, a person shall not apply to any miscellaneous metal part or product any specialty coating with a VOC content in excess of the following limits, expressed as grams of VOC per liter (lbs VOC per gal) of coating applied, excluding water, unless emissions to the atmosphere are controlled to an equivalent level by an air pollution abatement equipment with an abatement device efficiency of at least 85 percent that meets the requirements of Regulation 2, Rule 1.

	<u>Baked</u>	<u>Air dried</u>
312.1 Camouflage	360 (3.0)	420 (3.5)
312.2 High Gloss	360 (3.0)	420 (3.5)
312.3 Heat Resistant	360 (3.0)	420 (3.5)
312.4 High Performance Architectural	420 (3.5)	420 (3.5)
312.5 Metallic Topcoat	360 (3.0)	420 (3.5)
312.6 Deleted June 7, 1989		
312.7 Pretreatment Wash Primer	420 (3.5)	420 (3.5)
312.8 Silicone Release	420 (3.5)	420 (3.5)
312.9 Solar Absorbant	360 (3.0)	420 (3.5)
312.10 Deleted February 3, 1993		
312.11 Deleted February 3, 1993		
312.12 Extreme Performance	420 (3.5)	420 (3.5)
312.13 High Temperature	420 (3.5)	420 (3.5)

(Adopted 4/1/87; Amended 6/7/89; 2/3/93; 6/15/94)

- 8-19-313 Spray Application Equipment Limitations:** Effective July 1, 1994, any person who uses spray application equipment to apply coatings to miscellaneous metal parts or products within the District shall use one or more of the following high transfer efficiency application methods, unless emissions to the atmosphere are controlled by an approved emission control system with an overall abatement efficiency of at least 85 percent:
- 313.1 High-Volume, Low-Pressure (HVLP) Spray, operated in accordance with the manufacturer's recommendations; or
 - 313.2 Electrostatic spray, operated in accordance with the manufacturer's recommendations; or
 - 313.3 Detailing gun; or
 - 313.4 Any other coating spray application that achieves an equivalent transfer efficiency compared to the spray application methods listed in subsections 313.1 through 313.3. Prior written approval from the APCO shall be obtained for each alternative method used.

(Adopted 6/7/89; Amended 2/3/93; 10/6/93)

- 8-19-320 Solvent Evaporative Loss Minimization:** Unless emissions to the atmosphere are controlled by an approved emission control system with an overall abatement efficiency of at least 85%, any person using organic solvent for surface preparation and cleanup or any person mixing, using or disposing of coatings containing organic solvent:

- 320.1 Shall use closed containers for the storage or disposal of cloth or paper used for solvent surface preparation and cleanup.
- 320.2 Shall not use organic solvent for the cleanup of spray equipment including paint lines with a VOC content in excess of 50 g/l (0.42 lbs/gal) unless either (i) the solvent is pressurized through spray equipment with the atomizing air off or dispensed from a small non-atomizing container, and collected and stored in a closed container until recycled or properly disposed of offsite, or (ii) a spray gun washer subject to and in compliance with the requirements of Regulation 8, Rule 16 is used.
- 320.3 Shall close containers of coating, catalyst or solvent when not in use.

(Adopted 6/7/89; Amended 2/3/93; 10/16/02)

- 8-19-321 Surface Preparation Standards:** Effective June 1, 2003, no person shall use a surface preparation solvent with a VOC content that exceeds 50 g/l (0.42 lbs/gal), as applied, for surface preparation of any metal part or product unless emissions to the atmosphere are controlled to an equivalent level by an approved emission control system with an overall abatement efficiency of at least 85 percent.

(Adopted October 16, 2002)

8-19-400 ADMINISTRATIVE REQUIREMENTS

8-19-401 Deleted December 19, 1984

8-19-402 Deleted January 7, 1987

8-19-403 Deleted March 5, 1986

8-19-404 Deleted April 1, 1987

8-19-405 Low Usage Coating Petition: Any person seeking to satisfy the conditions of Section 8-19-110 shall comply with the following requirements:

- 405.1 The user or specifier shall petition the APCO in writing that substitute complying coatings are not available.
- 405.2 If the APCO grants written approval, such petition will be repeated on an annual basis.
- 405.3 If the APCO grants written approval, such approval shall contain volume and VOC limit conditions.
- 405.4 Records must be maintained as in Section 8-19-501.

(Adopted 12/19/84; Amended 12/18/85; 6/7/89)

8-19-406 Deleted June 7, 1989

8-19-407 Specialty Coating Petition: A person seeking a limited exemption pursuant to Section 8-19-136, shall comply with the following requirements:

- 407.1 A petition shall be submitted to the APCO containing the following information, as applicable: performance requirements, job order description, volume of coating, and maximum VOC level necessary.
- 407.2 If the APCO grants written approval, such petition will be repeated on an annual basis.
- 407.3 If the APCO grants written approval, such approval shall contain volume and VOC limit conditions.
- 407.4 Records must be maintained as in Section 8-19-501.

(Adopted 12/18/85; Amended 4/1/87; 6/7/89; 2/3/93; 6/15/94)

8-19-408 Emission Reduction Credits: Emission reduction credits established pursuant to Regulation 2, Rule 4 shall not take credit for any emissions reduced from coatings in excess of the standards of Section 8-19-302 or 312.

(Adopted June 15, 1994)

8-19-500 MONITORING AND RECORDS

8-19-501 Records: Any person using coatings or solvents subject to this Rule shall:

- 501.1 Maintain current data necessary to evaluate compliance, including the following information, as applicable:
 - a. coating catalyst and reducer used
 - b. VOC content of coating as applied
 - c. VOC content of surface preparation and cleanup solvents, as applied
- 501.2 Record the following information on a weekly basis, as applicable, unless otherwise specified in permit conditions imposed per Regulation 2-1-403:
 - a. coating and mix ratio of components in the coating used as applied
 - b. quantity of each coating applied
 - c. identification of specialty coating limit category
 - d. oven temperature
- 501.3 Record on a daily basis coating usage and key system operating parameters when an approved emission control system is used to comply with the requirements of Section 302, 312, 313, 320 or 321.
- 501.4 Record on a monthly basis the type and amount of solvent used for cleanup and surface preparation, unless more frequently specified in permit conditions imposed per Regulation 2-1-403.
- 501.5 Records shall be retained and available for inspection by the APCO for the previous 24-month period.

(Adopted 12/19/84; Amended 12/18/85; 1/7/87; 4/1/87; 6/7/89; 2/3/93; 10/6/93; 6/15/94; 10/16/02)

8-19-502 Deleted February 3, 1993

8-19-600 MANUAL OF PROCEDURES

8-19-601 Analysis of Coating Samples: Samples of volatile organic compounds as specified in Sections 8-19-302 and 312 shall be analyzed as prescribed in the Manual of Procedures, Volume III, Method 21 or 22.

(Adopted 3/17/82; Amended 12/19/84; 1/7/87; 4/1/87; 6/7/89; 2/3/93)

8-19-602 Determination of Emissions: Emissions of volatile organic compounds as specified in Sections 8-19-302, 312, 313, 320 and/or 321 shall be measured as prescribed by any of the following methods 1) BAAQMD Manual of Procedures, Volume IV, ST-7, 2) EPA Method 25 or 25A. When either EPA Method 25 or 25 A is used, control device equivalency shall be determined as prescribed in 55 FR 26865 (June 29, 1990). A source shall be considered in violation if the VOC emissions measured by any of the test methods exceed the standards of this rule.

(Adopted 3/17/82; Amended 1/7/87; 4/1/87; 6/7/89; 2/3/93; 6/15/94; 10/16/02)

8-19-603 Determination of Acid Content: Measurement of acid content as specified in Section 8-19-210 shall be determined in accordance with ASTM Method D-1613-96.

(Adopted 2/3/93; Amended 10/16/02)

8-19-604 Analysis of Mold Release Coating Samples: Samples of mold release coatings containing volatile organic compounds as specified in Section 8-19-302 shall be analyzed as prescribed in the Manual of Procedures, Volume III, Method 31.

(Adopted February 3, 1993)

8-19-605 Analysis of Solvent Samples: Samples of volatile organic compounds as specified in Section 8-19-320 or 321 shall be analyzed as prescribed in the Manual of Procedures, Volume III, Method 31.

(Adopted October 16, 2002)

8-19-606 Analysis of Exempt Compounds: Samples of PCBTF, VMS, and methyl acetate shall be analyzed by the Manual of Procedures, Volume III, Method 41, 43 and by ASTM Method D-6133-00, respectively.

(Adopted October 16, 2002)

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

**REGULATION 8
ORGANIC COMPOUNDS
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**REGULATION 8
ORGANIC COMPOUNDS
RULE 20
GRAPHIC ARTS PRINTING AND COATING OPERATIONS
(Adopted April 12, 1980)**

8-20-100 GENERAL

8-20-101 Description: The purpose of this Rule is to limit the emission of volatile organic compounds from graphic arts operations and graphic arts lines. Any operation which is determined to be exempt from the provisions of this Rule shall be subject to the provisions of Rule 4, if not already subject to another rule of Regulation 8. (Amended December 4, 1985; October 6, 1993)

8-20-110 Exemption, Small User: Until September 1, 1999, the requirements of this Rule shall not apply to any facility which emits less than 182 kilograms (400 pounds) of VOC in any month from graphic arts operations, including surface preparation and cleanup solvent, provided the requirements of Section 8-20-507 are met. Effective September 1, 1999, the requirements of this Rule shall not apply to any facility which emits less than 79.4 kilograms (175 pounds) of VOC in any month from graphic arts operations, including surface preparation and cleanup solvent, provided the requirements of Section 8-20-507 are met. For the purpose of calculating exemption applicability, emissions of volatile organic compounds from the use of non-heatset lithographic ink as determined by Section 8-20-601 shall be reduced by 95 percent.

110.1 Exemption, Small User, Extreme Performance Screen Printing: Until January 1, 2003, the Extreme Performance

Ink/Coating requirement of Section 8-20-307 shall not apply to any extreme performance screen printing facility which emits less than 182 kilograms (400 pounds) of VOC in any month from graphic arts operations, including surface preparation and cleanup solvent, provided the requirements of Section 8-20-406 are met.

(Amended April 19, 1989; October 6, 1993; March 3, 1999)

8-20-111 Exemption, Laboratory and Experimental Operations: Until September 1, 1999, the requirements of this Rule, except as provided in Section 8-20-503, shall not apply to equipment used exclusively for research, laboratory analysis or determination of product quality and commercial acceptance, provided emissions of VOC from such equipment do not exceed 136 kilograms (300 pounds) per month per facility. Effective September 1, 1999, the requirements of this Rule, except as provided in Section 8-20-503, shall not apply to equipment used exclusively for research, laboratory analysis or determination of product quality and commercial acceptance, provided emissions of VOC from such equipment do not exceed 79.4 kilograms (175 pounds) per month per facility.

(Amended April 19, 1989; October 6, 1993; March 3, 1999)

8-20-112 Deleted April 19, 1989

8-20-113 Deleted April 19, 1989

8-20-114 Deleted April 19, 1989

8-20-115 Deleted April 19, 1989

8-20-116 Exemption, Circuitry Printing: The requirements of this Rule shall not apply to circuitry printing. (Adopted April 19, 1989; Amended March 3, 1999)

8-20-117 Exemption, Heat Shrinkable Tubing and Wire Insulation: The requirements of this Rule shall not apply to the printing of heat shrinkable tubing and wire insulation. (Adopted October 6, 1993; Amended March 3, 1999)

8-20-118 Limited Exemption, Water Slide Decals: The requirements of this Rule, except as provided in Section 8-20-503, shall not apply to the screen printing of water slide decals. (Adopted October 6, 1993)

8-20-119 Exemption, Solvent Cleaners: The requirements of this Rule shall not apply to the use of any vapor degreaser or cold cleaner that use or contain solvent for cleaning. Such vapor degreasers or cold cleaners are subject to Regulation 8, Rule 16: Solvent Cleaning Operations. (Adopted March 3, 1999)

8-20-200 DEFINITIONS

8-20-201 Approved Emission Control System: A system for reducing emissions of VOC to the atmosphere, consisting of a control device and a collection system, which achieves the overall abatement efficiency specified in the applicable standards section at all times during operation of the equipment being controlled. (Amended April 19, 1989; October 6, 1993)

8-20-202 Flexographic Printing: The application of words, designs or pictures by roll printing technique in which the pattern to be applied is raised above the printing roll and the image carrier is made of rubber or other elastomeric material.

8-20-203 Fugitive Emissions: Emissions of VOC from any portion of the printing, coating or laminating operation other than the drying oven.

8-20-204 Graphic Arts Operation: Any gravure, publication gravure, flexographic printing, screen printing, letterpress, or lithographic printing operation, or any coating or laminating operation manufacturing converted flexible packaging materials for packaging of food or health care products for human or animal consumption. (Amended December 4, 1985; April 19, 1989; October 6, 1993)

8-20-205 Gravure Printing: An intaglio printing operation in which the ink is transferred from minute etched wells on a plate to the substrate, which is supported by an impression roller, with excess ink removed by a doctor blade.

8-20-206 Deleted October 6, 1993

8-20-207 Non-Porous Substrate: Any substrate whose surface prevents penetration by water, including but not limited to foil, polyethylene, polypropylene, cellophane, paper or paper-board coated with a non-porous surface, metalized polyester, nylon and polyethylene terephthalate (mylar). Clay-coated printing paper as defined by the American Paper Institute Classification System and paperboard coated with clay to prevent water penetration shall be considered a non-porous substrate.

8-20-208 Deleted October 6, 1993

8-20-209 Porous Substrate: A substrate whose surface does not prevent penetration by water, including but not limited to paper, paperboard, and any paper product which is coated with a porous material.

8-20-210 Publication Gravure: Gravure printing on paper which is subsequently formed into books, magazines, catalogues, brochures, directories, newspaper supplements or other types of printed material.

8-20-211 Fountain Solution: The solution applied to the image plate to maintain the hydrophilic properties of the non-image areas and to keep the non-image area free from ink. It is primarily water and contains at least one of the following materials: etchants such as mineral salts; hydrophilic gums; or VOC additives to reduce the surface tension of the solution. (Adopted December 4, 1985; Amended March 3, 1999)

8-20-212 Letterpress Printing: A method where the image area is raised relative to the non-image area and the ink is transferred to the paper directly from the image surface. (Adopted December 4, 1985)

8-20-213 Lithographic Printing: A plane-o-graphic method in which the image and non-image areas are on the same plane. (Adopted December 4, 1985; Amended October 6, 1993)

8-20-214 Screen Printing: A process where the printing ink passes through a web or a fabric to which a refined form of stencil has been applied. The stencil openings determine the form and dimensions of the imprint. (Adopted December 4, 1985)

8-20-215 Makeup Solvent: That solvent which is added to printing inks to reduce viscosity. (Adopted April 19, 1989)

8-20-216 Volatile Organic Compounds: Any organic compound (excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate) which would be emitted during use, application, curing or drying of a solvent or surface coating.

216.2 Effective January 1, 1995, for the purpose of calculating the VOC content of an ink, coating, or adhesive, any water or the following non-precursor organic compounds shall not be considered to be part of the product:

- acetone
- parachlorobenzotrifluoride (PCBTF)
- cyclic, branched or linear, completely methylated siloxanes (VMS)

216.3 For the purpose of calculating the VOC content of fountain solution and cleanup solvent, any water or the following non-precursor organic compounds shall not be considered to be part of the VOC content of the product:

- acetone
- parachlorobenzotrifluoride (PCBTF)
- cyclic, branched or linear, completely methylated siloxanes (VMS)

(Adopted 4/19/89; Amended 10/6/93; 6/15/94; 12/20/95; 3/3/99)

8-20-217 Graphic Arts Line: Printing application equipment, coating equipment, laminating equipment, flash-off areas, ovens, conveyors or other equipment operating in an uninterrupted series in a graphic arts operation. (Adopted April 19, 1989)

8-20-218 Non-Heat Set Ink: An ink which dries by oxidation and absorption into the substrate without the use of heat from dryers or ovens. (Adopted April 19, 1989)

8-20-219 Extreme Performance Ink/Coating: For the purposes of this Rule, an ink or coating used in screen printing on a non-porous substrate that is designed to resist or withstand any of the following: more than two years of outdoor exposure; exposure to industrial-grade chemicals, solvents, acids, or detergents, oil products, cosmetics, temperatures exceeding 76oC (170oF), vacuum forming, embossing or molding. (Adopted October 6, 1993)

8-20-220 Heat Shrinkable Tubing and Wire Insulation: Thermoplastic tubing, including but not limited to polyethylene, Kynar and mylar tubing that, after printing, is exposed to temperatures exceeding 100oC (212oF) or other environmental extremes, including but not limited to, repetitive rubbing or contact with hot fluids. (Adopted October 6, 1993; Amended March 3, 1999)

8-20-221 Metallic Ink: An ink that contains greater than 50 grams of metal per liter (0.4 lb/gal) of ink. (Adopted October 6, 1993)

8-20-222 Sign Ink/Coating: An ink or coating used in screen printing indoor and outdoor signs (excluding structural components) and murals, including lettering enamels, poster colors, copy blockers, and bulletin enamels. (Adopted October 6, 1993)

8-20-223 Solvent: Organic compounds which are used as diluents, thinners, dissolvers, viscosity reducers, cleaning agents or for other similar uses. (Adopted October 6, 1993)

8-20-224 Water Slide Decal: A decal which is screen printed onto treated paper stock and is removable from the stock by the dissolution of an underlying, water-soluble adhesive or a similar carrier. (Adopted October 6, 1993)

8-20-225 Web Splicing Adhesive: An adhesive used to join two continuous rolls of substrate. (Adopted October 6, 1993)

8-20-226 Key System Operating Parameter: An emission control system operating parameter, such as temperature, flow rate or pressure, that ensures operation of the abatement equipment within manufacturer specifications and compliance with the standards in Section 8-20-301.2, and 308. (Adopted June 15, 1994)

8-20-227 Circuitry Printing: Printing on circuit boards and other electronic circuitry, including membrane switches. (Adopted March 3, 1999)

8-20-228 Lithographic, Blanket and Roller Washes: Cleaning products which are used to wash the blankets, the rollers, and the exterior surfaces of the printing press to remove excess printing inks, oils, and paper pieces. (Adopted March 3, 1999)

8-20-229 Lithographic, Other Cleaners: Cleaning products which are used to clean the other components of the lithographic presses other than blankets, rollers, and exterior surfaces, such as metering rollers and printing plates. (Adopted March 3, 1999)

8-20-230 Ink Removal Products: Cleaning products used for the final cleaning of application equipment prior to color change or storage of the application equipment. (Adopted March 3, 1999)

8-20-231 VOC Composite Partial Pressure: Sum of the partial pressures of the compounds defined as VOCs. (Adopted March 3, 1999)

8-20-232 Specialty Flexographic Printing: Flexographic printing on polyethylene, polypropylene, polyester and foil substrates for food packaging and health care products and specialty products on nylon substrates. (Adopted March 3, 1999)

8-20-300 STANDARDS

8-20-301 Publication Gravure Requirements: A person shall not operate a publication gravure process unless one or more of the following conditions is satisfied:

301.1 The process uses ink and coating that contains less than 300 grams VOC per liter of product, less water, or

301.2 Emissions of VOC from the printing and drying operation are controlled by an emission control system that meets the requirements of Regulation 2, Rule 1, and which has an overall collection and control efficiency of at least 85 percent on a mass basis. (Amended April 19, 1989; October 6, 1993)

8-20-302 Flexographic, Gravure, Letterpress, and Lithographic Requirements: Except as provided in Section 8-20-308, a person shall not operate a flexographic, gravure, letterpress, lithographic, related printing or coating operation unless the following product limits, expressed in grams VOC per liter of product as applied (pounds per gallon), less water, or percent VOC by volume are met:

	Product Limits
	grams VOC per liter of product as applied, less water (lbs/gal)
Ink	300 (2.5)
Coating	300 (2.5)
Adhesive	150 (1.25)
Web Splicing Adhesive	300 (2.5)

	Product Limit
	percent VOC by volume
Fountain Solution	8

(Amended October 6, 1993; June 15, 1994; March 3, 1999)

8-20-303 Deleted April 19, 1989

8-20-304 Alternate Emission Control Plan: The requirements of Sections 8-20-301 and 8-20-302 shall not apply to any graphic arts operation or group of such operations which comply with an alternative emission control plan that satisfies all the following requirements:

304.1 For plans submitted prior to May 26, 1988, emissions of VOC, on a daily weighted average, shall be no greater than that amount which would result if the affected graphic arts line or lines complied with all applicable requirements of Sections 8-20-301, and 302. Averaging shall be performed using pounds of VOC emitted per gallon of solids applied. The VOC content of the ink, coating, adhesive or fountain solution is as applied including any solvent added before or during application.

304.2 The plan shall include methods acceptable for demonstrating compliance with the plan on a daily basis. The information shall be available for inspection by the APCO for each production day at the time of inspection. Such demonstration shall include the following information:

- 2.1 List of products included in the plan
- 2.2 Type of inks, coatings or adhesives which will be applied on each product
- 2.3 Amount of ink, coatings or adhesives applied on each product
- 2.4 Solids content for each ink, coating or adhesive
- 2.5 VOC content per gallon or liter of solids, as applied, for each ink, coating or adhesive
- 2.6 Detailed description of how compliance with Section 8-20-304.1 or Section 8-20-304.7.2, where applicable, shall be achieved

304.3 The person submitting the plan shall maintain such records and submit such information on usage and composition, laboratory analysis, source tests or other information as required by the APCO to determine compliance with the plan.

304.4 The plan shall contain credit only for reductions achieved on sources subject to the applicable sections of this Rule. Credit shall not be granted for periods of non-operation, for reductions in surface preparation or cleanup solvent, for coatings exempt from the standards in Section 8-20-301 and 302, nor for emission reductions required by other regulations of this District.

304.5 If any District regulation is adopted or amended after approval of the plan which requires emissions reductions that are included in the plan, a new plan shall be submitted which does not include credit for those reductions.

304.6 The plan shall be submitted to the APCO for review and approval on an annual basis. Submission of the plan shall be within 60 days prior to annual permit renewal. Approval of the plan shall include a 30-day public comment period.

304.7 For alternate emission control plans submitted on or after May 26, 1988, the following additional requirements shall be satisfied:

7.1 Emissions of VOC on a daily basis shall not exceed the maximum daily emission limit as specified in subsection 8-20-304.7.2.

7.2 For the purpose of determining the maximum daily emission limit, the plan shall include a 20 percent net reduction beyond a baseline as calculated in subsection 8-20-304.7.3.

7.3 Baseline emissions shall be calculated as follows:

Baseline emissions = E x P x U, where

E = the lower of the actual or allowable pounds of VOC at the time of submission of the plan per pound of solids applied.

P = the arithmetic average of the lower of the actual or allowable hours of operation per day for the prior two years or two other years if it can be shown to the satisfaction of the APCO that the prior two years are not representative.

U = the lower of the actual or allowable pounds of solids per unit of production times units of production per day.

Allowable emissions shall be those which would meet the limits specified in Section 8-20-301 and 302, expressed as a solids applied basis.

7.4 The plan submitted pursuant to subsection 8-20-304.2 shall additionally include units of production per hour or per production run and hours of operation or production runs per day to demonstrate compliance with the plan on a daily basis.

7.5 Emissions reductions achieved as a result of compliance with subsection 304.7.2 shall not be deposited into an emissions trading bank. The plan may not take credit for emissions banked as the result of a shutdown. (Amended October 6, 1993)

7.6 Emissions reductions from an air pollution abatement device may not be used to generate credit toward an alternate emissions control plan where the installation of the device was necessary to comply with Sections 8-20-301 or 302.

7.7 Each renewal of a plan shall maintain the maximum daily emission limit established at the time of initial approval of the plan as specified in subsection 8-20-304.7.1. A recalculation of baseline emissions and a 20 percent net reduction as specified in subsections 8-20-304.7.2 and 304.7.3 shall not be required for each plan renewal. Any modification of the provisions of the plan shall constitute a new plan.

7.8 The requirements of subsections 8-20-304.7.1, 304.7.2 and 304.7.3 shall not apply to any plan submitted where the provisions of the plan are limited to coatings applied at a single source subject to the same emission limitation during a single production run. Allowable emissions shall be those specified in subsection 8-20-304.1.

7.9 The provisions of subsection 8-20-304.7 shall be submitted to the Environmental Protection Agency (EPA) as a source-specific revision to the State Implementation Plan (SIP). Sources which obtain an approved alternate emission control plan pursuant to the provisions of subsection 8-20-304.7 remain subject to federal enforcement of existing SIP limits pending federal approval of the plan as a source-specific SIP revision.

304.8 Failure to comply with any provision of an approved plan shall constitute a violation of this Rule. (Amended September 20, 1989; October 6, 1993)

8-20-305 Deleted April 19, 1989

8-20-306 Compliance Statement Requirement: The manufacturer of all inks, coatings, adhesives, and fountain solutions which are sold for use in graphic arts operation within the District shall include a designation of VOC of product, less water, as supplied (as defined in Section 8-20-216) expressed in grams per liter or pounds per gallon, either by calculation or analysis, on data sheets. (Adopted April 19, 1989; Amended October 6, 1993)

8-20-307 Screen Printing Requirements: Except as provided in Section 8-20-308, a person shall not operate a screen printing operation unless the following product limits, expressed in grams VOC per liter (pounds per gallon) as applied, less water, are met:

	<u>Product Limits</u>
	grams VOC per liter of product as applied, less water (lbs/gal)
Ink	400 (3.3)
Coating	400 (3.3)
Adhesive	150 (1.25)
Extreme Performance Ink/Coating	400 (3.3)
Metallic Ink	400 (3.3)
	400 (3.3)

(Amended October 6, 1993; June 15, 1994; March 3, 1999)

8-20-308 Approved Emission Control System Requirements: The limits of Section 8-20-302, 307, or 309 shall not apply when emissions of VOC to the atmosphere from the printing, coating or laminating, drying and cleanup operations are controlled by an emission control system that meets the requirements of Regulation 2, Rule 1, and has a collection and control efficiency of at least 75 percent overall on a mass basis. (Adopted October 6, 1993; Amended March 3, 1999)

8-20-309 Cleaning Product Requirements: Effective January 1, 2000, except as provided in Section 8-20-308, a person shall not use cleaning products containing VOC's for the cleanup of equipment used in graphic arts printing and coating operations, unless the following product limits are met:

	VOC g/l (lb/gal), including water	Product Limit	
			VOC Composite Partial Pressure Hg @ 20oC (68oF)
Lithographic, Blanket and Roller Washes	300 (2.5)	OR	10
Lithographic, Other Cleaners	300 (2.5)	OR	25
Screen Printing, Ink Removal Products	300 (2.5)	OR	10
Gravure Printing	800 (6.7)	OR	25
Ultraviolet Inks, Ink Removal Products	800 (6.7)	AND	33
Flexographic Printing	810 (6.8)	AND	21
Specialty Flexographic Printing	880 (7.4)	AND	25

(Adopted March 3, 1999)

8-20-320 Solvent Evaporative Loss Minimization: The requirements of this Section shall apply to any person using solvent for surface preparation and cleanup and to any person using, mixing, storing, or disposing of ink, coating or adhesive :

320.1 A person shall not use open containers for the storage or disposal of cloth or paper impregnated with organic compounds that is used for surface preparation, cleanup or ink, coating or adhesive removal.

320.2 A person shall not store spent or fresh organic compounds to be used for surface preparation, cleanup or ink, coating, or adhesive removal in open containers.

320.3 A person shall not leave containers or ink, coating, adhesive or fountain solution open when not in use.

(Adopted April 19, 1989; Amended and Renumbered October 6, 1993)

8-20-400 ADMINISTRATIVE REQUIREMENTS

8-20-401 Deleted April 19, 1989

8-20-402 Deleted April 19, 1989

8-20-403 Deleted April 19, 1989

8-20-404 Deleted April 19, 1989

8-20-405 Deleted April 19, 1989

8-20-406 Compliance Schedule, Loss of Exemption: Any person who becomes subject to the requirements of Sections 301, 302, or 307 through loss of exemption in Section 110 shall comply with the following increment of progress:

406.1 By January 1, 1995, be in full compliance with the requirements of this Rule.

8-20-407 Small User, Extreme Performance Screen Printing Petition: Any person seeking to use an Extreme Performance Ink/Coating which does not comply with the requirements of Section 8-20-307 shall satisfy the conditions of Section 8-20-110.1 and shall comply with the following requirements:

406.1 The user or specifier shall petition the APCO (attn: Enforcement Division) in writing that substitute complying coatings are not available.

406.2 The petition to the APCO shall include the performance requirements, volume of coating, and VOC level, which is attainable. A facility may submit more than one petition, as long as the conditions of Section 8-20-110.1 are satisfied.

406.3 If the APCO grants written approval, such petition will be repeated on an annual basis.

406.4 If the APCO grants written approval, such approval shall contain conditions consistent with the information provided in the petition to monitor usage and insure compliance with Section 8-20-110.1.

406.5 Records shall be maintained as in Section 8-20-503.

(Adopted March 3, 1999)

8-20-500 MONITORING AND RECORDS

8-20-501 Deleted April 19, 1989

8-20-502 Deleted April 19, 1989

8-20-503 Records: Any person complying with the requirements of Sections 8-20-111, 118, 301.1, 302, 307 or 309 shall:

503.1 Maintain a current list of inks, coatings, adhesives, fountain solutions and makeup and cleaning solvents in use which states the VOC content of each.

503.2 Record on a monthly basis the type and amount of all ink, using one of the following methods:

2.1 Group the quantity of all inks used and identify the maximum VOC content and use the minimum density of 1.01 kg/l (8.44lb/gal).

2.2 Report process inks and pantone colors separately and use the specific VOC content and density value for each process ink and the highest volatile organic compound and 1.01 kg/l (8.44 lbs/gal) for pantone inks; or

2.3 Report process inks and pantone colors separately using the maximum VOC content and minimum density for both process and pantone inks or use the density of 1.01 kg/l (8.44 lbs/gal) for pantone inks.

2.4 Itemize each ink and pantone color and use the specific VOC content and density value for each.

503.3 Record on a monthly basis the type and amount of each coating, adhesive, fountain solution and makeup, surface preparation, and cleanup solvent used.

503.4 Retain and have such records available for inspection by the APCO for the previous 24-month period.

(Adopted 4/19/89; Amended 10/6/93; 6/15/94; 3/3/99)

8-20-504 Deleted October 6, 1993

8-20-505 Emission Control System Monitoring: Effective September 1, 1989, any person who uses an emission control system which is subject to the provisions of Sections 8-20-301.2, 301.3, 304, and 308 shall install a readily visible temperature gauge which monitors the operating temperature of the emission control system at all times during operation. (Adopted April 19, 1989; Amended September 20, 1989; October 6, 1993)

8-20-506 Emission Control System, Recordkeeping Requirements: Any person subject to Sections 8-20-301.2 and 308 shall:

506.1 Maintain a current list of inks, coatings, adhesives, fountain solutions and makeup solvent in use which states the VOC content of each.

506.2 Record on a daily basis the type and amount of all ink, coating, adhesive, fountain solution and makeup, surface preparation and cleanup solvent used.

506.3 Record key system operating parameters, as defined in Section 8-20-226, on a daily basis.

506.4 Retain and have such records available for inspection by the APCO for the previous 24-month period.

(Adopted October 6, 1993; Amended June 15, 1994)

8-20-507 Burden of Proof: Any person claiming the small user exemption per Section 8-20-110 must have information available, such as purchase orders or hazardous waste manifests, that would allow the APCO to verify facility usage. (Adopted October 6, 1993)

8-20-600 MANUAL OF PROCEDURES

8-20-601 Analysis of Samples: Samples of products specified in Sections 8-20-301, 302, and 307 shall be analyzed as prescribed in the Manual of Procedures, Volume III, Methods 21 or 22, or EPA Methods 24 and 24A to determine VOC content. Samples of fountain solutions and cleaning materials as specified in Section 8-20-302 and 309, shall be analyzed as prescribed in the Manual of Procedures, Volume III, Method 31. (Amended October 6, 1993; Amended March 3, 1999)

8-20-602 Determination of Emissions: Emissions of volatile organic compounds as specified in Sections 8-20-110, 111, 301, 308, and subsection 8-20-304.3 shall be measured as prescribed by any of the following methods: 1) BAAQMD Manual of Procedures, Volume IV, ST-7, 2) EPA Method 25 or 25A. When either EPA Method 25 or 25A is used, control device equivalency shall be determined as prescribed in 55 FR 26865 (June 29, 1990). A source shall be considered in violation if the VOC emissions measured by any of the referenced test methods exceed the standards of this rule. When determining emissions of VOC for lithographic printing facilities, the following substrate retention factors of VOC for inks will be applied: 20 percent retention of the VOC content for heatset inks and 95 percent retention of the VOC content for non-heatset inks, based on the VOC content as determined by Section 8-20-601. For the purpose of determining abatement device efficiency, any acetone, PCBTF or VMS shall be included as volatile organic compounds. A source shall be considered in violation if the VOC emissions measured by any of the reference test method exceed the standards of this rule. (Amended April 19, 1989; Sept. 20, 1989; Oct. 6, 1993; June 15, 1994)

8-20-603 Deleted October 6, 1993

8-20-604 Determination of VOC Composite Partial Pressure: Emissions of VOC Composite Partial Pressure shall be measured as prescribed by BAAQMD Manual of Procedures, Volume III, Method 46. (Adopted March 3, 1999)

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REGULATION 8 - RULE 21

RUBBER TIRE MANUFACTURING OPERATIONS

- 8-21-100 GENERAL
- 8-21-101 Description: The purpose of this Rule is to limit emissions of volatile organic compounds (VOC) from pneumatic rubber tire manufacturing operations.
- 8-21-110 Exemption, Retread Operations: The requirements of this Rule shall not apply to operations applying new tread to used tires.
- 8-21-200 DEFINITIONS
- 8-21-201 Approved Emission Collection System: A system, approved by the APCO, for collecting VOC emissions and transporting them to a control device and which satisfies at least one of the following conditions:
- 201.1 The system collects at least 85 percent of the VOC emissions generated by the operation being controlled, or
- 201.2 The system achieves maximum reasonable collection consistent with good engineering practice and guidelines published by the American Federation of Industrial Hygienists and the National Institute of Occupational Safety and Health.
- 8-21-202 Bead Dipping: Dipping of an assembled tire bead into a solvent based cement.
- 8-21-203 Green Tire Coating: Coating of green tires with release compounds to help remove air during tire molding and prevent the tire from sticking to the mold after curing.
- 8-21-204 Green Tires: Assembled tires before molding and curing have occurred.
- 8-21-205 Pneumatic Rubber Tire Manufacturing: Production of pneumatic rubber tires for passenger cars, light trucks or medium trucks, or other pneumatic rubber tires manufactured on an assembly line using automated equipment.
- 8-21-206 Tread End Cementing: Application of a solvent based cement to the tire tread ends.
- 8-21-207 Undertread Cementing: Application of a solvent based cement to the underside of a tire tread.
- 8-21-208 Water Based Coating: Release compounds which contain less than 3 percent volatile organic compounds.

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8-21-300 STANDARDS

8-21-301 Cementing and Bead Dipping: Effective April 1, 1982, a person shall not operate any undertread cementing, tread end cementing or bead dipping operation unless the following requirements have been satisfied:

301.1 Install and operate an approved emission collection system, as defined in this Rule.

301.2 Install and operate a control device which reduces emissions from the collection system by at least 95 percent on a mass basis.

8-21-302 Green Tire Coating: Effective April 1, 1982, a person shall use only water base coatings in green tire coating operations unless the following requirements are satisfied:

302.1 Install and operate an emission collection system which collects and transports to the control device at least 90 percent (on a mass basis) of the VOC emitted by the green tire coating.

302.2 Install and operate a control device which reduces emissions from the collection system by at least 95 percent on a mass basis.

8-21-303 Compensating Reductions: The requirements of Sections 8-21-301 through 302 shall not apply to any pneumatic rubber tire manufacturing operations which comply with an alternative emission control plan which has been approved by the APCO and which satisfies all the following requirements:

303.1 Emissions of VOC, on a daily weighted average be no greater than that amount which would result if the affected operations complied with all applicable requirements of Sections 8-21-301 through 302.

303.2 The plan shall be submitted to the APCO for review and approval on an annual basis.

303.3 The plan shall include methods acceptable to APCO for demonstrating compliance with the plan a daily basis. Such demonstration shall include the following:

303.3.1 List of materials which will be used on each production line.

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- 303.3.2 Type of coatings or cements which will be applied.
 - 303.3.3 Amount of those coatings or cements which will be applied.
 - 303.3.4 VOC content or equivalent emission for each coating or cement.
 - 303.3.5 Detailed description of compensating reductions to be achieved for each non-complying operation.
 - 303.4 The information required in Section 303.3 shall be available for inspection by the APCO on each production day.
 - 303.5 The plan shall contain credit only for reductions achieved on coating or cementing operations subject to this Rule.
 - 303.6 Failure to comply with any provision of an approved plan shall constitute a violation of this Rule.
 - 303.7 The person submitting the plan shall maintain such records and submit such information on usage and composition, laboratory analysis, source tests or other information as required by the APCO to determine compliance with the plan.
 - 303.8 The plan shall not include credit for emission reductions required by other sections of this regulation or other regulations of this District.
 - 303.9 If any District regulation is adopted or amended after approval of the plan, which requires emission reductions which are included in the plan, a new plan shall be submitted which does not include credit for those reductions.
- 8-21-304 Container Requirements: Containers for organic solvents or for cements containing organic solvents shall be covered at all times except when cleaning or adding or removing material, and any leaks in such containers shall be repaired immediately.
- 8-21-400 ADMINISTRATIVE REQUIREMENTS
- 8-21-401 Compliance Schedule: Any person who is subject to the requirements of this Rule shall comply with the following increments of progress:
- 401.1 By April 1, 1981: Submit to the APCO a plan describing the methods to be used to comply with the applicable requirements.
 - 401.2 By November 1, 1981: Submit a completed application for any Authority to Construct necessary to comply with the applicable requirements.
 - 401.3 By April 1, 1982: Be in full compliance with all applicable requirements.

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

REGULATION 8

ORGANIC COMPOUNDS

RULE 22

VALVES AND FLANGES AT CHEMICAL PLANTS

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REGULATION 8

ORGANIC COMPOUNDS

RULE 22

VALVES AND FLANGES AT CHEMICAL PLANTS

(Adopted March 5, 1980)

8-22-100 GENERAL

8-22-101 Description: The purpose of this Rule is to limit emissions of precursor organic compounds from valves and flanges at chemical plants. (Amended March 17, 1982; July 20, 1983)

8-22-110 Deleted September 6, 1989

8-22-111 Deleted September 6, 1989

8-22-112 Exemption, Low Vapor Pressure: The provisions of this Rule shall not apply to valves or flanges which handle only organic liquids with a vapor pressure less than 2.6 mmHg (0.05 psia) at 20°C (68°F) or exhibit a 10 percent evaporation point greater than 150°C (302°F) when using ASTM D-86. (Amended September 6, 1989)

8-22-113 Exemption, Natural Gas: The provisions of this Rule shall not apply to valves or flanges which handle only commercial natural gas. (Amended September 6, 1989)

8-22-114 Exemption, Research and Development Facilities: The provisions of this Rule shall not apply to research or development facilities which produce only non-commercial products for research and development purposes. (Amended June 1, 1994)

8-22-115 Exemption, Chemical Plants With 100 or More Valves: Effective January 1, 1993, the provisions of this Rule shall not apply to valves or flanges in chemical plants having 100 or more valves, which are subject to the provisions of Regulation 8, Rule 18: Valves and Connectors at Petroleum Refineries, Chemical Plants, Bulk Plants and Bulk Terminals. (Adopted March 4, 1992)

8-22-200 DEFINITIONS

8-22-201 Background: The ambient concentration of organic compounds determined at least 3 meters (10 feet) upwind from the valve or flange to be inspected and not influenced by any specific emission point. (Amended March 17, 1982; September 6, 1989)

8-22-202 Essential Valve or Flange: A valve or flange which cannot be taken out of service without shutting down the process unit which it serves.

8-22-203 Flange: A projecting rim on a pipe or piping component used to attach it to another piping detail.

8-22-204 Flange Leak Minimization: Tightening, adjusting or addition of gasket material to a flange, using best modern practices, for the purpose of stopping or reducing leakage to the atmosphere.

8-22-205 Flange Leak Repair: Tightening, adjusting or replacing, adding gasket material to a flange which reduces leakage to the atmosphere below the limit of Section 8-22-301.

8-22-206 Process Unit: A manufacturing process which is independent of other processes and is continuous when supplied with a constant feed of raw materials and sufficient storage facilities for the final project. (Renumbered March 17, 1982)

8-22-207 Chemical Plants: Any facility engaged in producing organic or inorganic and/or manufacturing products by chemical processes. Any facility or operation that has 28 as the first two digits in their Standard Industrial Classification Code as determined from the Standard Industrial Classification Manual published in 1972 by the Executive Office of the President, Office of Management and Budget. Chemical plants may include, but are not limited to the manufacture of: industrial inorganic and organic chemicals; plastic and synthetic resins, synthetic rubber, synthetic and other man made fibers; drugs; soap, detergents and cleaning preparations, perfumes, cosmetics and other toilet preparations; paints, varnishes, lacquers, enamels and allied products; agricultural chemicals; safflower and sunflower oil extracts; re-refining. (Renumbered March 17, 1982; Amended July 20, 1983; March 4, 1992)

8-22-208 Valve: Any device that regulates the flow of fluids in a piping system by means of an external actuator acting to permit or block passage of liquids or gases. (Renumbered March 17, 1982)

8-22-209 Valve Leak Minimization: The tightening, adjustment, or addition of packing material which surrounds the valve stem, or the replacement of the valve for the purpose of stopping or reducing leakage to the atmosphere, using best modern practices. (Renumbered March 17, 1982)

8-22-210 Valve Leak Repair: The tightening, adjustment, or addition of packing material which surrounds the valve stem, or the replacement of the valve, which reduces the leakage to the atmosphere below the limit of Section 8-22-301. (Renumbered March 17, 1982)

8-22-211 Inaccessible Valves and Flanges: Valves or flanges that are not in an accessible location as defined by Title 8, Section 3207, General Industrial Safety Orders of CAL OSHA 1986. (Adopted September 6, 1989)

8-22-212 Small Chemical Plant: Effective January 1, 1993, any chemical plant that has 100 or less valves. (Adopted March 4, 1992)

8-22-300 STANDARDS

8-22-301 Valves and Flanges: A person shall not use any valve or flange handling precursor organic compounds in a chemical plant if the concentration of organic compounds, measured 1 cm or less from any leak in such valve or flange, exceed 10,000 ppm (expressed as methane) above background, unless the following requirements are satisfied:

301.1 If the valve or flange is not essential, the leak shall be repaired within 15 days.

301.2 If the valve or flange is essential, the leak shall be minimized within 15 days.

301.3 If a valve or flange leak which has been minimized as required by subsection 301.2 still exceeded the limitations of Section 8-22-301, that valve or flange be repaired at the next scheduled turnaround of the process unit. Effective July 1, 1980 any such valve or flange shall not be operated longer than six months before repairs are conducted.

301.4 Any valve or flange subject to Section 8-22-301, where the organic compound concentration exceeds 75, 00 ppm (expressed as methane) above background, measured 1 cm or less from a lake in any such valve or flange, shall be repaired within 15 days. (Amended March 17, 1982; July 20, 1983; September 6, 1989)

8-22-400 ADMINISTRATIVE REQUIREMENTS

8-22-401 Identification: Any valve or flange with a leak in excess of the limitations of Section 8-22-301, which has been detected by the operator and is awaiting repair shall be identified in a manner which is readily observable by a District inspector. (Amended September 6, 1989)

8-22-402 Inspection Plan: Any person subject to this Rule shall comply with the following inspection requirements:

402.1 All annually inspected valves shall be inspected at least once prior to January 1, 1991. All quarterly inspected valves shall be inspected at least once prior to April 1, 1990.

402.2 Any valve which exceeds the limitations of Section 8-22-301 shall be marked with a tag and shall be reinspected within 3 months after being repaired.

402.3 Any accessible valve subject to this Rule shall be inspected at least once a year by the person subject to this Rule.

402.4 Any accessible valve subject to this Rule shall be inspected at least quarterly by the person subject to this Rule.

402.5 Any valve subject to this Rule may be inspected at any time by the APCO. (Amended March 17, 1982; July 20, 1983; September 6, 1989)

8-22-403 Deleted June 1, 1994

8-22-500 MONITORING AND RECORDS

8-22-501 Portable Hydrocarbon Detector: Any instrument used for the measurement of precursor organic compounds shall be a combustible gas indicator approved by the APCO or other type of instrument approved by the APCO in accordance with EPA Reference Method 21. (Amendment March 17, 1982; September 6, 1989)

8-22-502 Records: Any person subject to the requirements of this Rule shall maintain records that provide the following information:

502.1 The valve identification code, valve type and the location of the valve.

502.2 The date of all inspection and reinspection and the corresponding leak concentration measured as specified by Section 8-22-401.

502.3 Records shall be maintained for at least 5 years and shall be made available to the APCO for inspection at any time.

502.4 Monthly records of all non-repairable valves subject to the provisions of Section 8-22-301.3 shall be maintained and contain the valve identification code, valve type, valve location, leak concentration monthly measurement and date, last unit turnaround date, and total number of non-reparable valves awaiting repair. (Adopted June 1, 1994)

8-22-600 MANUAL OF PROCEDURES

8-22-601 Analysis of Samples: Samples of organic compounds as defined in this Rule shall be analyzed for Reid vapor pressure as prescribed in the Manual of Procedures, Volume 111, Method 13. (Adopted March 17, 1982)

8-22-602 Inspection Procedure: Inspection of valves and flanges shall be conducted as prescribed by EPA Reference Method 21. (Adopted September 6, 1989)

**REGULATION 8
ORGANIC COMPOUNDS
RULE 23
COATING OF FLAT WOOD PANELING
AND WOOD FLAT STOCK**

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**REGULATION 8
ORGANIC COMPOUNDS
RULE 23
COATING OF FLAT WOOD PANELING
AND WOOD FLAT STOCK**

(Adopted April 2, 1980)

8-23-100 GENERAL

8-23-101 Description: The purpose of this Rule is to limit the emission of volatile organic compounds (VOC) from the application of coatings and adhesives to flatwood panels and wood flat stock including but not limited to the following:

- 101.1 Printed interior panels made of hardwood plywood and thin particleboard
- 101.2 Natural finish hardwood plywood
- 101.3 Hardwood paneling
- 101.4 Baseboard
- 101.5 Wood flat stock
- 101.6 Veneers, doors, door skins, and wood flat product skins
- 101.7 Tileboard and wallboard
- 101.8 Exterior siding

Any coating which is determined to be exempt from the provisions of this Rule shall be subject to the provisions of Rule 4, if not already subject to another Rule of Regulation 8. (Amended March 20, 1985; June 21, 1989)

8-23-102 Deleted October 6, 1993

8-23-110 Exemption, Furniture and Cabinet Components This Rule shall not apply to the surface coating of flat wood stock intended to be used as a furniture or cabinet component. Such coating is subject to Regulation 8, Rule 32.

(Amended June 21, 1989)

8-23-111 Exemption, Architectural Coatings The provisions of this Rule shall not apply to the application of coatings to stationary structures and their appurtenances. Such coating is subject to Regulation 8, Rule 3, Architectural Coatings.

(Adopted June 21, 1989)

8-23-200 DEFINITIONS

8-23-201 Deleted June 21, 1989

8-23-202 Deleted June 21, 1989

8-23-203 Hardboard: A panel manufactured primarily from inter-felted ligno-cellulosic fibers which are consolidated under heat and pressure in a hot press.

8-23-204 Hardwood Plywood: Plywood whose surface layer is a veneer of hardwood.

8-23-205 Natural Finish Hardwood Plywood Panels: Panels whose original grain pattern is enhanced by essentially transparent finishes frequently supplemented by fillers and toners.

8-23-206 Printed Interior Panels: Panels whose grain or natural surface is obscured by fillers and basecoats upon which a simulated grain or decorative pattern is printed.

8-23-207 Thin Particleboard: A manufactured board 1/4 inch or less in thickness made of individual wood particles which have been coated with a binder and formed into flat sheets by pressure.

8-23-208 Tileboard: Paneling that has a colored waterproof surface coating.

8-23-209 Adhesive: Any substance that is applied for the primary purpose of bonding surfaces together. (Adopted March 20, 1985; Amended June 21, 1989)

8-23-210 Deleted June 21, 1989

8-23-211 Coating: Any coating applied on any wood flat stock including but not limited to water repellent preservative, semitransparent stains, opaque stains, filler, or clear top coat.

(Adopted March 20, 1985)

- 8-23-212 Deleted June 21, 1989**
- 8-23-213 Ink:** Any fluid or viscous composition used in printing, impressing or transferring an image onto a panel. (Adopted March 20, 1985)
- 8-23-214 Deleted June 21, 1989**
- 8-23-215 Deleted June 21, 1989**
- 8-23-216 Deleted June 21, 1989**
- 8-23-217 Deleted June 21, 1989**
- 8-23-218 Panel:** A flat piece of wood or wood product, usually rectangular and used inside homes and mobile homes for wall decorations. (Adopted March 20, 1985)
- 8-23-219 Deleted June 21, 1989**
- 8-23-220 Deleted June 21, 1989**
- 8-23-221 Wood Flat Stock:** Panels containing wood including but not limited to redwood stocks, plywood panels, particle boards, composition hardboards, and any other panels containing solid wood or wood product. (Adopted March 20, 1985)
- 8-23-222 Volatile Organic Compound:** Any organic compound (excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate) which would be emitted during use, application, curing or drying of a solvent or surface coating.
- 222.1 For purposes of calculating VOC content of a coating, any water or the following non-precursor organic compounds:
- methylene chloride
 - 1,1,1 trichloroethane
 - 1,1,2 trichlorotrifluoroethane (CFC-113)
 - trichlorofluoromethane (CFC-11)
 - dichlorodifluoromethane (CFC-12)
 - dichlorotetrafluoroethane (CFC-114)
 - chloropentafluoroethane (CFC-115)
 - chlorodifluoromethane (HCFC-22)
 - trifluoromethane (HFC-23)
 - acetone
 - parachlorobenzotrifluoride (PCBTF)
 - cyclic, branched or linear, completely methylated siloxanes (VMS)
- shall not be considered to be part of the coating.
(Adopted June 21, 1989; Amended December 20, 1995)
- 8-23-223 Non-Heat-Set Ink:** An ink which dries by oxidation and absorption into the substrate without the use of heat from dryers or ovens. (Adopted June 21, 1989)
- 8-23-224 Key System Operating Parameter:** An air pollution abatement equipment operating parameter, such as temperature, flow rate or pressure, that ensures operation of the abatement equipment within manufacturer specifications and compliance with the standards in Section 8-23-301. (Adopted June 15, 1994)

8-230-300 STANDARDS

- 8-23-301 Emission Limits:** A person shall not apply to any wood flat stock or wood panel any coating in excess of the following limits, (expressed as grams of VOC per liter of coating used, excluding water) unless emissions to the atmosphere are controlled to an equivalent level by air pollution abatement equipment with an abatement device efficiency of at least 90% and meets the requirements of Regulation 2, Rule 1:
- | | | |
|-------------------------|-----|---------------|
| Wood Flat Stock Coating | 250 | (2.1 lbs/gal) |
| Adhesive | 250 | (2.1 lbs/gal) |
| Inks | 250 | (2.1 lbs/gal) |
- (Amended March 20, 1985; June 21, 1989; October 6, 1993)
- 8-23-302 Deleted June 21, 1989**
- 8-23-303 Deleted June 21, 1989**
- 8-23-304 Deleted June 21, 1989**
- 8-23-305 Deleted October 6, 1993**

8-23-400 ADMINISTRATIVE REQUIREMENTS

8-23-401 Coating List: Any person subject to Section 8-23-301 shall maintain a current list of coatings and adhesives in use which provides all of the data necessary to evaluate compliance. (Amended March 20, 1985; June 21, 1989)

8-23-402 Deleted October 6, 1993

8-23-500 MONITORING AND RECORDS

8-23-501 Records: Any person subject to this Rule shall maintain records on a daily basis that provide the following information, as applicable:

- a. coating and mix ratio of components in the coating or adhesive used
- b. quantity of each coating or adhesive applied
- c. description of substrate coated
- d. oven or cure temperature
- e. type and amount of solvent used for cleanup and surface preparation

(Adopted June 21, 1989)

8-23-502 Air Pollution Abatement Equipment, Recordkeeping Requirements: Any person operating air pollution abatement equipment to comply with Section 8-23-301, in addition to Section 8-23-501, shall record key system operating parameters on a daily basis. (Adopted June 15, 1994)

8-23-600 MANUAL OF PROCEDURES

8-23-601 Analysis of Samples: Samples of volatile organic compounds as defined in this Rule shall be analyzed as prescribed in the Manual of Procedures, Volume III, Method 21 or 22.. (Amended June 21, 1989; June 15, 1994)

8-23-602 Determination of Emissions: Emissions of precursor organic compounds as specified in Sections 8-23-301 shall be measured as prescribed by any of the following methods: 1) BAAQMD Manual of Procedures, Volume IV, ST-7, 2) EPA Method 25 or 25A. When either EPA Method 25 or 25A is used, control device equivalency shall be determined as prescribed in 55 FR 26865 (June 29, 1990). A source shall be considered in violation if the VOC emissions measured by any of the referenced test methods exceed the standards of this rule.

(Adopted March 20, 1985; Amended June 21, 1989; June 15, 1994)

REGULATION 8

ORGANIC COMPOUNDS

RULE 24

PHARMACEUTICAL AND COSMETIC MANUFACTURING OPERATIONS

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REGULATION 8

ORGANIC COMPOUNDS

RULE 24

PHARMACEUTICAL AND COSMETIC MANUFACTURING OPERATIONS

8-24-100 GENERAL

8-24-101 Description: The purpose of this Rule is to limit emissions of organic compounds from the manufacture of pharmaceutical and cosmetic products or devices.

8-24-110 Exemption, Small User: The requirements of Sections 8-24-301, 302, 303, 305, 306, 307 and 502 shall not apply to facilities that emit, 6.8 kg (15 lbs) per day or less of unabated organic compounds provided the requirements of Section 8-24-501 are met. (Calculations shall not include surface preparation and cleanup solvent.) (Amended July 11, 1990)

8-24-111 Exemption, Ethylene Oxide Sterilizers: Ethylene oxide sterilizers which are subject to the provisions of Regulation 11, Rule 9, are exempt from the provisions of Section 8-24-303. (Adopted July 11, 1990)

8-24-200 DEFINITIONS

8-24-201 Cosmetics Manufacturing Plant: Any plant producing or blending chemicals for use in cosmetic products and/or manufacturing cosmetic products.

8-24-202 In-Process Tank: Containers used for mixing, blending, heating, reacting, holding, crystallizing, evaporating, or cleaning operations in the manufacture of pharmaceuticals or cosmetics.

8-24-203 Organic Compound: Any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides, or carbonates, ammonium carbonates, methane, trichlorofluoromethane (CFC-11), dichlorodifluoromethane (CFC-12), chlorodifluoromethane (CFC-22), trifluoromethane (CFC-23), trichlorotrifluoroethane (CFC-113), dichlorotetrafluoroethane (CFC-114), chloropentafluoroethane (CFC-115), 1,1,1-trichloroethane and methylene chloride.

8-24-204 Pharmaceutical Manufacturing Plant: Any plant producing or blending chemicals for use in pharmaceutical products and/or employing chemical processes in the manufacture of pharmaceutical products or

medical devices.

8-24-205 Approved Emission Control System: A system for reducing emissions to the atmosphere, consisting of an abatement device and a collection system, which achieves the abatement efficiency specified in the applicable standards at all times during the operation of the equipment being controlled. (Adopted June 15, 1994)

8-24-206 Key System Operating Parameter: An emission control system operating parameter, such as temperature, flow rate or pressure, that ensures operation of the abatement equipment within manufacturer specifications and compliance with the standards in Section 8-24-301.2, 302, 303, and 305. (Adopted June 15, 1994)

8-24-300 STANDARDS

8-24-301 Reactors, Distillation Columns, Crystallizers & Centrifuges: A person shall not emit more than 6.8 kg (15 lbs) or organic compounds per day from any reactor, distillation column, crystallizer or centrifuge unless such emissions are reduced by one of the following:

301.1 Surface condensers for the control of organic compounds having the outlet gas temperature controlled as follows:

Vapor Pressure of Organic Compounds at 20 oC (68oF)		Maximum Condenser Outlet Gas Temp	
MM Hg	Psia	oC	(oF)
26-52	(0.5-1.0)	25	(77)
52-78	(1.0-1.5)	10	(50)
78-150	(1.5-2.9)	0	(32)
150-300	(2.9-5.8)	-15	(5)
over 300	(over 5.8)	-25	(-13)

301.2 Any other approved emission control system that meets the requirements of Regulation 2, Rule 1 that reduces emissions by at least as much as would have occurred using a surface condenser specified in subsection 8-24-301.1 (Amended July 11, 1990; June 15, 1994)

8-24-302 Separation Operations: A person shall not emit more than 15 kg (33 lbs) or organic compounds per day from any rotary vacuum filter or any other filter or separation device having an exposed liquid surface where the liquid contains organic compounds with a combined vapor pressure of 26 mm Hg (0.5 psia) or more at 20°C (68°F) unless such emissions are reduced by 90 percent on a mass basis. (Amended July 11, 1990)

8-24-303 Sterilizers: A person shall not operate any chemical sterilizer using gaseous organic compounds unless the following condition is met:

303.1 Deleted July 11, 1990

303.2 Emissions of organic compounds shall not exceed 15 kg (33 lbs) per day from any such sterilizer unless such emissions are reduced by at least 75% on a mass basis. (Amended July 11, 1990)

8-24-304 In-Process Tanks: A person shall not use in-process tanks for material containing organic liquids unless a cover is provided. These covers must remain closed, unless production, sampling, maintenance, loading

or unloading procedures require operator access.

8-24-305 Air Dryers: A person shall not emit more than 15 kg (33 lbs) of organic compounds per day from any air dryer unless such emissions are reduced by at least 90 percent by weight.

8-24-306 Bulk Loading: A person shall not transfer organic liquids having vapor pressure greater than 212 mm Hg (4.1 psia) at 20°C (68°F) from any rail car or tank truck into any storage tank with a capacity greater than 7,500 liters (2,000 gal.) unless organic compound emissions during transfer are reduced by 90 percent by weight.

8-24-307 Storage Tanks: All storage tanks that store organic liquids with a vapor pressure greater than 78 mm Hg (1.5 psia) at 20°C (68°F) shall be equipped with pressure/vacuum vents set at a minimum ± 2 mm Hg (± 0.03 psia).

8-24-308 Operating Requirements: An operator shall repair all leaks from which organic liquids can be observed to be running or dripping. The repair shall be completed the first time the equipment is off-line for a period long enough to complete the repair.

8-24-309 Surface Preparation and Cleanup Solvent: The requirements of this Section shall apply to any person using organic solvent for surface preparation and cleanup.

309.1 A person shall use closed containers for the storage or disposal of cloth or paper used for solvent surface preparation and cleanup.

309.2 A person shall store fresh or spent solvent in closed containers. (Adopted July 11, 1990)

8-24-400 ADMINISTRATIVE REQUIREMENTS

8-24-401 Deleted July 11, 1990

8-24-402 Compliance Schedule, Loss of Exemption: Any person who becomes subject to the requirements of this Rule through loss of exemption in Section 110 shall comply with the following increments of progress.

402.1 By January 1, 1991, submit an application to the APCO for Authority to Construct.

402.2 By June 1, 1991, be in final compliance. (Adopted July 11, 1990)

8-24-500 MONITORING AND RECORDS

8-24-501 Smaller-User Records: Any person seeking to satisfy the conditions of Section 8-24-110 shall comply with the following requirements:

501.1 The user shall keep records on a daily basis which show the types and amounts of organic compounds used.

501.2 Such records shall be retained and available for inspection by the APCO for the previous 24-month period. (Adopted July 11, 1990)

8-24-502 Organic Compound Processing Records: Any person subject to Sections 8-24-301, 302, 303, or 305 shall:

502.1 Maintain a current list of organic compounds in use including the vapor pressure of each compound at 20°C.

502.2 Record on a daily basis the types and amounts of organic compounds used.

502.3 Record on a daily basis approved emission control system key system operating parameters.

502.4 Retain and have such records available for inspection by the APCO for the previous 24-month period. (Adopted July 11, 1990; Amended June 15, 1994)

8-24-600 MANUAL OF PROCEDURES

8-24-601 Analysis of Samples: Samples of organic compounds as specified in Section 8-24-300 shall be analyzed as prescribed in the Manual of Procedures, Volume III, Method 13. (Adopted March 17, 1982; Amended July 11, 1990)

8-24-602 Determination of Emissions: Emissions of organic compounds as specified in Sections 8-24-110, 301, 302, 303 and 305 shall be measured as prescribed by any of the following methods: 1) BAAQMD Manual of Procedures, Volume IV, ST-7, 2) EPA Method 25 or 25A. When either EPA Method 25 or 25A is used control device equivalency shall be determined as prescribed in 55 FR 26865 (June 29, 1990). A source shall be considered in violation if the VOC emissions measured by any of the referenced test methods exceed the standards of this rule. (Adopted March 17, 1982; Amended June 15, 1994)

REGULATION 8
ORGANIC COMPOUNDS
RULE 25
PUMP AND COMPRESSOR SEALS AT PETROLEUM REFINERIES,
CHEMICAL PLANTS, BULK PLANTS AND BULK TERMINALS

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- 8-25-204 **Leak Repair:** Tightening, adjusting or replacing the seal of a pump or compressor which reduces leakage to the atmosphere below the applicable standard in Section 8-25-301, 302, 303, 305 or 307. (Amended August 4, 1982; March 4, 1992)
- 8-25-205 **Process Unit:** A manufacturing process which is independent of other processes and is continuous when supplied with a constant feed or raw materials and sufficient storage facilities for the final product.
- 8-25-206 **Petroleum Refinery:** Any facility engaged in producing gasoline, kerosene, distillate fuel oils, residual fuel oils, lubricants or other products through distillation of petroleum or through redistillation, cracking, rearrangement or reforming of unfinished petroleum derivatives.
- 8-25-207 **Chemical Plant:** Any facility engaged in producing organic or inorganic chemicals and/or manufacturing chemical products by chemical processes. Any facility or operation that has 28 as the first two digits in their Standard Industrial Classification Code as determined from the Standard Industrial Classification Manual. Chemical plants include, but are not limited to, facilities that manufacture: industrial inorganic and organic chemicals; plastic and synthetic resins, synthetic rubber, synthetic and other man made fibers; drugs; soap, detergents and cleaning preparations, perfumes, cosmetic and other toilet preparations; paints, varnishes, lacquers, enamels and allied products; agricultural chemicals; safflower and sunflower oil extracts; re-refining. (Adopted July 20, 1983; Amended March 4, 1992)
- 8-25-208 **Liquid Leak:** Dripping of liquid organic compounds at a rate of greater than 3 drops per minute and a concentration of organic compounds as indicated by a hydrocarbon analyzer specified by Section 8-25-501 that exceeds the applicable leak standard in Section 8-25-301, 302, or 303. Adopted September 6, 1989; March 4, 1992)
- 8-25-209 **Bulk Plants and Terminals:** A distribution facility which is subject to Regulation 8, Rule 6, 33 or 39. (Adopted March 4, 1992)
- 8-25-210 **Organic Compound:** Any compound of carbon, excluding methane, carbon monoxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate. (Adopted March 4, 1992)
- 8-25-211 **Quarter:** One of the four consecutive 3-month divisions of the calendar year beginning on January 1. (Adopted March 4, 1992)
- 8-25-212 **Inspection:** The determination of the concentration of total organic compounds leaking from a pump or compressor using a portable hydrocarbon analyzer as required by Section 8-25-501. (Adopted March 4, 1992)
- 8-25-213 **Leak:** The concentration of total organic compounds as indicated by a hydrocarbon analyzer specified by Section 8-25-501 measured above background, expressed as methane and measured 1 centimeter or less from the leak source. (Adopted March 4, 1992)
- 8-25-214 **Total Organic Compounds:** The concentration of organic compounds as indicated by a hydrocarbon analyzer as specified by Section 8-25-501. Effective January 1, 1995, total organic compounds shall include methane. (Adopted March 4, 1992)
- 8-25-215 **Turnaround:** The scheduled shutdown of a unit for maintenance and repair work. (Adopted March 4, 1992)
- 8-25-216 **Reciprocating Pump:** A positive displacement pump in which a plunger or piston displaces a given volume of fluid for each stroke. (Adopted March 4, 1992)
- 8-25-217 **Gear Pump:** A rotary pump in which two or more gears mesh to provide a pumping action. (Adopted March 4, 1992)
- 8-25-218 **Small Facility:** A chemical plant that has less than 10 pumps. (Adopted March 4, 1992)
- 8-25-219 **Large Facility:** A chemical plant that has 10 or more pumps. (Adopted March 4, 1992)

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8-25-300 STANDARDS

8-25-301 Pump and Compressor Operating Requirements: Until January 1, 1993 for large facilities, a person shall not use any pump or compressor handling precursor organic compounds in a petroleum refinery or chemical plant if the concentration of precursor organic compounds exceeds 10,000 ppm (expressed as methane), measured at a distance of 1 cm or less from the potential source, unless the following requirements are satisfied:

- 301.1 If the pump or compressor is not essential, that pump or compressor shall be repaired within 15 days of discovery of the leak.
- 301.2 If the spare pump or compressor also exceeds the limitation of this section, leak repairs to either pump or compressor shall be completed within 15 days of discovery of its leak and the other pump or compressor may be operated until repairs are completed.
- 301.3 Deleted September 6, 1989
- 301.4 Deleted September 6, 1989
- 301.5 If the pump or compressor has a packed seal and is essential, the leak shall be minimized within 15 days of its discovery.
- 301.6 If the pump or compressor is essential, and has been leak minimized as required by subsection 8-25-301.5 and still exceeds the limitation of this section, that pump or compressor shall be repaired at the next scheduled turnaround of the process unit.

(Amended August 4, 1982; July 20, 1983; September 6, 1989; March 4, 1992)

8-25-302 Pumps: Effective January 1, 1993, any pump that leaks in excess of the standard specified in the table below is a violation of this rule unless the leak has been discovered by the operator, minimized within 24 hours and repaired within 7 days; or if the leak has been discovered by the APCO, repaired within 24 hours.

Effective Date	Leak Standard
January 1, 1993	1000 ppm
January 1, 1997	500 ppm

(Adopted March 4, 1992)

8-25-303 Compressors: Effective January 1, 1993, any compressor that leaks in excess of the standard specified in the table below is a violation of this rule unless the leak has been discovered by the operator, minimized within 24 hours and repaired within 7 days; or if the leak has been discovered by the APCO, repaired within 24 hours.

Effective Date	Leak Standard
January 1, 1993	1000 ppm
January 1, 1997	500 ppm

(Adopted March 4, 1992)

8-25-304 Non-repairable Pumps and Compressors: Effective January 1, 1993, any pump or compressor which cannot be repaired as required by Section 8-25-302 or 303 must comply with the following conditions:

- 304.1 The pump or compressor must be repaired or replaced within 5 years or at the next scheduled turnaround, whichever is first.

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304.2 For pumps and compressors subject to this rule including those pumps and compressors exempted under Section 8-25-113, the number of pumps and compressors awaiting repair shall not exceed the values expressed in the table below. Spared pumps and compressors must be repaired and cannot be included in the percent awaiting repair.

Effective Date	Percent
January 1, 1993	10%
January 1, 1997	1%

(Adopted March 4, 1992)

8-25-305 **New or Replaced Pumps and Compressors:** Effective January 1, 1995, any repaired or replaced pump or compressor as required by Subsection 8-25-304.1 or any new pump or compressor, except reciprocating or gear pumps, shall not leak in excess of 500 ppm for four consecutive quarters. (Adopted March 4, 1992)

8-25-306 **Repeat Leakers:** Effective January 1, 1993, any pump or compressor found to be leaking 2 times in a year by the APCO in excess of the standard shall comply with the requirements of Sections 8-25-304 and 305. (Adopted March 4, 1992)

8-25-307 **Liquid Leak:** Effective January 1, 1993, any pump or compressor having a liquid leak as defined in Section 8-25-214 is a violation of this rule unless the leak has been discovered by the operator, minimized within 24 hours and repaired within 7 days. (Adopted March 4, 1992)

8-25-400 ADMINISTRATIVE REQUIREMENTS

8-25-401 **Measurement Schedule:** Any person subject to this Rule shall comply with the following inspection requirements:

401.1 Any pump or compressor subject to this Rule which exceeds the limitations of Section 8-25-301, 302, 303, 305, or 307 shall be measured for leaks within 7 days after leak repairs.

401.2 Pumps and compressors subject to this Rule shall be measured for leaks at least once a quarter by the person subject to this Rule.

(Amended August 4, 1982; July 20, 1983; September 6, 1989; March 4, 1992)

8-25-402 **Inspection Plan:** Any pump or compressor with a leak in excess of the applicable limitation in Section 8-25-301, 302, 303, 305 or 307 which has been detected by the operator and is awaiting repair shall be identified in a manner which is readily observable by the APCO.

(Adopted July 20, 1983; Amended September 6, 1989; March 4, 1992)

8-25-403 **Visual Inspection Schedule:** All pumps and compressors handling organic compounds shall be visually inspected daily for leaks. If a leak is observed, the concentration of organic compounds shall be determined.

(Amended August 4, 1982; Renumbered July 20, 1983; Amended September 6, 1989)

8-25-404 Deleted March 4, 1992

8-25-405 **Pump and Compressor Identification:** All pumps or compressors shall be identified with a unique permanent identification code approved by the APCO. This identification code shall be used to refer to the pump or compressor location, and corresponding records relating to the pump or compressor or its successors.

(Amended 8/4/82; Amended and Renumbered 7/20/83; Amended 3/4/92)

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- 8-25-406 **Leaking Pumps and Compressors:** Any pump or compressor found to be leaking in excess of the applicable standard of Section 8-25-301, 302, 303, or 307 shall be tagged with a brightly colored weatherproof tag indicating the date the leak was detected. (Adopted March 4, 1992)
- 8-25-500 **MONITORING AND RECORDS**
- 8-25-501 **Portable Hydrocarbon Detector:** Any instrument used for the measurement of organic compounds shall be a combustible gas indicator that has been approved by the APCO, and shall meet the specifications and performance criteria of, and be calibrated in accordance with, EPA Reference Method 21 (40 CFR 60, Appendix A). (Amended August 4, 1982; September 6, 1989; March 4, 1992)
- 8-25-502 Deleted March 4, 1992
- 8-25-503 **Records:** Any person subject to the requirements of this rule shall maintain records that provide the following information:
- 503.1 The pump or compressor identification code, type and location.
 - 503.2 The date of all inspections and reinspections and the corresponding leak concentration measured as specified by Section 8-25-400.
 - 503.3 Records shall be maintained for at least 5 years and shall be made available upon request.
 - 503.4 Monthly records of all non-repairable pumps and compressors subject to the provisions of Section 8-25-304 shall be maintained and contain the identification code, equipment type, location, last unit turnaround date, leak concentration monthly measurement and date, and total number of all non-repairable pumps and compressors awaiting repair. (Adopted March 4, 1992)
- 8-25-504 **Burden of Proof:** The burden of proof of eligibility for exemption from this rule is on the operator. (Adopted June 1, 1994)
- 8-25-600 **MANUAL OF PROCEDURES**
- 8-25-601 **Analysis of Samples:** Samples of organic compounds as defined in Section 8-25-114 shall be analyzed for Initial Boiling Point as prescribed in ASTM D 1078-78. (Adopted March 17, 1982; March 4, 1992)
- 8-25-602 **Inspection Procedure:** Inspection of pumps and compressors shall be conducted as prescribed by EPA Reference Method 21 (40 CFR 60, Appendix A). (Adopted September 6, 1989; March 4, 1992)
- 8-25-603 **Determination of Control Efficiency:** The control efficiency as specified by Section 8-25-113 shall be determined by any of the following methods: 1) BAAQMD Manual of Procedures, Volume IV, ST-7, 2) EPA Method 25 or 25A. A source shall be considered in violation if the VOC emissions measured by any of the referenced test methods exceed the standards of this rule. (Adopted March 4, 1992; Amended June 1, 1994)

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

REGULATION 8

ORGANIC COMPOUNDS

RULE 26

MAGNET WIRE COATING OPERATIONS

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REGULATION 8

ORGANIC COMPOUNDS

RULE 26

MAGNET WIRE COATING OPERATIONS

(Adopted May 7, 1980)

8-26-100 GENERAL

8-26-101 Description: The purpose of this Rule is to limit the emission of volatile organic compounds (VOC)

from magnet wire coating operations.

8-26-110 Exemption, Small User: The requirements of this Rule shall not apply to sources that emit, at their design production rating, 6.8 kg. (15 lbs.) per day or less of VOC.

8-26-111 Exemption, Electrical Machinery: The requirements of this Rule shall not apply to the coating of electrical machinery and equipment subassemblies such as motor housings, rotors, stators or armatures.

8-26-200 DEFINITIONS

8-26-201 Approved Emission Control System: A system for reducing emissions of VOC to the atmosphere, consisting of a control device and a collection system, which is approved by the APCO and which satisfies the following conditions:

201.1 The control device shall achieve the control efficiency specified in Section 8-26-301 at all times during normal operation of the equipment being controlled.

201.2 The collection system shall vent all coating, drying, and curing exhausts to the control device.

201.3 The collection system shall be designed and operated in accordance with good engineering practice for maximum collection emissions.

8-26-202 Magnet Wire: Wire used in electromagnetic field application in electrical machinery and equipment such as transformers, motors, generators, and magnetic tape recorders.

8-26-203 Magnet Wire Coating Operation: The process of applying insulation coatings such as varnish or enamel on magnet wire where wire is continuously drawn through a coating applicator.

8-26-204 Volatile Organic Compound: Any organic compound (excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate) which would be emitted during use, application, curing or drying of a solvent or surface coating.

204.1 For purposes of calculating VOC content of a coating, any water or any of the following non-precursor organic compounds shall not be considered to be part of the coating:

acetone

parachlorobenzotrifluoride (PCBTF)

cyclic, branched or linear completely methylated siloxanes (VMS)

(Adopted December 20, 1995)

8-26-300 STANDARDS

8-26-301 Magnet Wire Coating Requirements: Effective January 1, 1989, a person shall not apply any magnet wire coating unless one or more of the following conditions is satisfied:

301.1 The coating operation uses a magnet wire coating which contains less than 200 g/liter (1.67 lb./gal.), excluding water, of VOC, or

301.2 Emissions of VOC are controlled by an approved emission control system, as defined in this rule, with a control device efficiency of at least 90% on a mass basis.

8-26-600 MANUAL OF PROCEDURES

8-26-601 Analysis of Samples: Samples of volatile organic compounds as defined in Section 8-26-301 shall be analyzed as prescribed in the Manual of Procedures, Volume III, Method 21 or 22. (Adopted March 17, 1982)

8-26-602 Determination of Emissions: Emissions of volatile organic compounds as specified in Section 8-26-110 and 301 shall be measured as prescribed in the Manual of Procedures, Volume IV, ST-7. (Adopted March 17, 1982)

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REGULATION 8 - RULE 27
PERCHLOROETHYLENE DRY CLEANING

8-27-100 GENERAL

- 8-27-101 Description: The purpose of this Rule is to limit emissions of perchloroethylene from dry cleaning operations.
- 8-27-110 Exemption, Other Solvents: This Rule does not apply to dry cleaning plants which do not use perchloroethylene.
- 8-27-111 Exemption, Small Users: The provisions of Section 8-27-302 shall not apply to dry cleaning plants which consume less than 1200 liters (320 gallons) of perchloroethylene per year.
- 8-27-112 Exemption, Space and Steam Limitations: The provisions of Section 8-27-302 shall not apply to dry cleaners which satisfy one of the following conditions:
- 112.1 An adsorber cannot be accommodated because of inadequate space.
 - 112.2 Excess steam capacity in the plant is insufficient to regenerate a carbon adsorption system.
 - 112.3 The plant operator has demonstrated to the satisfaction of the APCO that other hardships justify such an exclusion.

8-27-300 STANDARDS

- 8-27-301 Operating Requirements: Effective May 15, 1980, a person shall not operate any dry cleaning equipment which uses perchloroethylene unless all of the following requirements are satisfied:
- 301.1 Any solvent liquid or solvent vapor leaks shall be repaired immediately.
 - 301.2 The residue from a solvent still shall not contain more than 0.6 kg of solvent per kg of wet waste.
 - 301.3 The used filtration cartridges shall be put in the filter housing and drained there for at least 24 hours before being discarded or for at least 12 hours provided that they are dried in a closed container which is vented to a control device approved by the APCO.

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- 301.4 The used absorbent earth filters shall be cooked or treated so that the residue contains no more than 0.25 kg of solvent per kg of wet waste.
- 301.5 Any other filtration or distillation system can be used if it can be demonstrated to the satisfaction of the APCO that it reduces waste losses below 0.01 kg per kg of clothes.
- 301.6 The still residue stored in sealed containers or underground tanks is disposed of at a Class I dump or by other procedures approved by the APCO.

8-27-302 Emission Control Requirements: A person shall not operate any dry cleaning equipment which uses perchloroethylene unless one of the following requirements is satisfied:

- 302.1 All exhaust gases from drying tumblers and cabinets are vented through a carbon adsorber or other control device which reduces the total emissions of organic compounds to the atmosphere during the entire cycle by at least 90 percent by weight, or
- 302.2 All of the exhaust gases from drying tumblers and cabinets are vented through a carbon adsorber or other control device which reduces the total emissions of organic compounds to the atmosphere during the entire drying cycle to 100 ppm before dilution.

The effective date for this Section 8-27-302 shall be as follows:

December 31, 1981 - for any plant which consumes more than 4000 liters (1060 gallons) of perchloroethylene per year.

December 31, 1982 - for any plant which consumes more than 2000 liters (530 gallons) of perchloroethylene per year.

December 31, 1983 - for any plant which consumes more than 1200 liters (320 gallons) of perchloroethylene per year.

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8-27-400 ADMINISTRATIVE REQUIREMENTS

8-27-401 Compliance Schedule for Section 8-27-302: A person subject to the requirements of Section 8-27-302 shall comply with the following increments of progress:

401.1 Submit a control plan on or before September 1, 1980.

401.2 Submit a complete application for any required authority to construct at least 6 months before the effective date for that plant.

401.3 Complete construction or installation of the required emission control equipment on or before the effective date for that plant.

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

REGULATION 8 - ORGANIC COMPOUNDS

RULE 28 - EPISODIC RELEASES FROM PRESSURE RELIEF DEVICES AT PETROLEUM REFINERIES AND CHEMICAL PLANTS

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REGULATION 8 ORGANIC COMPOUNDS RULE 28 EPISODIC RELEASES FROM PRESSURE RELIEF DEVICES AT PETROLEUM REFINERIES AND CHEMICAL PLANTS

(Adopted July 16, 1980)

8-28-100 GENERAL

8-28-101 Description: The purpose of this Rule is to prevent the episodic emissions of organic compounds from pressure relief devices on any equipment handling gaseous organic compounds at petroleum refineries, and to collect information on episodic organic and inorganic compound emissions from petroleum refineries and chemical plants.

(Amended March 17, 1982, July 20, 1983, December 17, 1997)

8-28-110 Deleted September 6, 1989

8-28-111 Exemption, Evaporation Point: The provisions of this rule shall not apply to pressure relief valves which exclusively handle organic compounds exhibiting a 10% evaporation point greater than 150 degrees Celsius (302 degrees Fahrenheit) when using ASTM D-86 and/or inorganic compounds not listed in Section 8-28-401.5. The provisions of this rule shall also not apply to thermal relief valves that are vented to process drains or back to the pipeline.

(Amended September 6, 1989, December 17, 1997, March 18, 1998)

8-28-112 Exemption, Storage Tanks: The requirements of this rule shall not apply to any pressure relief device on storage tanks.

(Amended December 17, 1997)

8-28-113 Exemptions, Research and Development Facilities: The provisions of this Rule shall not apply to research or development facilities which produce only non-commercial products for research and development purposes.

(Adopted June 1, 1994)

8-28-114 Limited Exemption, Small Refineries: Section 8-28-304.2 shall not apply to petroleum refineries processing less than 20,000 barrels per stream day of crude, unless the District's evaluation of the Process Hazards Analysis in Section 8-28-303.1 determines that it is cost-effective and technologically feasible for the refinery to control the pressure relief devices.

(Adopted December 17, 1997)

8-28-200 DEFINITIONS

8-28-201 Chemical Plant: Any facility engaged in producing organic or inorganic chemicals and/or manufacturing

products by chemical processes. Any facility or operation that has 28 as the first two digits in their Standard Industrial Classification Code as determined from the Standard Industrial Classification Manual published in 1972 by the Executive Office of the President, Office of Management and Budget. Chemical plants may include, but are not limited to the manufacture of: industrial inorganic and organic chemicals; plastic and synthetic resins, synthetic rubber, synthetic and other man-made fibers; drugs; soap, detergents and cleaning preparations, perfumes, cosmetics and other toilet preparations; paints, varnishes, lacquers, enamels and allied products; agricultural chemicals; safflower and sunflower oil extracts; re-refining, not including petroleum refineries.

(Adopted July 20, 1983, amended December 17, 1997)

8-28-202 Pressure Relief Valve: The automatic pressure-relieving device actuated by the static pressure upstream of the valve.

(Renumbered July 20, 1983)

8-28-203 Rupture Disk: The thin metal diaphragm held between flanges.

(Renumbered July 20, 1983)

8-28-204 Deleted December 17, 1997

8-28-205 Deleted December 17, 1997

8-28-206 Deleted December 17, 1997

8-28-207 Modified Source: The same definition contained in District Regulation 2-2-223.

(Adopted December 17, 1997)

8-28-208 Parallel Service: Additional pressure relief devices which protect a common piece or pieces of equipment. These additional pressure relief devices may be installed as spares to facilitate maintenance or because the design relieving capacity cannot be obtained with a single pressure relieving device. The pressure relieving devices do not need to have the same pressure setting to be considered parallel.

(Adopted December 17, 1997)

8-28-209 Petroleum Refinery: Any facility that processes products as defined in Standard Industrial Classification Manual as Industry No. 2911, Petroleum Refining.

(Adopted December 17, 1997)

8-28-210 Pressure Relief Device: The automatic pressure-relieving device for discharges of organic compounds which prevents safety hazards, prevents pressures from exceeding the maximum allowable working pressure of the operating process equipment or prevents equipment damage. Such devices include, but are not limited to, pressure relief valves, emergency de-pressuring vents or rupture disks.

(Adopted December 17, 1997)

8-28-211 Prevention Measure: A reliable component, system, or program that will prevent a Release Event. Examples of prevention measures include, but are not limited to:

1. flow, temperature, level and pressure indicators with interlocks, deadman switches, monitors, or automatic actuators,
2. documented and verified routine inspection and maintenance programs,

3. inherent safer designs,
4. deluge systems.

Operator training and documented and verified routine inspection and maintenance programs may count as only one of the 3 Prevention Measures required by Section 8-28-302.2, 8-28-303.2, and 8-28-304.1. A component, system or program with a high probability for failure shall not be considered a Prevention Measure.

(Adopted December 17, 1997)

8-28-212 Process Hazards Analysis (PHA): A PHA is an organized effort to identify and analyze the significance of hazardous scenarios associated with a process or activity. For the purposes of this rule, PHA's are used to pinpoint weaknesses in the design and operation of facilities that could lead to a Release Event and to provide the facility with information to aid in making decisions for preventing such events.

(Adopted December 17, 1997)

8-28-213 Qualified Person: An APCO approved person who is qualified to attest to the validity of the Prevention Measures Procedures and who is a registered professional engineer in the State of California with expertise in chemical, mechanical or safety engineering.

(Adopted December 17, 1997)

8-28-214 Release Event: Any release of organic or inorganic pollutant greater than 10 pounds resulting from a pressure relieving device, subject to this Rule, opening to the atmosphere. These events do not include releases that are vented to a vapor recovery or disposal system with at least 95% by weight organic compound control efficiency.

(Adopted December 17, 1997)

8-28-215 Responsible Manager: A person who is an employee of the facility or corporation, who possesses sufficient corporate authority and who is responsible for the management of the facility.

(Adopted December 17, 1997)

8-28-300 STANDARDS

8-28-301 Deleted December 17, 1997

8-28-302 Pressure Relief Devices at New or Modified Sources at Petroleum Refineries: Any person installing a new refinery source or modifying an existing refinery source, that is equipped with at least one pressure relief device in organic compound service, shall meet all of the following conditions:

- 302.1 Meet the applicable requirement of Regulation 2, Rule 2, including Best Available Control Technology, and
- 302.2 Meet the Prevention Measures Procedures specified in Section 8-28-405.

(Adopted December 17, 1997)

8-28-303 Pressure Relief Devices at Existing Sources at Petroleum Refineries: After the next scheduled turnaround following July 1, 1998, use of a pressure relief device in organic compound service on any equipment at a Petroleum Refinery is prohibited, except when the device meets at least one of the following conditions prior to the equipment startup:

- 303.1 Vent all pressure relief devices from the source to a vapor recovery or disposal system with at least a 95 percent by weight organic compounds control efficiency, and the control system shall be properly sized per manufacturer's recommendations to handle the material from all devices it is intended to serve, or
- 303.2 Meet the Prevention Measures Procedures specified in Section 8-28-405.

(Adopted December 17, 1997; Amended March 18, 1998)

8-28-304 Repeat Release – Pressure Relief Devices at Petroleum Refineries: After the next scheduled turnaround following July 1, 1998, any petroleum refinery source that has at least one reportable Release Event from a pressure relief device in organic compound service, including those in parallel service, in any consecutive five calendar year period shall meet the following conditions:

304.1 Within 90 days of the first Release Event from a pressure relief device, the facility shall conduct an additional, separate Process Hazard Analysis and meet the Prevention Measures Procedures specified in Section 8-28-405; and conduct a failure analysis of the incident, to prevent recurrence of similar incidents. Within 120 days of the first Release Event, the facility shall equip each pressure relief device of that source with a tamperproof tell-tale indicator that will show that a release has occurred since the last inspection. The Process Hazard Analysis shall include an evaluation of the cost-effectiveness and technical feasibility of control devices to remedy the incident. This evaluation of control devices shall include, but shall not be limited to, the following:

1. installing additional flare gas compressor recovery capacity and
2. venting the pressure relief device that caused the Release Event to existing vapor recovery or disposal systems, and

304.2 Within one year of the second Release Event from a pressure relief device in organic compound service on the same source, including those in parallel service, the facility shall vent all the pressure relief devices that vent the second Release Event, including those in parallel service, to a vapor recovery or disposal system with at least 95 percent by weight organic compounds control efficiency, and the control system shall be properly sized per manufacturer's recommendations to handle the material from all devices it is intended to serve.

The five calendar year period of this section shall begin at the time that the District receives a Prevention Measure Plan as specified in Section 8-28-304.1.

(Adopted December 17, 1997; Amended March 18, 1998)

8-28-400 ADMINISTRATIVE REQUIREMENTS

8-28-401 Reporting at Petroleum Refineries and Chemical Plants: A Release Event from a pressure relief device at petroleum refineries and chemical plants shall be reported to the APCO on the next working day following the venting. In addition, the following information shall be submitted in writing to the APCO within 30 days following the Release Event:

401.1 Date, time, and duration of the Release Event in minutes.

401.2 Identification of the device by its unique number as required in Section 8-28-404 as well as its name and service commonly referred to by the facility.

401.3 Identification of the incident number assigned by the APCO when the event is reported within one working day.

401.4 Type and size of device.

401.5 Type and amount of material released in pounds, accurate to two significant digits. Reportable materials are: total organic compounds, ammonia, hydrogen sulfide, chlorine, sulfur dioxide, sulfur trioxide, hydrofluoric acid, and difluoroethane.

401.6 Necessary information and assumptions used to report the duration and amount released during the event.

401.7 Cause of the event.

401.8 A schedule for action to prevent re-occurrence of the event.

401.9 Results of fugitive emission inspection of the device done in accordance with the requirements of section 8-28-402.

(Amended February 18, 1981, December 17, 1997, March 18, 1998)

8-28-402 Inspection: Any pressure relief device which has a Release Event and is subject to this Rule shall be inspected within 5 working days after actuation to confirm compliance with Regulation 8, Rule 18 and the results reported in

accordance with Regulation 8-28-401.9.

(Amended September 6, 1989, June 1, 1994, December 17, 1997)

8-28-403 Records: Any person subject to this Rule shall comply with the following recordkeeping requirements:

403.1 Prevention measure records to demonstrate compliance with the standards in sections 8-28-302, 8-28-303, 8-28-304, and 8-28-405.

(Adopted September 6, 1989, amended June 1, 1994, December 17, 1997)

8-28-404 Identification: Any person subject to this rule shall comply with the following identification requirements:

404.1 All pressure relief valves subject to this rule shall be identified with a unique permanent identification code approved by the APCO. This identification code shall be used to refer to the pressure relief valve location. Records for each pressure relief valve shall refer to this identification code.

(Adopted June 1, 1994; Amended December 17, 1997)

8-28-405 Prevention Measures Procedures: All facilities using pressure relief devices in organic compound service which are subject to the standards in Section 8-28-300 and which have a potential for a Release Event shall comply with the following process safety requirements:

405.1 Explicitly establish training, equipment, inspection, maintenance and monitoring levels such that the pressure relief device releases are minimized and

405.2 Using a Process Hazards Analysis, predict, plan and implement either:

2.1 At least 3 consecutive Prevention Measures for the Release Event before a pressure relief device will release or

2.2 At least one Prevention Measure for the Release Event before a pressure relief device will release. For single Prevention Measure pressure relief devices that vent a Release Event, within one year of the Release Event, the facility shall vent these pressure relief devices, including those in parallel service, to a vapor recovery or disposal system with at least 95% by weight organic compound efficiency.

405.3 Must be approved and signed by a Qualified Person and a Responsible Manager.

405.4 Must be submitted for review to the APCO to determine if the plan meets the requirements of subsections 8-28-405.1 through 405.3. The APCO shall provide a 30-day public comment period and will consider all comments received during this period prior to approval or disapproval of the procedures.

(Adopted December 17, 1997; Amended March 18, 1998)

8-28-500 MONITORING AND RECORDS

8-28-501 Deleted December 17, 1997

8-28-600 MANUAL OF PROCEDURES

8-28-601 Deleted December 17, 1997

8-28-602 Determination of Control Efficiency: The control efficiency as specified Section 8-28-302.1, 8-28-303.1, 8-28-304.2, and 8-28-405.2.2 (with the exception of non-enclosed flares) shall be determined as prescribed by any of the following methods: 1) BAAQMD Manual of Procedures, Volume IV, ST-7, 2) EPA Method 25 or 25A. 3) Flare control efficiency calculations approved by the APCO and EPA in writing, or 4) other methods to demonstrate control efficiency approved by the APCO and EPA in writing. A source shall be considered in violation if the VOC emissions measured by any of the referenced test methods exceed the standards of this rule.

(Adopted June 1, 1994; Amended December 17, 1997)

8-28-603 Deleted December 17, 1997

**REGULATION 8
ORGANIC COMPOUNDS
RULE 29
AEROSPACE ASSEMBLY AND COMPONENT COATING OPERATIONS**

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REGULATION 8
ORGANIC COMPOUNDS
RULE 29
AEROSPACE ASSEMBLY AND COMPONENT COATING OPERATIONS

(Adopted August 4, 1982)

8-29-100 GENERAL

- 8-29-101 Description:** The purpose of this Rule is to limit the emission of volatile organic compounds from the surface preparation and coating of aerospace components and cleanup of aerospace coating equipment. (Amended November 1, 1989)
- 8-29-110 Exemption, Electronic Industries:** The requirements of 8-29-305 and 306 shall not apply to fabrication of electronic components, including but not limited to microprocessors, control systems and instrumentation. (Amended February 3, 1993)
- 8-29-111 Exemption, Printed Circuit Boards:** The requirements of this Rule shall not apply to coatings applied to assembled printed circuit boards. This coating operation is subject to Regulation 8, Rule 4. (Amended February 3, 1993)
- 8-29-112 Exemption, Low Usage Coatings:** The requirements of Section 302 shall not apply to coatings with separate formulations that are used in volumes of less than 20 gallons per calendar year, provided the requirements of Section 8-29-402 are satisfied. No more than 200 gallons of low usage coating may be used per facility per calendar year. Records of coating usage shall be maintained as per Section 8-29-501. (Amended November 1, 1989; February 3, 1993; June 1, 1994)
- 8-29-113 Deleted February 3, 1993**
- 8-29-114 Exemption, Paper-Fabric-Film Coating:** The requirements of this Rule shall not apply to any source which is subject to and complies with the provisions of Regulation 8, Rule 12.
- 8-29-115 Exemption, Tank-type Stripper:** The requirements of Section 8-29-305 shall not apply to a tank-type stripper employing a sealing fluid at least four inches in depth which floats on the stripper surface and which consists of:
- 115.1 Water, or
 - 115.2 A fluid with a true vapor pressure of less than 10 mmHg (0.19 psia) at actual usage temperature. (Adopted December 7, 1983)
- 8-29-116 Exemption, Adhesives:** The requirements of this Rule shall not apply to the application of adhesives. Application of adhesive is subject to the requirements of Regulation 8, Rule 4. (Adopted November 1, 1989)
- 8-29-117 Exemption, Aerosol Cans:** The requirements of this Rule shall not apply to non-refillable handheld aerosol cans. Application of coating from aerosol cans is subject to the requirements of Regulation 8, Rule 49. (Adopted November 1, 1989, Amended June 20, 1990)
- 8-29-118 Exemption, Stencil Coatings:** The requirements of this Rule shall not apply to the application of coatings by template or hand in order to add designs, letters and/or numbers to the products. Stencil Coating is subject to the requirement of Regulation 8, Rule 4. (Adopted November 1, 1989)
- 8-29-119 Exemption, Solid Film Lubricant:** The provisions of this Rule shall not apply to any solid film lubricant (anti-chafe coating). The application of solid film lubricant is subject to the requirements of Regulation 8, Rule 4. (Adopted November 1, 1989)
- 8-29-120 Exemption, Test Panels:** The provisions of this Rule shall not apply to coating test panels used to evaluate coating performance. Such coating is subject to the requirements of Regulation 8, Rule 4. (Adopted November 1, 1989)
- 8-29-121 Exemption, Satellite Coatings:** The provisions of Section 8-29-302 shall not apply to the coating of satellites or satellite components, provided records are maintained as per Section 8-29-501. Application of satellite coating is subject to the requirements of Regulation 8, Rule 4. (Adopted November 1, 1989)
- 8-29-122 Exemption, High-Temperature-Curing Adhesive Bonding Primer:** The provisions of Section 8-29-302 and 310 shall not apply to the use of adhesive

bonding primer that has a cure temperature in excess of 325°F, provided records are maintained as per Section 8-29-501. Application of high-temperature-curing adhesive bonding primer is subject to the requirements of Regulation 8, Rule 4.

(Adopted November 1, 1989; Amended February 3, 1993)

8-29-123 Exemption, Spray Application Equipment: The requirements of Section 8-29-310 shall not apply to the following provisions:

123.1 The application of coatings to surface areas with limited access due to visual impairment which require a 360° spray-gun nozzle extension.

123.2 The application of waterborne extreme performance interior topcoat coatings.

123.3 The application of adhesive bonding primers and pretreatment wash primers.

123.4 The application of a textured finish coat. (Adopted February 3, 1993)

8-29-124 Limited Exemption, Coating Records: The requirements of Subsection 501.2 shall not apply to individual source operations using less than 75.7 liters (20 gal) of coating in any calendar year, unless otherwise specified in permit conditions pursuant to Regulation 2-1-403. A person shall maintain monthly records of coating usage under this exemption. (Adopted February 3, 1993)

8-29-200 DEFINITIONS

8-29-201 Aerospace Component: The fabricated part, assembly of parts or completed unit of any aircraft, helicopter, missile or space vehicle. For the purposes of this Rule, an aerospace component shall include any aerospace prototype or test model.

(Amended November 1, 1989)

8-29-202 Adhesive Bonding Primer: A coating applied in a very thin film to aerospace metal for the primary purpose of providing a primer for a subsequent coat of structural adhesive. (Amended November 1, 1989)

8-29-203 Deleted November 1, 1989

8-29-204 Electric or Radiation Effect Coatings: Electrical conductive or insulative coatings and coatings used on radar and antennae enclosures. (Amended November 1, 1989)

8-29-205 Flight Test Coating: The coating applied to test aircraft to protect the test aircraft from corrosion and to provide required marking during flight test evaluation.

8-29-206 Fuel Tank Coating: A coating applied to the interior of a fuel tank or fuel-wetted areas of aircraft to protect it from corrosion. (Amended November 1, 1989)

8-29-207 Maskant for Chemical Processing: A coating applied directly to an aerospace component to protect surface areas when chemical milling, anodizing, aging, bonding, plating, etching and/or performing other chemical operations on the surface of the component.

8-29-208 Pretreatment Wash Primer: A coating which contains a minimum of 0.5% acid by weight for surface etching and is applied directly to bare metal surfaces to provide corrosion resistance and adhesion. (Amended November 1, 1989)

8-29-209 Primer: A coating applied directly to the aerospace component for purposes of corrosion prevention, protection from the environment, functional fluid resistance and adhesion of subsequent coatings. (Amended November 1, 1989)

8-29-210 Deleted November 1, 1989

8-29-211 Stripper: An organic compound mixture applied to remove temporary protective coating, maskant for chemical processing, surface coating or coating residue.

(Amended February 3, 1993)

8-29-212 Temporary Protective Coating: A coating applied to an aerospace component to protect it from any mechanical or environmental damage during manufacturing.

(Amended February 3, 1993)

8-29-213 Topcoat: Coatings applied over a primer or intermediate coating for purposes such as appearance, identification or protection. (Amended November 1, 1989)

8-29-214 Tank-type Stripper: A tank employing a stripping solution where parts are immersed for removal of temporary protective coating, maskant for chemical processing, surface coating or coating residue.

(Adopted December 7, 1983; Amended February 3, 1993)

- 8-29-215 Interior Topcoat:** A topcoat used in interior habitable spaces of aircraft.
(Adopted November 1, 1989; Amended February 3, 1993)
- 8-29-216 Electrostatic Spray:** Equipment used to apply coating by charging atomized particles that are deposited by electrostatic attraction.
(Adopted November 1, 1989; Amended February 3, 1993)
- 8-29-217 Extreme Performance Interior Topcoat:** A topcoat used in interior spaces of aircraft areas requiring fluid, stain or nicotine barrier. (Adopted November 1, 1989)
- 8-29-218 Fire Insulation Coating:** A coating used to provide a layer of insulation in the event of an aircraft or engine fire. (Adopted November 1, 1989)
- 8-29-219 High-Temperature Coating:** A coating that, during normal use, must withstand temperatures in excess of 350oF. (Adopted November 1, 1989)
- 8-29-220 High-Volume, Low-Pressure (HVLP) Spray:** Equipment used to apply coating by means of a gun that operates between 0.1 and 10 psig air atomizing pressure.
(Adopted November 1, 1989; Amended February 3, 1993)
- 8-29-221 Sealant:** A coating applied for the purpose of filling voids and providing a barrier against penetration of water, fuel or other fluids or vapors.
(Adopted November 1, 1989)
- 8-29-222 Self-priming Topcoat:** A coating applied directly to the aerospace component that is not subsequently overcoated. (Adopted November 1, 1989)
- 8-29-223 Transfer Efficiency:** The ratio of the amount of coating solids adhering to an object being coated to the total amount of coating solids used in the application process, expressed as a percentage. (Adopted November 1, 1989)
- 8-29-224 Volatile Organic Compound:** Any organic compound (excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate) which would be emitted during use, application, curing or drying of a solvent, surface coating, or stripper.
- 224.1 For purposes of calculating VOC content of a coating, any water or any of the following non-precursor organic compounds shall not be considered to be part of the coating:
methylene chloride
1,1,1 trichloroethane
trichlorotrifluoroethane (CFC-113)
trichlorofluoromethane (CFC-11)
dichlorodifluoromethane (CFC-12)
dichlorotetrafluoroethane (CFC-114)
chloropentafluoroethane (CFC-115)
acetone
parachlorobenzotrifluoride (PCBTF)
cyclic, branched or linear completely methylated siloxanes (VMS)
- 224.2 For purposes of calculating the VOC content of a stripper, methylene chloride and water shall not be considered a part of the VOC content of the stripper.
(Adopted November 1, 1989; Amended February 3, 1993, December 20, 1995)
- 8-29-225 Solid Film Lubricant:** A very thin coating consisting of an organic binder system containing as its chief pigment material one or more of molybdenum disulfide, graphite, polytetrafluoroethylene (PTFE) or other solids that act as a dry lubricant between faying surfaces. (Adopted November 1, 1989; February 3, 1993)
- 8-29-226 Sealant Bonding Primer:** A coating applied in a very thin film to an aerospace component for the purpose of providing a primer for a subsequent coat of silicone sealant. (Adopted November 1, 1989)
- 8-29-227 Structural Adhesive:** A coating which is applied for the purpose of bonding structural components together. (Adopted November 1, 1989)
- 8-29-228 Satellite:** A device intended to orbit the earth above the earth's atmosphere.
(Adopted November 1, 1989)
- 8-29-229 Detailing Gun:** Small air-spray equipment, including air brushes, that operate at no greater than 5 cfm air flow and no greater than 50 psig air pressure.
(Adopted February 3, 1993)

8-29-230 Approved Emission Control System: A system for reducing emissions to the atmosphere, consisting of an abatement and a collection system, which achieves the abatement efficiency specified in the applicable standards at all times during the operation and meets the requirements of Regulation 2, Rule 1.

(Adopted February 3, 1993)

8-29-231 Textured Finish Coat: Any non-smooth, patterned surface that is intentionally produced and applied as a final coat by spraying drops of coating over a previously applied base coating.

(Adopted February 3, 1993)

8-29-232 Mold Release Coating: A temporary protective coating with a solids content of less than 120 grams solids per liter (1 pound solids per gallon) that reduces or prevents adhesion between the mold surface and the surface being molded.

(Adopted February 3, 1993)

8-29-233 Key System Operating Parameter: An emission control system operating parameter, such as temperature, flow rate or pressure, that ensures operation of the abatement equipment within manufacturer specifications and compliance with the standards in Sections 8-29-302, 306.1, and 310.

(Adopted June 1, 1994)

8-29-300 STANDARDS

8-29-301 Deleted November 1, 1989

8-29-302 Coating Limitations: A person shall not apply to aerospace components any coating with a VOC content in excess of the following limits, expressed as grams VOC per liter (lbs/gal) of coating as applied, excluding water, unless emissions to the atmosphere are controlled to an equivalent level by air pollution abatement equipment with an abatement device efficiency of at least 85 percent that meets the requirements of Regulation 2, Rule 1.

302.1	Primer	350 (2.9)
302.2	Adhesive bonding primer	850 (7.1)
302.3	Interior Topcoat	340 (2.8)
302.4	Electric or Radiation Effect Coating	800 (6.7)
302.5	Extreme Performance Interior Topcoat	420 (3.5)
302.6	Fire Insulation Coating	600 (5.0)
302.7	Fuel Tank Coating	720 (6.0)
302.8	High-Temperature Coating	720 (6.0)
302.9	Sealant	600 (5.0)
302.10	Self-priming Topcoat	420 (3.5)
302.11	Topcoat	420 (3.5)
302.12	Pretreatment Wash Primer	420 (3.5)
302.13	Sealant Bonding Primer	720 (6.0)
302.14	Temporary Protective Coating	250 (2.1)

(Amended November 1, 1989; February 3, 1993)

8-29-303 Deleted November 1, 1989

8-29-304 Solvent Evaporative Loss Minimization: Any person using organic solvent for surface preparation and cleanup or mixing, using or disposing of coating or stripper containing organic solvent:

- 304.1 Shall use closed containers for the storage or disposal of cloth or paper used for solvent surface preparation and cleanup.
- 304.2 Shall not use organic compounds for the cleanup of spray equipment including paint lines unless equipment for collecting the cleaning compounds and minimizing their evaporation to the atmosphere is used.
- 304.3 Shall close containers of stripper subject to this Rule, coating, catalyst, thinner, or solvent when not in use.

(Amended November 1, 1989; February 3, 1993)

8-29-305 Stripper Limitations: A person shall not use a stripper unless it complies with one or both of the following:

- 305.1 The stripper contains less than 400 grams/liter (3.3 lbs/gal) of precursor organic compounds.

305.2 The stripper has a true vapor pressure of less than 10 mmHg (0.19 psia) at actual usage temperature. (Amended December 7, 1983)

8-29-306 Maskant for Chemical Processing Limitations: A person shall not apply any maskant for chemical processing to aerospace components unless:

306.1 The VOC emissions from coating operations are reduced by 85 percent, or

306.2 The coating contains less than 600 grams of VOC per liter of coating excluding water, as applied. (Amended December 4, 1985, November 1, 1989)

8-29-307 Deleted November 1, 1989

8-29-308 Prohibition of Specification: No person shall require for use or specify the application of a coating subject to this Rule if such use or application results in a violation of any of the provisions of this Rule. The prohibition of this Section shall apply to all written or oral contracts under the terms of which any coating is to be applied to any aerospace component at any physical location within the District.

(Adopted November 1, 1989)

8-29-309 Compliance Statement Requirement: The manufacturer of coatings subject to this Rule shall provide on the coating container or as an accompanying data sheet a designation of VOC (as defined in Section 8-29-224), expressed in grams per liter or pounds per gallon of coating. Effective September 1, 1993, the designation shall include the VOC content of the coating as supplied and at the maximum recommended thinning ratio to maintain compliance with the VOC limits of this Rule.

(Adopted November 1, 1989; Amended February 3, 1993)

8-29-310 Spray Application Equipment Limitations: Effective July 1, 1994, a person who uses spray application equipment to apply coatings to aerospace components within the District shall use one or more of the following high transfer efficiency application methods, unless emissions to the atmosphere are controlled by an approved emission control system with an overall abatement efficiency of at least 85%.

310.1 High-Volume, Low-Pressure (HVLP) Spray, operated in accordance with manufacturer's recommendations, or

310.2 Electrostatic Spray, operated in accordance with manufacturer's recommendations, or

310.3 Detailing Gun, or

310.4 Any other coating spray application which has been demonstrated to the satisfaction of the APCO to achieve an equivalent transfer efficiency compared to the spray application methods listed in Subsections 310.1 through 310.3. Prior written approval from the APCO shall be obtained for each alternative method used. (Adopted February 3, 1993)

8-29-400 ADMINISTRATIVE REQUIREMENTS

8-29-401 Deleted November 1, 1989

8-29-402 Low Usage Coating Petition: Any person seeking to satisfy the requirements of Section 8-29-112 shall comply with the following requirements:

402.1 The user or specifier shall notify the APCO in writing of coatings to be qualified pursuant to this exemption.

402.2 Such notification shall be repeated on an annual basis.

402.3 The notification shall contain volumes and maximum VOC levels of coatings to be used.

402.4 Records must be maintained as in Section 8-19-501.

(Adopted November 1, 1989; Amended June 1, 1994)

8-29-403 Methylene Chloride Reduction Plan: By January 1, 1995, any person using stripper subject to this Rule shall submit a methylene chloride reduction plan. The plan shall include the following:

403.1 Methylene chloride emissions inventory by source

403.2 Description of reduction measures to be implemented

403.3 Implementation schedule for the reduction measures

403.4 Anticipated emission reductions and projected costs for each reduction measure (Adopted February 3, 1993)

8-29-500 MONITORING AND RECORDS

8-29-501 Records: Any person subject to Sections 8-29-302, 305 and/or 306 shall:

- 501.1 Maintain current data necessary to evaluate compliance, including the following information as applicable:
 - a. coating stripper, catalyst, and reducer used
 - b. VOC content of coating and stripper as applied
- 501.2 Record coating usage on a weekly basis including the following information, as applicable, unless otherwise specified in permit conditions imposed per Regulation 2-1-403:
 - a. coating and mix ratio of components in the coating used as applied
 - b. quantity of each coating applied
- 501.3 Record on a daily basis coating usage and key system operating parameters when air pollution abatement equipment is used to comply with the requirements of Sections 302, 306, or 310.
- 501.4 Record cleanup solvent usage on a monthly basis the type and amount of solvent used for cleanup and surface preparation, unless otherwise specified in permit conditions imposed per Regulation 2-1-403.
- 501.5 Records on a monthly basis the amount of stripper used, unless otherwise specified in permit conditions imposed per Regulation 2-1-403. A person using a tank-type stripper shall maintain records on a monthly basis showing the amount of stripper added to each tank.
- 501.6 Records shall be retained and available for inspection by the APCO for the previous 24-month period
- 501.7 The requirements of Section 8-29-501.2, 501.4 and 501.5 shall not apply to any person who complies with an alternate recordkeeping plan that provides for an enforceable daily record which meets the following requirements:
 - a. The APCO must be petitioned in writing that complying with Sections 8-29-501.2, 501.4 and 501.5 would constitute an undue burden.
 - b. A list of coatings and solvents subject to the plan.
 - c. A description of the calculation methodology, and estimated annual usage for coatings and solvent.
 - d. Effective August 1, 1994 and annually thereafter, any facility operating under this provision must submit an update to the plan that identifies any changes in coating and solvent usage, and the annual usage for the preceding year.
 - e. A violation of Sections 8-29-302, 305 or 306 within the reporting period, as established by the plan, shall be considered a violation for each day of the reporting period.

(Adopted 11/1/89; Amended February 3, 1993; October 6, 1993; June 1, 1994)

8-29-600 MANUAL OF PROCEDURES

8-29-601 Analysis of Coating Samples: Samples of volatile organic compounds as specified in Sections 8-29-302 and 306 shall be analyzed as prescribed in the Manual of Procedures, Volume III, Method 21 or 22.

(Amended November 1, 1989; February 3, 1993)

8-29-602 Determination of Emissions: Emissions of volatile organic compounds as specified in Section 8-29-302, 306, and 310 shall be measured as prescribed by any of the following methods : 1) BAAQMD Manual of Procedures, Volume IV, ST-7, 2) EPA Method 25 or 25A. When either EPA Method 25 or 25A is used control device equivalency shall be determined as prescribed in 55 FR 26865 (June 29, 1990). A source shall be considered in violation if the VOC emissions measured by any of the referenced test methods exceed the standard of the rule.

(Amended November 1, 1989; February 3, 1993; June 1, 1994)

8-29-603 Analysis of Stripper Samples: Samples of volatile organic compounds of stripper as specified in Section 8-29-305 shall be analyzed as prescribed in the Manual of Procedures, Volume III, Method 31. (Adopted November 1, 1989)

- 8-29-604 Determination of Acid Content:** Measurement of acid content as specified in Section 8-29-208 shall be determined in accordance with ASTM Method D-1613-85.
(Adopted February 3, 1993)
- 8-29-605 Analysis of Mold Release Coating Samples:** Samples of mold release coatings containing volatile organic compounds as specified in Section 8-29-302 shall be analyzed as prescribed in the Manual of Procedures, Volume III, Method 31.
(Adopted February 3, 1993)

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**REGULATION 8
ORGANIC COMPOUNDS
RULE 30
SEMICONDUCTOR MANUFACTURING OPERATIONS**

8-30-100 GENERAL

8-30-101 Description: The purpose of this Rule is to limit the emissions of precursor organic compounds from semiconductor manufacturing operations. For the purpose of this Rule, semiconductor manufacturing operations are limited to the manufacture of semiconductor and other related integrated circuits.

8-30-110 Exemption, Small Semiconductor Operation: The provisions of Sections 8-30-302, 303, and 501 shall not apply to any facility whose total combined negative photoresist maskant and negative photo resist developer consumption is less than 24 gallons per month on a facility wide basis and provided the requirements of Section 8-30-402 and Section 8-30-502 are met. (Amended November 23, 1988)

8-30-111 Exemption, Solvent Cleaners: The provisions of Sections 8-30-301 and 8-30-304 shall not apply to any vapor degreaser or cold cleaner utilizing solvent flow or with a capacity greater than 10 gallons. Such vapor degreasers or cold cleaners are subject to Regulation 8, Rule 16, Solvent Cleaning Operations.

(Amended November 23, 1988)

8-30-112 Exemption, Compounds with Low Volatility: All compounds with an initial boiling point greater than 150°C (302°F) and where the initial boiling point exceeds the actual operating temperature by at least 100°C (180°F) are exempt from the requirements of Section 8-30-304.3

(Amended November 23, 1988)

8-30-200 DEFINITIONS

8-30-201 Freeboard Height: The distance from the top of the solvent or solvent drain to the top of the sink.

8-30-202 Freeboard Ratio: The freeboard height divided by the smaller of the length or width of the sink or reservoir.

8-30-203 Masking: Application of a maskant material to a wafer to increase or decrease the masked area's resistance to chemical milling.

8-30-204 Organic Compound: Any compound of carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate.

8-30-205 Organic Compound, Non-precursor: Methylene chloride, 1,1,1 trichloroethane, 1,1,2 trichlorotrifluoroethane (CFC-113), trichlorofluoromethane (CFC-11), dichlorodifluoromethane (CFC-12), dichlorotetrafluoroethane (CFC-114), chloropentafluoroethane (CFC-115), chlorodifluoromethane (CFC-22), and trifluoromethane (FC-23).

8-30-206 Organic Compound, Precursor: Any organic compound as defined in 8-30-204 excepting the non-precursors as designated in 8-30-205.

8-30-207 Photoresist Line : Equipment used to apply and develop photoresist masking solution on a wafer. Process includes preparation (except primary cleaning), soft bake, develop and hard bake.

8-30-208 Photoresist, Negative: Maskant hardens when exposed to light. Unhardened maskant is stripped, exposing wafer surface to etching. Typically uses xylene formulated resin and developer solutions.

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- 8-30-209 **Photoresist, Positive:** Maskant softens when exposed to light. Softened maskant is stripped, exposing wafer surface for etching. Typically uses cellosolves for primer and resin carrier with caustic type developer.
- 8-30-210 **Semiconductor Manufacture:** Any operation performed in order to manufacture semiconductor or related solid state devices, such as semiconductor diodes and stacks, and including rectifiers, integrated microcircuits, transistors, solar cells, and light sensing and emitting devices. Semiconductor manufacture includes all processing from crystal growth through circuit separation and encapsulation. Examples of semiconductor operations are: crystal growth, diffusion operations, photoresist operations, wafer processing, etching, etc. (Amended March 6, 1985)
- 8-30-211 **Solvent Cleaning Station:** Any operation whose primary purpose is to remove surface contaminants or to remove photoresist using a liquid or vapor containing organic compounds. (Amended November 23, 1988)
- 8-30-212 **Liquid Solvent Leak:** A liquid leak of four drops or more per minute. (Amended November 23, 1988)
- 8-30-213 **Container:** For the purposes of Section 8-30-301 and Section 8-30-304, a container is defined as having a total volume of 1 liter (0.264 gal) or less. Any container with a volume greater than 1 liter is considered a reservoir. (Amended November 23, 1988)
- 8-30-300 **STANDARDS**
- 8-30-301 Deleted June 15, 1994)
- 8-30-302 **Negative Photoresist Operations:** All exhaust gases containing precursor organic vapors from negative photoresist operations shall be vented to control devices that reduce the total emission of precursor organic compounds to the atmosphere by at least 90 percent by weight. (Amended November 23, 1988)
- 8-30-303 Deleted June 15, 1994
- 8-30-304 **Solvent Cleaning Station Limits:** A person shall not operate a solvent cleaning station at a semiconductor manufacturing facility unless the following requirements are met:
- 304.1 All unheated containers, reservoirs, and sinks containing precursor organic compounds shall be provided with a cover. These covers must remain closed unless production, sampling, maintenance, loading or unloading procedures require operator access.
 - 304.2 All unheated reservoirs and sinks containing acetone, isopropyl alcohol, methyl alcohol, methyl ethyl ketone, or trichloroethylene shall have a freeboard ratio greater than or equal to 0.75.
 - 304.3 All heated reservoirs, sinks, or containers containing precursor organic compounds shall be provided with a cover as described in Section 304.1. In addition, heated reservoirs and sinks must also have a freeboard ratio greater than or equal to 0.75.
 - 304.4 The capacity of all vapor degreasers and cold cleaners shall be clearly marked by a suitable physical or mechanical means.
 - 304.5 Precursor organic compounds, including waste solvents, shall not be stored or disposed of in a manner that will allow evaporation into the atmosphere. Storage of organic compounds in tanks which comply with Regulation 8, Rule 5, constitutes compliance with Section 8-30-304.5.
 - 304.6 All equipment at a solvent cleaning station shall be operated and maintained in proper working order.
 - 304.7 Liquid solvent leaks shall be repaired immediately or the equipment shall be shut down. (Adopted November 23, 1988; Amended June 15, 1994)

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8-30-400 ADMINISTRATIVE REQUIREMENTS

- 8-30-401 Reservoir and Sink Compliance Schedule:** Any existing facility subject to Section 8-30-304 of this Rule shall comply with the following increments of progress:
- 401.1 Submit to the APCO a complete application for an Authority to Construct necessary equipment modifications on or before March 1, 1989.
 - 401.2 Complete onsite construction of equipment modifications on or before March 1, 1990.
 - 401.3 Demonstrate final compliance on or before July 1, 1990.
(Amended November 23, 1988)
- 8-30-402 Small Semiconductor Operation Petition:** Any person seeking to satisfy the conditions of Section 8-30-110 shall comply with the following requirements:
- 402.1 A written petition for exemption shall be submitted to the APCO showing the total combined net usage of negative photoresist maskant and negative photoresist developer is less than 24 gallons per month for the facility.
 - 402.2 If the APCO grants written approval, such petition will be repeated on an annual basis.
(Adopted November 23, 1988)
- 8-30-403 Deleted June 15, 1994**

8-30-500 MONITORING AND RECORDS

- 8-30-501 Annual Reporting:** Any person subject to Sections 8-30-302, 303, or 304 of this Rule shall report the following on an annual basis, prior to renewal of Permits to Operate:
- 501.1 Quantity of each of the following liquid organic compounds purchased during the previous 12 months for use in semiconductor manufacturing.
 - Xylene
 - n-Butyl Acetate
 - Acetone
 - Isopropyl Alcohol
 - Methyl Ethyl Ketone
 - Trichloroethylene
 - All other precursor organic compounds (total)
 - Methylene Chloride
 - 1,1,1 Trichloroethane
 - All other non-precursor organic compounds (total)
 - 501.2 Separate totals of precursor and non-precursor organic compounds disposed of or reclaimed in liquid form from semiconductor manufacturing operations during the previous 12 months.
- 8-30-502 Records:** Any person seeking to satisfy the conditions of Section 8-30-110 shall comply with the following requirements:
- 502.1 A weekly record shall be kept showing the facility wide combined net usage of negative photoresist maskant and negative photoresist developer.
 - 502.2 Such records shall be maintained and be available for inspection by the APCO for the previous 24 month period. (Adopted November 23, 1988)
- 8-30-503 Negative Photoresist Source Tests:** Any person subject to Section 8-30-302 shall conduct a source test of the abatement device to demonstrate compliance. Results of the tests shall be submitted within 90 days of (Date of adoption by the Board of Directors), or 90 days after start up of affected equipment, whichever is later. The APCO shall be contacted in writing no less than 15 days prior to testing. Equipment that has previously undergone a District approved source test and successfully demonstrated compliance under Regulation 8, Rule 30 Requirements need not be retested.
(Adopted November 23, 1988)

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8-30-600 MANUAL OF PROCEDURES

8-30-601 Determination of Abatement Efficiency: Abatement efficiency of precursor organic compounds as specified in Section 8-30-302, 8-30-303, and subsection 8-30-304.3.2 shall be measured as prescribed by any of the following methods: 1) BAAQMD Manual of Procedures, Volume IV, ST-7, 2) EPA Method 25 or 25A. A source shall be considered in violation if the VOC emissions measured by any of the test methods exceed the standards of this rule.

(Adopted November 23, 1988; Amended June 15, 1994)

**REGULATION 8
ORGANIC COMPOUNDS
RULE 31
SURFACE PREPARATION AND COATING OF PLASTIC PARTS AND
PRODUCTS**

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**REGULATION 8
ORGANIC COMPOUNDS
RULE 31
SURFACE PREPARATION AND COATING OF PLASTIC PARTS AND
PRODUCTS**

(Adopted September 7, 1983)

8-31-100 GENERAL

8-31-101 Description: The purpose of this Rule is to limit the emission of volatile organic compounds from the surface preparation and coating of plastic parts and products, including polyester resin (fiberglass) products.

(Amended 6/7/89; 10/16/02)

8-31-110 Exemption, Adhesives: The requirements of this Rule shall not apply to the application of adhesives. Application of adhesives is subject to Regulation 8, Rule 51.

(Amended 6/7/89; 2/3/93)

8-31-111 Exemption, Low Usage Coatings: The requirements of Sections 8-31-302, 306 and 309 shall not apply to any coating used in volumes less than 75.7 liters (20 gallons) in any one year, and provided the requirements in Section 8-31-403 are satisfied. A person shall be limited to 208.1 liters (55 gallons) total coating per year under this exemption.

(Amended 1/7/87; 4/1/87; 6/7/89; 6/1/94)

8-31-112 Deleted April 1, 1987

8-31-113 Exemption, Aerosol Cans: The provisions of this Rule shall not apply to coating operations employing hand-held aerosol cans. Such coating is subject to the provisions of Regulation 8, Rule 49 or to the California Air Resources Board aerosol coating product regulation found in Title 17 of the California Code of Regulations, beginning at Section 94520.

(Amended 1/7/87; 6/7/89; 6/20/90; 10/16/02)

8-31-114 Exemption, Touch-up: The provisions of this Rule shall not apply to touch-up operations.

(Amended 1/7/87; 6/7/89)

8-31-115 Deleted April 1, 1987

8-31-116 Deleted April 1, 1987

8-31-117 Deleted April 1, 1987

8-31-118 Exemption, Automobile Assembly Coatings: The requirements of this Rule shall not apply to coatings applied to parts in an automobile assembly plant, provided the following conditions are satisfied:

118.1 The parts are coated in a coating line subject to the requirements of Regulation 8, Rule 13.

118.2 The coating of these parts complies with the requirements which apply to other parts or products coated in the same coating line.

(Amended June 7, 1989)

8-31-119 Exemption, Aerospace Assembly Coatings: The requirements of this Rule shall not apply to coatings applied to plastic aerospace components subject to Regulation 8, Rule 29.

(Adopted June 7, 1989)

8-31-120 Exemption, Test Panels: The requirements of this Rule shall not apply to test panels used to evaluate coating performance. Such test panels are subject to Regulation 8, Rule 4.

(Adopted June 7, 1989)

8-31-121 Exemption, Stencil Coatings: The requirements of this Rule shall not apply to coatings that are applied by template in order to add designs, letters and/or numbers to the products.

(Adopted June 7, 1989)

8-31-122 Exemption, Spray Application Equipment: The requirements of Section 8-31-310 shall not apply to the following operations:

- 122.1 The application of high solids, solvent-borne coatings with a solids content of at least 60% by volume to pre-textured or hair-cell surfaces of plastic parts and products. This exemption only applies to coatings subject to the limits of Section 8-31-302.
- 122.2 The application of coatings to the inner surface area of pipes which require a spray gun nozzle extension.
- 122.3 The application of a textured finish coat.
- 122.4 The application of conductive coatings.

(Adopted February 3, 1993)

- 8-31-123 Exemption, Small User:** The spray application equipment limitations of Section 8-21-310 shall not apply to any facility where the total amount of all coatings used to coat plastic parts and products does not exceed 50 gallons/year.

(Adopted February 3, 1993)

- 8-31-124 Limited Exemption, Coating Records:** The requirements of subsection 8-31-501.2 shall not apply to individual source operations using less than 75.7 liters (20 gal) of coating in any calendar year, unless otherwise specified in permit conditions pursuant to Regulation 2-1-403. A person shall maintain monthly records of coating usage under this exemption.

(Adopted February 3, 1993)

- 8-31-125 Exemption, Printed Circuit Boards:** The requirements of this Rule shall not apply to coatings applied to assembled printed circuit boards. This coating operation is subject to Regulation 8, Rule 4.

(Adopted February 3, 1993)

- 8-31-126 Exemption, Translucent Coatings:** The requirements of Section 8-31-302 shall not apply to translucent coatings applied to translucent plastic provided records are maintained as per Section 8-29-501. The application of translucent coating is subject to the requirements of Regulation 8, Rule 4.

(Adopted February 3, 1993)

- 8-31-127 Limited Exemption, Specific Surface Preparation and Cleaning Operations:** The surface preparation standards in Section 8-31-321 shall not apply to, (i) the surface preparation of medical devices or precision optics, (ii) surfaces prepared for adhesive bonding of dissimilar substrates, (iii) stripping of cured inks, coatings and adhesives or cleaning of resin, coating, ink and adhesive mixing, molding and application equipment, or (iv) surface preparation associated with research and development operations; performance testing to determine coating, adhesive or ink performance; or testing for quality control or quality assurance purposes.

(Adopted October 16, 2002)

- 8-31-128 Limited Exemption, Military Components:** The requirements of Section 8-31-321 shall not apply to the surface preparation of any military component for which a contract exists that specifies the use of an organic solvent that does not comply with the standards in Section 8-19-321, provided that contract has been entered into prior to December 1, 2005.

(Adopted October 16, 2002)

8-31-200 DEFINITIONS

- 8-31-201 Camouflage Coating:** A coating used on military equipment to conceal such equipment from detection.

- 8-31-202 Conductive Coating:** A coating used on electrical or electronic equipment to provide shielding against electromagnetic interference, radio frequency interference or static discharge.

- 8-31-203 Flexible Part or Product:** A part or product designed to withstand significant deformation without apparent damage, such as flexible automobile bumpers.

- 8-31-204 Metallic Topcoat:** A topcoat containing more than 5 g/l (0.42 lb/gal) of metal particles, as identified on a technical or material safety data sheet, where such metal particles are visible in the dried film.

(Amended 1/7/87; 6/1/94)

- 8-31-205 Volatile Organic Compound:** Any organic compound (excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and

ammonium carbonate) which would be emitted during use, application, curing or drying of a solvent or surface coating.

205.1 For purposes of calculating VOC content of a coating, any water or the following non-precursor organic compounds:

acetone

methyl acetate

parachlorobenzotrifluoride (PCBTF)

cyclic, branched or linear, completely methylated siloxanes (VMS)

shall not be considered to be part of the coating.

206.2 For the purposes of calculating the VOC content of a surface preparation or cleaning solvent, any water or the non-precursor organic compounds listed in subsection 8-31-206.1, above, shall be considered part of the volume of solvent but shall not be considered part of the VOC content of the solvent.

(Amended 1/7/87; 6/7/89, 12/20/95; 10/16/02)

8-31-206 Extreme Performance Coating: Any coating which during intended use is exposed to one or more of the following conditions:

206.1 Repeated heavy abrasion, including mechanical wear and repeated scrubbing with industrial grade solvents, cleaners or abrasive scouring agents.

206.2 Repeated exposure to temperatures in excess of 121°C (250°F).

206.3 Chronic exposure to corrosive, caustic or acidic agents, chemicals, chemical fumes, chemical mixtures or solution.

(Amended 1/7/87; 6/1/94)

8-31-207 Deleted June 7, 1989

8-31-208 Touch-up: That portion of the surface preparation or coating operation which is incidental to the main coating process but necessary to cover minor imperfections or mechanical damage incurred prior to intended use.

(Amended 1/7/87; 10/16/02)

8-31-209 Transfer Efficiency: The ratio of the amount of coating solids adhering to the object being coated to the total amount of coating solids used in the application process, expressed as a percentage.

8-31-210 Deleted January 7, 1987

8-31-211 High Gloss Coating: Any coating which achieves at least 85% reflectance on a 60o meter when tested by ASTM Method D-523-1989.

(Adopted June 7, 1989)

8-31-212 Adhesive: Any coating applied for the purpose of bonding surfaces together.

(Adopted June 7, 1989)

8-31-213 Electrostatic Spray: Equipment used to apply coating by charging atomized particles that are deposited by electrostatic attraction.

(Adopted February 3, 1993)

8-31-214 High Volume, Low Pressure (HVLP) Spray: Equipment used to apply coating by means of a gun which is designed to be operated and which is operated between 0.1 and 10.0 psig air atomizing pressure measured dynamically at the center of the air cap and at the air horns.

(Adopted 2/3/93; 10/16/02)

8-31-215 Pre-Textured or Hair-Cell Surface: The rough or uneven surface impressed upon a manufactured plastic part during molding processes that exists before applying a semi-transparent or colored surface coating.

(Adopted February 3, 1993)

8-31-216 Detailing Gun: Small air spray equipment, including air brushes, that operate at no greater than 5 cfm air flow and no greater than 50 psig air pressure.

(Adopted February 3, 1993)

8-31-217 Approved Emission Control System: A system for reducing emissions to the atmosphere, consisting of an abatement device and a collection system, which achieves the abatement efficiency specified in the applicable standards at all times during the operation and meets the requirements of Regulation 2, Rule 1.

(Adopted February 3, 1993)

8-31-218 Translucent Coating: A clear or colored coating which is formulated to allow light transmission.

(Adopted February 3, 1993)

- 8-31-219 Textured Finish Coat:** Any non-smooth, patterned surface that is intentionally produced and applied as a final coat by spraying drops of coating over a previously applied base coating.
(Adopted February 3, 1993)
- 8-31-220 Optical Coating:** Any coating applied to ophthalmic lenses to provide a scratch resistant, protective film.
(Adopted February 3, 1993)
- 8-31-221 Mold Release Coating:** A temporary protective coating with a solids content of less than 120 grams solids per liter (1 pound solids per gallon) that reduces or prevents adhesion between the mold surface and the surface being molded.
(Adopted February 3, 1993)
- 8-31-222 Key System Operating Parameter:** An emission control system operating parameter, such as temperature, flow rate or pressure, that ensures operation of the abatement equipment within manufacturer specifications and compliance with the standards in Sections 8-31-302, 306, 309, and 310.
(Adopted June 1, 1994)
- 8-31-223 Medical Device:** An instrument, apparatus, implement, machine, contrivance, implant, in vitro reagent or other similar article, including any component or accessory that is (i) intended for use in the diagnosis of disease or other conditions, or in the cure, mitigation, treatment, or prevention of diseases, or (ii) is intended to affect the structure or any function of the body, or (iii) is defined in the National Formulary or the United States Pharmacopoeia or any supplement to it.
(Adopted October 16, 2002)
- 8-31-224 Precision Optics:** The optical elements used in electro-optical devices that are designed to sense, detect, or transmit light energy, including specific wavelengths of light energy and changes of light energy levels.
(Adopted October 16, 2002)
- 8-31-225 Surface Preparation:** The cleaning of plastic parts and products prior to coating, further treatment, sale, or intended use. Surface preparation of plastic parts subject to and in compliance with Regulation 8, Rule 16: Solvent Cleaning Operations, is not subject to the surface preparation standards in this Rule.
(Adopted October 16, 2002)
- 8-31-300 STANDARDS**
- 8-31-301 Deleted June 7, 1989**
- 8-31-302 Limit:** A person shall not apply to any plastic part or product any coating with a VOC content in excess of 340 grams of VOC per liter of coating applied (2.8 lb/gal), excluding water, unless emissions to the atmosphere are controlled to an equivalent level by use of an air pollution abatement device with an abatement device efficiency of at least 85% that meets the requirements of Regulation 2, Rule 1.
(Amended 1/7/87; 4/1/87; 6/7/89; 2/3/93)
- 8-31-303 Deleted February 3, 1993**
- 8-31-304 Deleted June 7, 1989**
- 8-31-305 Deleted June 7, 1989**
- 8-31-306 Flexible Coatings:** A person shall not apply to any flexible part or product any coating which has a VOC content in excess of the following limits expressed as grams of VOC per liter (lb VOC per gal) of coating applied, excluding water, unless emissions to the atmosphere are controlled to an equivalent level by use of an air pollution abatement device with an abatement device efficiency of at least 85% that meets the requirements of Regulation 2, Rule 1.
- | | | |
|-------|--|------------------------------|
| 306.1 | Flexible primer | 490 grams/liter (4.1 lb/gal) |
| 306.2 | Color topcoat | 450 grams/liter (3.8 lb/gal) |
| 306.3 | Base coat/clear coat (combined system) | 540 grams/liter (4.5 lb/gal) |
- (Amended 1/7/87; 4/1/87; 6/7/89; 2/3/93)*
- 8-31-307 Prohibition of Specification:** No person shall require for use or specify the application of a coating or solvent subject to this Rule if such use or application results in a violation of any of the provisions of this Rule. The prohibition of this Section shall apply to all written or oral contracts under the terms of which any

coating or solvent is to be applied to any plastic part or product at any physical location within the District.

(Adopted 1/7/87, Amended 6/7/89; 10/16/02)

- 8-31-308 Compliance Statement Requirement:** The manufacturer of coatings and solvents subject to this Rule shall provide on the coating container or as an accompanying data sheet a designation of VOC (as defined in Section 8-31-205), expressed in grams per liter or pounds per gallon of coating. Effective September 1, 1993, the designation shall include the VOC content of the coating as supplied and at the maximum recommended thinning ratio to maintain compliance with the VOC limits of this Rule.

(Adopted 1/7/87; Amended 7/7/89; 2/3/93; 10/16/02)

- 8-31-309 Specialty Coating Limitations:** A person shall not apply to any plastic part or product any specialty coating with a VOC content in excess of the following limits, expressed as grams of VOC per liter (lb VOC per gal) of coating applied, excluding water, unless emissions to the atmosphere are controlled to an equivalent level by use of an air pollution abatement device with an abatement device efficiency of at least 85% that meets the requirements of Regulation 2, Rule 1.

Effective January 1, 1994

309.1	Camouflage	420 (3.5)	
309.2	Conductive	700 (5.8)	325 (2.7)
309.3	Metallic Topcoat	420 (3.5)	
309.4	Extreme Performance	750 (6.2)	
309.5	High Gloss	420 (3.5)	
309.6	Optical	800 (6.7)	

Any person seeking to use a coating subject to subsection 8-31-309.4 shall also comply with the following provisions:

- a. Usage is limited to 3785 liters (1000 gal) in any calendar year.
- b. Requirements of Section 8-31-401 must be satisfied.

(Adopted 4/1/87; Amended 6/7/89; 2/3/93)

- 8-31-310 Spray Application Equipment Limitations:** Effective July 1, 1994, a person who uses spray application equipment to apply coatings to plastic parts and products within the District shall use one or more of the following application methods, unless emissions are controlled by an approved emission control system with an overall abatement efficiency of at least 85%:

- 310.1 High Volume, Low Pressure (HVLP) spray, operated in accordance with the manufacturer's recommendations, or
- 310.2 Electrostatic Spray, operated in accordance with the manufacturer's recommendations, or
- 310.3 Detailing Gun, or
- 310.4 Any other coating spray application, which has been demonstrated to the satisfaction of the APCO to achieve an equivalent transfer efficiency compared to the spray application methods listed in subsections 310.1 through 310.3. Prior written approval from the APCO shall be obtained for each alternative method used.

(Adopted February 3, 1993)

- 8-31-320 Solvent Evaporative Loss Minimization:** Unless emissions to the atmosphere are controlled by an approved emission control system with an overall abatement efficiency of at least 85%, any person using organic solvent for surface preparation and cleanup or mixing, using or disposing of coating, catalyst or thinner containing organic solvent:

- 320.1 Shall use closed containers for the storage or disposal of cloth or paper used for solvent surface preparation and cleanup.
- 320.2 Shall not use organic solvent for the cleanup of spray equipment including paint lines with a VOC content in excess of 50 g/l (0.42 lbs/gal) unless either (i) the VOC can be pressurized through spray equipment with the atomizing air off or dispensed from a small non-atomizing container, and collected and stored in a closed container until recycled or properly disposed of offsite, or (ii) a spray gun washer subject to and in compliance with the requirements of Regulation 8, Rule 16 is used.
- 320.3 Shall close containers of coating, catalyst or solvent when not in use.

(Adopted 6/7/89; Amended 2/3/93; 10/16/02)

8-31-321 Surface Preparation Standards: Effective June 1, 2003, no person shall use a surface preparation solvent with a VOC content that exceeds 50 g/l (0.42 lbs/gal) for surface preparation of any plastic part or product unless emissions to the atmosphere are controlled to an equivalent level by an approved emission control system with an abatement device efficiency of at least 85 percent that meets the requirements of Regulation 2, Rule 1.

(Adopted October 16, 2002)

8-31-400 ADMINISTRATIVE REQUIREMENTS

8-31-401 Extreme Performance Coating Petition: A person seeking to come within the provisions of subsection 8-31-309.4, shall comply with the following requirements:

- 401.1 A petition shall be submitted to the APCO stating the performance requirements, volume of coating, and VOC level which is attainable.
- 401.2 If the APCO grants written approval, such petition will be repeated on an annual basis.
- 401.3 If the APCO grants written approval, such approval shall contain volume and VOC limit conditions.
- 401.4 Records shall be maintained as in Section 8-31-501.

(Amended 1/7/87; 4/1/87; 6/7/89; 2/3/93)

8-31-402 Deleted June 7, 1989

8-31-403 Low Usage Coating Petition: A person seeking to satisfy the conditions of Section 8-31-111 shall comply with the following requirements:

- 403.1 The user or specifier shall petition the APCO in writing that substitute complying coatings are not available.
- 403.2 If the APCO grants written approval, such petition will be repeated on an annual basis.
- 403.3 If the APCO grants written approval, such approval shall contain volume and VOC limit conditions.
- 403.4 Records shall be maintained as in Section 501.

(Adopted June 7, 1989)

8-31-500 MONITORING AND RECORDS

8-31-501 Records: Any person using coatings or solvents subject to this Rule shall:

- 501.1 Maintain current data necessary to evaluate compliance, including the following information as applicable:
 - a. coating catalyst and reducer used
 - b. VOC content of coating as applied
 - c. VOC content of surface preparation and cleanup solvents, as applied.
- 501.2 Record coating usage on a weekly basis, including the following information as applicable:
 - a. coating and mix ratio of components in the coating used as applied
 - b. quantity of each coating applied
 - c. identification of specialty coating limit category
 - d. oven temperature
- 501.3 Record coating usage and key system operating parameters on a daily basis when air pollution abatement equipment is used to comply with the requirements of Sections 8-31-302, 306, 309, 310, 320 and/or 321.
- 501.4 Record cleanup solvent usage on a monthly basis showing the type and amount used for cleanup and surface preparation, unless more frequently specified in permit conditions imposed per Regulation 2-1-403.
- 501.5 Records shall be retained and available for inspection by the APCO for the previous 24-month period.

(Adopted 1/7/87; Amended 4/1/87; 6/7/89; 2/3/93; 6/1/94; 10/02/16)

8-31-502 Deleted February 3, 1993

8-31-600 MANUAL OF PROCEDURES

- 8-31-601 Analysis of Coating Samples:** Samples of volatile organic compounds as specified in Sections 8-31-302, 306 and 309 shall be analyzed as prescribed in the Manual of Procedures, Volume III, Method 21 or 22.
(Adopted 1/7/87; Amended 4/1/87; 2/3/93)
- 8-31-602 Determination of Emissions:** Emissions of volatile organic compounds as specified in Sections 8-31-302, 306, 309, 310, 320 and/or 321 shall be measured as prescribed by any of the following methods: 1) BAAQMD Manual of Procedures, Volume IV, ST-7, 2) EPA Method 25 or 25A. When either EPA Method 25 or 25A is used, control device equivalency shall be determined as prescribed in 55 FR 26865 (June 29, 1990). A source shall be considered to be in violation if the VOC emissions measured by any of the referenced test methods exceed the standards of this rule.
(Adopted 1/7/87; Amended 4/1/87; 2/3/93; 6/1/94; 10/16/02)
- 8-31-603 Analysis of Mold Release Coating Samples:** Samples of mold release coatings containing volatile organic compounds as specified in Section 8-31-302 shall be analyzed as prescribed in the Manual of Procedures, Volume III, Method 31.
(Adopted February 3, 1993)
- 8-31-604 Analysis of Solvent Samples:** Samples of volatile organic compounds as specified in Section 8-31-320 or 321 shall be analyzed as prescribed in the Manual of Procedures, Volume III, Method 31.
(Adopted October 16, 2002)
- 8-31-605 Analysis of Exempt Compounds:** Samples of PCBTF, VMS, and methyl acetate shall be analyzed by the Manual of Procedures, Volume III, Method 41, 43 and by ASTM Method D-6133-00, respectively.
(Adopted October 16, 2002)

**REGULATION 8
ORGANIC COMPOUNDS
RULE 32
WOOD PRODUCTS COATINGS**

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**REGULATION 8
ORGANIC COMPOUNDS
RULE 32
WOOD PRODUCTS COATINGS
(Adopted September 21, 1983)**

- 8-32-100 GENERAL**
- 8-32-101 Description:** The purpose of this Rule is to limit emissions of volatile organic compounds from the application of coatings to, and surface preparation of, any wood products, including furniture, cabinets and custom architectural millwork. This Rule shall not apply to residential noncommercial operations. (Amended April 17, 1991)
- 8-32-110 Deleted October 6, 1993**
- 8-32-111 Exemption, Small Coating Operations:** The provisions of this Rule shall not apply to facilities that use a total of less than 20 gallons of coating per year.
(Adopted April 17, 1991)
- 8-32-112 Exemption, Specific Operations:** The provisions of this Rule shall not apply to the following specific coating operations:
- 112.1 Coatings and adhesives applied to Flatwood Paneling and Wood Flat Stock subject to the provisions of Regulation 8, Rule 23
 - 112.2 Coating applied to stationary structures and their appurtenances subject to the provisions of Regulation 8, Rule 3 or Rule 48
 - 112.3 Coating applied from aerosol cans subject to the provisions of Regulation 8, Rule 49
(Adopted April 17, 1991)
 - 112.4 Adhesive coating subject to the provisions of Regulation 8, Rule 51.
(Adopted November 18, 1992)
- 8-32-113 Exemption, Refinishing, Replacement and Custom Replica Furniture Operations:** The provisions of Sections 8-32-303, 304, 305 and 501 shall not apply to any refinishing operation necessary for preservation, to return the wood product or furniture to original condition, to replace missing furniture to produce a matching set, or to produce custom replica furniture.
(Adopted April 17, 1991)
- 8-32-114 Exemption, Stencil Coatings:** The provisions of this Rule shall not apply to the application of coatings by template in order to add designs, letters or numbers to products. The application of stencil coatings is subject to the provisions of Regulation 8, Rule 4.
(Adopted April 17, 1991)
- 8-32-115 Exemption, Specific Finishes:** The provisions of Sections 8-32-301, 303, and 304 shall not apply to coatings used to produce the following finishes, provided records are maintained as specified in Section 8-32-501:
- 115.1 Crackle lacquers
 - 115.2 Leaf finishes
 - 115.3 Faux finishes
 - 115.4 Imitation wood grain
- The application of coatings used to produce these specific finishes is subject to the provisions of Regulation 8, Rule 4.
(Adopted April 17, 1991)
- 8-32-116 Exemption, Musical Instruments:** The provisions of this Rule shall not apply to the application of coatings to musical instruments.
(Adopted April 17, 1991)
- 8-32-117 Exemption, Polyester Resin Application:** The application of polyester resin with a VOC content of less than 120 grams VOC per liter (1.0 pound VOC per gallon) shall be exempt from the spray application equipment limitations of Section 8-32-301.
(Adopted April 17, 1991)

8-32-200 DEFINITIONS

8-32-201 Deleted April 17, 1991

8-32-202 Binders: Non-volatile polymeric organic materials (resins) which form surface film in coating applications.

8-32-203 Clear Topcoat: The final coating which contains binders, but not opaque pigments, and is specifically formulated to form a transparent or translucent solid protective film.

8-32-204 Deleted April 17, 1991

8-32-205 Opaque Stains: Stains containing pigments not classified as semitransparent stains, including wiping stains, glazes and other opaque material to give character to wood.

8-32-206 Pigmented Coatings: Opaque coatings which contain binders and colored pigments which are formulated to hide the wood surface, either as an undercoat or topcoat.

8-32-207 Sanding Sealer: A coating containing binders, which seals the wood prior to application of and provides a sandable surface for the subsequent coatings.

(Amended April 17, 1991)

8-32-208 Semi-transparent Stains: Stains containing dyes and/or semi-transparent pigments which are formulated to enhance wood grain and change surface color, but not to conceal surface grain, and include sap stain, toner and non-grain raising stains. For the purpose of this Rule, semi-transparent stains shall be considered low-solids coatings and shall contain less than 120 grams solids per liter (1 pound solids per gallon) of coating. Semi-transparent stains with greater than 120 grams solids per liter (1 pound solids per gallon) of coating shall be considered opaque stains.

(Amended April 17, 1991)

8-32-209 Transfer Efficiency: The ratio of the weight of coating solids deposited on an object to the total weight of coating solids used in a coating application step, expressed as a percentage.

(Amended April 17, 1991)

8-32-210 Wash Coat: A coating, containing binders, which penetrates into and seals wood, prevents undesired staining and seals in wood pitch. For the purpose of this Rule, washcoats shall be considered low-solids coatings and shall contain less than 120 grams solids per liter (1 pound solids per gallon) of coating. Wash coats with greater than 120 grams solids per liter (1 pound solids per gallon) of coating shall be considered sanding sealers.

(Amended April 17, 1991)

8-32-211 Wood Furniture: Those surface coated room furnishings which are subject to Standard Industrial Classification Major Group 25 including tables, chairs, beds, sofas, dressers and standing screens made of solid wood, wood composition or wood material.

(Amended April 17, 1991)

8-32-212 General Wood Products: For the purpose of this Rule, general wood products are those surface coated objects which are subject to Standard Industrial Classification Major Group 24 including cabinets, vanities, shutters, containers, frames, tools and ladders made of solid wood, wood composition or wood material.

(Adopted April 17, 1991)

8-32-213 Custom Architectural Millwork: Those in shop finished wood products intended for use as architectural components including panels, doors and trim. Custom architectural millwork is individually produced items designed for a specific space and client.

(Adopted April 17, 1991)

8-32-214 Volatile Organic Compound: Any organic compound (excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate) which would be emitted during use, application, curing or drying of a solvent or surface coating.

214.1 For purposes of calculating the VOC content of a high solids coating subject to Sections 8-32-303.1 and 304.1, any water or the following compounds:
acetone

parachlorobenzotrifluoride (PCBTF)
cyclic, branched or linear, completely methylated siloxanes (VMS)
shall not be considered a part of the coating.

214.2 For purposes of calculating the VOC content of a low solids coating subject to Sections 8-32-303.2 and 304.2, any water shall be considered a part of the coating. The following compounds:

acetone
parachlorobenzotrifluoride (PCBTF)
cyclic, branched or linear, completely methylated siloxanes (VMS)
shall not be considered part of the VOC content of the coating.

(Adopted April 17, 1991; Amended December 20, 1995)

- 8-32-215 Airless Spray:** Equipment used to apply coatings by use of fluid pressure without atomizing air, including heated airless spray. (Adopted April 17, 1991)
- 8-32-216 Air Assisted Airless Spray:** Equipment used to apply coatings that uses fluid pressure to atomized coating and air pressure between 0.1 and 50 psig to adjust the spray pattern. (Adopted April 17, 1991; Amended July 6, 1994)
- 8-32-217 High-Volume, Low-Pressure (HVLP) Spray:** Equipment used to apply coatings by means of a gun which operates between 0.1 and 10 atomizing psig air pressure. (Adopted April 17, 1991; Amended October 6, 1993)
- 8-32-218 Electrostatic Air Spray:** Equipment used to apply coating by charging atomized particles that are deposited by electrostatic attraction. (Adopted April 17, 1991)
- 8-32-219 Detailing or Touch-up Guns:** Small air spray equipment, including air brushes, that operate at no greater than 5 cfm air flow and no greater than 50 pig air pressure and are used to coat small products or portions of furniture. (Adopted April 17, 1991)
- 8-32-220 Crackle Lacquer:** A clear or pigmented topcoat intended to dry to produce a cracked or crazed appearance. (Adopted April 17, 1991)
- 8-32-221 Filler:** A material whose primary function is to fill voids. (Adopted April 17, 1991)
- 8-32-222 Leaf Finish:** A finish used in conjunction with metal leaf or foil. (Adopted April 17, 1991)
- 8-32-223 Faux Finish:** A finish intended to simulate a surface other than wood, including stone, sand, slate, marble, metal, metal flake or leather. (Adopted April 17, 1991)
- 8-32-224 Imitation Wood Grain:** A hand applied finish that simulates the appearance of a specific natural wood grain. (Adopted April 17, 1991)
- 8-32-225 Custom Replica Furniture:** Furniture individually produced for a specific client using methods of construction including materials, joinery and finishes authentic to the period and in keeping with the style of furniture. (Adopted April 17, 1991)
- 8-32-226 Key System Operating Parameter:** An air pollution abatement equipment operating parameter, such as temperature, flow rate or pressure, that ensures operation of the abatement equipment within manufacturer specifications and compliance with the standards in Sections 8-32-303, and 304. (Adopted June 15, 1994)

8-32-300 STANDARDS

8-32-301 Spray Application Equipment Limitations: Any person who utilizes spray application equipment to apply coatings to wood products, furniture and cabinets shall use one or more of the following application methods:

Airless spray
Air assisted airless spray
High Volume Low Pressure (HVLP) spray
Electrostatic air spray
Detailing or Touch-up Guns

(Amended April 17, 1991)

8-32-302 Deleted April 17, 1991

8-32-303 General Wood Product Limits: A person shall not apply to any wood product, any coating with a VOC content in excess of the following limits expressed as grams VOC per liter (pounds VOC per gallon) of coating applied, unless emissions to the atmosphere are controlled to an equivalent level by air pollution abatement equipment with an abatement device efficiency of at least 85 percent that meets the requirements of Regulation 2, Rule 1.

303.1 High Solids Coatings:

	Effective August 1, 1991	Effective July 1, 1992	Effective July 1, 1995	Effective July 1, 1997
Clear Topcoat	700 (5.8)	550 (4.6)	275 (2.3)	275 (2.3)
Sanding Sealer	700 (5.8)	550 (4.6)	550 (4.6)	275 (2.3)
Pigmented Coating	600 (5.0)	600 (5.0)	275 (2.3)	275 (2.3)
Opaque Stain	700 (5.8)	700 (5.8)	700 (5.8)	240 (2.0)
Filler	500 (4.2)	500 (4.2)	500 (4.2)	275 (2.3)

303.2 Low Solids Coatings:

	Effective August 1, 1991	Effective July 1, 1992	Effective July 1, 1995	Effective July 1, 1997
Semi-transparent				
Stain	800 (6.7)	480 (4.0)	480 (4.0)	120 (1.0)
Wash-coat	800 (6.7)	480 (4.0)	480 (4.0)	120 (1.0)

(Adopted April 17, 1991; Amended October 6, 1993; July 6, 1994)

8-32-304 Furniture and Custom Architectural Millwork Limits: A person shall not apply to any furniture or custom architectural millwork any coating with a VOC content in excess of the following limits, expressed as grams VOC per liter (pounds VOC per gallon) of coating applied, unless emissions to the atmosphere are controlled to an equivalent level by air pollution abatement equipment with an abatement device efficiency of at least 85 percent that meets the requirements of Regulation 2, Rule 1.

304.1 High Solids Coatings:

	Effective August 1, 1991	Effective July 1, 1992	Effective July 1, 1995	Effective July 1, 1997
Clear Topcoat	700 (5.8)	700 (5.8)	420 (3.5)	420 (3.5)
Sanding Sealer	700 (5.8)	700 (5.8)	550 (4.6)	420 (3.5)
Pigmented Coating	600 (5.0)	600 (5.0)	420 (3.5)	420 (3.5)
Opaque Stain	700 (5.8)	700 (5.8)	700 (5.8)	420 (3.5)
Filler	500 (4.2)	500 (4.2)	500 (4.2)	275 (2.3)

304.2 Low Solids Coatings:

	Effective August 1, 1991	Effective July 1, 1992	Effective July 1, 1995	Effective July 1, 1997
Semi-transparent				
Stain	800 (6.7)	800 (6.7)	480 (4.0)	120 (1.0)
Wash-coat	800 (6.7)	800 (6.7)	480 (4.0)	120 (1.0)

(Adopted April 17, 1991; Amended October 6, 1993; July 6, 1994)

8-32-305 Prohibition of Specification: No person shall require for use or specify the application of a coating subject to this Rule if such use or application results in a violation of any of the provisions of this Rule. The prohibition of this Section shall apply to all written or oral contracts under the terms of which any coating is to be applied to any wood product, furniture or cabinet at any physical location within the District.

- 8-32-306 Compliance Statement Requirement:** Effective August 1, 1991, the manufacturer of coatings subject to this Rule shall provide on the coating container or as an accompanying specification a designation of VOC content (as defined in Section 8-32-214) expressed in grams per liter or pounds per gallon of coating.
(Adopted April 17, 1991)
- 8-32-320 Solvent Evaporative Loss Minimization:** The requirements of this Section shall apply to any person using organic solvent for surface preparation and cleanup or to any person mixing, using or disposing of coating, adhesive or stripper containing organic solvent.
- 320.1** A person shall use closed containers for the storage or disposal of cloth or paper used for solvent surface preparation and cleanup.
- 320.2** A person shall store fresh or spent solvent in closed containers.
- 320.3** A person shall not use organic compounds for the cleanup of mixing, storage or spray equipment unless equipment for collecting the cleaning compounds and minimizing their evaporation to the atmosphere is used.
- 320.4** A person shall not leave containers of stripper, coating, adhesive, catalyst or thinner open to the atmosphere when not in use. (Adopted April 17, 1991)
- 8-32-400 ADMINISTRATIVE REQUIREMENTS**
- 8-32-401 Deleted April 17, 1991**
- 8-32-402 Progress Report:** Any facility, where compliance with Section 8-32-303 or 304 is required, where the total organic compound emissions from wood coating operations is greater than 5 tons per year shall submit a report showing the results of product trials of products compliant with the VOC standards effective July 1, 1995. At a minimum the report shall show names of coating manufacturers' products tested and the results of those tests. The report shall be submitted to the APCO no later than March 1, 1995.
(Adopted July 6, 1994)
- 8-32-500 MONITORING AND RECORDS**
- 8-32-501 Recordkeeping Requirements:** Any person subject to Sections 8-32-303 or 304 shall:
- 501.1** Maintain a current list of coatings in use which provides all of the data necessary to evaluate compliance, including the following information, as applicable:
- a. coating, catalyst or reducer used
 - b. manufacturer's recommended mix ratio of components
 - c. VOC content of coating as applied
- 501.2** Record the following information on a daily basis, as applicable:
- a. coating and mix ratio of components in the coating used
 - b. quantity of each coating applied
 - c. identification of coating category
 - d. type and amount of solvent used for cleanup and surface preparation
- 501.3** Record air pollution abatement equipment key operating parameters on a daily basis where such equipment is installed to meet the requirements of Sections 8-32-303 and 304.
- 501.4** Records shall be retained and available for inspection by the APCO for the previous 24-month period. (Adopted April 17, 1991; Amended June 15, 1994)
- 8-32-502 Refinishing, Replacement and Custom Replica Furniture Operations Recordkeeping Requirements:** Any person refinishing wood products or furniture, replacing missing furniture or producing custom replica furniture shall:
- 502.1** Maintain a current list of coatings in use which provides the following information, as applicable:

- a. coating, catalyst or reducer used
 - b. manufacturer's recommended mix ratio of components
 - c. VOC content of coating or reducer
- 502.2 Record on a monthly basis the following information, as applicable:
- a. amount of coating, catalyst and reducer used
 - b. type and amount of solvent used for cleanup and surface preparation
 - c. type and amount of stripper used
- 502.3 Records shall be retained and available for inspection by the APCO for the previous 24-month period. (Adopted April 17,1991; Amended June15,1994)
- 8-32-503 Custom Architectural Millwork Recordkeeping Requirements:** In addition to the requirements of Section 8-32-501, any person producing custom architectural millwork shall maintain and make available for inspection by the APCO job orders, shop drawings or blueprints, or designer or architectural drawings as necessary to establish the custom nature of the work. (Adopted April 17,1991)
- 8-32-600 MANUAL OF PROCEDURES**
- 8-32-601 Analysis of Samples:** Samples of VOC as specified in Sections 8-32-303.1 or 304.1 shall be analyzed as prescribed in the Manual of Procedures, Volume 111, Method 21 or 22. Samples of VOC as specified in Sections 8-32-303.2 or 304.2 shall be analyzed as prescribed in the Manual of Procedures, Volume 111, Method 31. (Amended April 17, 1991)
- 8-32-602 Determination of Emissions:** Emissions of volatile organic compounds as specified in Sections 8-32-303 or 304 shall be measured as prescribed by any of the following methods: 1) BAAQMD Manual of Procedures, Volume IV, ST-7, 2) EPA Method 25 or 25A. When either EPA Method 25 or 25A is used, control device equivalency shall be determined as prescribed in 55 FR 26865 (June 29, 1990). A source shall be considered in violation if the VOC emissions measured by any of the referenced test methods exceed the standards of this rule. (Adopted April 17,1991; Amended June 15, 1994)

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

REGULATION 8

ORGANIC COMPOUNDS

RULE 33

GASOLINE BULK TERMINALS AND GASOLINE DELIVERY VEHICLES

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REGULATION 8

ORGANIC COMPOUNDS

RULE 33

GASOLINE BULK TERMINALS AND GASOLINE DELIVERY VEHICLES

(Adopted November 30, 1983)

8-33-100 GENERAL

8-33-101 Description: The purpose of this Rule is to limit emissions of organic compounds from gasoline transfer operations at gasoline bulk terminals and delivery vehicles. (Amended October 7, 1987; June 1, 1994)

8-33-110 Exemptions

8-33-111 Delivery Vehicle Exemptions: The requirements of subsections 8-33-304.1 and 304.2 do not apply to gasoline delivery vehicles which deliver exclusively to;

111.1 Storage tanks with a capacity of less than 1.0 cubic meter (260 gallons).

111.2 Storage tanks installed prior to February 18, 1987, with an annual throughput of less than 227 cubic meters (60,000 gallons).

111.3 Storage tanks with a capacity of less than 2.2 cubic meters (550 gallons), used primarily for the fueling of implements of husbandry as defined in Division 16, Chapter 1, of the California Vehicle Code.

111.4 Storage tanks where the APCO determines that Phase I vapor recovery is not feasible. (Amended January 9, 1985; October 7, 1987; June 1, 1994)

8-33-112 Tank Gauging and Inspection: Any tank may be opened for gauging or inspection when loading operations are not in progress provided that such tank is not pressurized. (Amended and Renumbered October 7, 1987)

8-33-113 Maintenance and Repair Exemption: The requirements of Section 8-33-306 shall not apply to spills and vapor leaks resulting from maintenance or repair operations provided proper operating practices are employed to minimize evaporation of gasoline into the atmosphere. (Renumbered October 7, 1987)

8-33-200 DEFINITIONS

8-33-201 CARB Certified Vapor Recovery System: A vapor recovery system which has been certified by the California Air Resources Board (CARB) pursuant to Section 41954 of the Health and Safety Code. (Amended October 7, 1987)

8-33-202 Gasoline Bulk Terminal: A distributing facility which receives gasoline by other than tank truck, or rail car, stores it in stationary tanks, and loads it into tank trucks for delivery to gasoline bulk plants, service stations or other distribution points. (Amended October 7, 1987; June 1, 1994)

8-33-203 Gasoline: Petroleum distillates used as motor fuel with a Reid vapor pressure greater than 4.0 pounds.

8-33-204 Leak Free: A liquid leak of less than four drops per minute excluding losses which occur upon disconnecting transfer fittings, provided such disconnect losses do not exceed 10 milliliters (0.34 fluid ounces) per disconnect, averaged over three disconnects.

8-33-205 Submerged Fill Pipe: Any discharge pipe or nozzle which meets either of the following conditions:

205.1 Where the tank is filled from the top, the end of the discharge pipe or nozzle must be totally submerged when the liquid level is 15 cm (6 in.) from the bottom of the tank.

205.2 Where the tank is filled from the side, the discharge pipe or nozzle must be totally submerged when the liquid level is 46 cm (18 in.) from the bottom of the tank.

8-33-206 Switch Loading: For the purpose of this Rule, switch loading is the loading of organic liquids with a Reid vapor pressure of less than 4.0 pounds into a delivery vehicle where the previous load was gasoline.

8-33-207 Vapor Tight: A leak of less than 100 percent of the lower explosive limit on a combustible gas detector measured at a distance of 2.5 cm (1 in.) from the source or no visible evidence of air entrainment in the sight glasses of liquid delivery hoses.

8-33-208 Vapor Tight - Gasoline Cargo Tank: A leak that does not exceed the standards specified in the CARB "Certification and Test Procedures for Vapor Recovery Systems on Gasoline Delivery Tanks. (Adopted January 9, 1985)

8-33-209 Deleted June 1, 1994

8-33-210 Organic Compound: Any compound of carbon, excluding methane, carbon monoxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate. (Adopted June 1, 1994)

8-33-300 STANDARDS

8-33-301 Final Gasoline Bulk Terminal Limitations: Effective April 1, 1989, a person shall not load or permit the loading of gasoline into or out of a gasoline bulk terminal unless a CARB certified vapor recovery system is properly connected and used. Such systems shall not emit into the atmosphere more than 9.6 grams of organic compounds per cubic meter (0.08 lbs per 1000 gallons) of organic liquid loaded. Switch loading shall be subject to this standard. Where multiple processors are used, each processor shall be subject to this standard. (Amended October 7, 1987; July 20, 1988; June 1, 1994)

8-33-302 Vapor Recovery System Requirement: A person shall not install a vapor recovery system unless it is CARB certified. (Amended October 7, 1987)

8-33-303 Bottom Fill Requirement: Delivery vehicle loading operations at gasoline bulk terminals shall be accomplished by bottom fill. (Amended October 7, 1987)

8-33-304 Delivery Vehicle Requirements: Gasoline delivery vehicles are subject to the following requirements:

304.1 Vapor Integrity Requirement: A person shall not operate, or allow the operation of, a gasoline delivery vehicle unless valid State of California decals, as required by Section 41962 of the Health and Safety Code which attest to the vapor integrity of the tank, are displayed.

304.2 Vapor Recovery Requirement: Any gasoline delivery vehicle loading at a facility subject to the requirements of Section 8-33-301 shall be equipped with and use a vapor recovery system.

304.3 Deleted October 7, 1987.

304.4 Purging Requirement: A person shall not purge gasoline vapor from the tank of a delivery vehicle to the atmosphere. (Renumbered, Amended January 9, 1985, October 7, 1987)

8-33-305 Equipment Maintenance: All equipment associated with delivery and loading operations shall be maintained to be leak free, vapor tight and in good working order.

8-33-306 Operating Practices: Gasoline shall not be spilled, discarded in sewers, stored in open containers, or handled in any other manner that would result in evaporation to the atmosphere.

8-33-307 Loading Practices: Loading operations which use vapor processing equipment shall be operated in such a manner that the vapor processing capacity is not exceeded.

8-33-308 Vapor Diaphragm Requirements: Diaphragms used in vapor storage tanks shall be maintained such that organic compound emissions from the airspace above the diaphragm do not exceed a concentration of 3,000 parts per million expressed as methane and 6.8 kilograms (15 pounds) per day. (Amended October 7, 1987)

8-33-309 Vapor Recovery System Requirements - Loading Rack: The system shall be maintained and operated in a manner that prevents gauge pressure in the delivery tank from exceeding 46cm (18 in.) of water column during product loading. (Adopted January 9, 1985)

8-33-310 Interim Gasoline Bulk Terminal Limitations: Until April 1, 1989, a person shall not load or permit the loading of gasoline into or out of a gasoline bulk terminal unless a CARB certified vapor recovery system is properly connected and used. Such systems shall not emit into the atmosphere more than 66 grams of organic compounds per cubic meter (0.55 lbs per 1000 gallons) of organic liquid loaded. Switch loading shall be subject to this standard. Where multiple processors are used, each processor shall be subject to this standard. (Adopted

July 20, 1988; Amended June 1, 1994)

8-33-400 ADMINISTRATIVE REQUIREMENTS

8-33-401 Equipment Installation and Modification: A person shall not install or modify stationary gasoline storage tanks greater than 1 cubic meter (260 gallons) or vapor recovery equipment, exclusive of repair, unless an authority to construct has been obtained pursuant to Section 301 of Regulation 2, Rule 1.

8-33-402 Implementation: Any person who must install or modify vapor recovery equipment as required by Section 8-33-301 of this rule as amended on October 7, 1987, shall meet the following increments of progress:

- (a) By April 1, 1988, submit an application to the APCO for Authority to Construct.
- (b) By April 1, 1989, be in final compliance. (Amended October 7, 1987; December 2, 1987)

8-33-500 MONITORING AND RECORDS

8-33-501 Burden of Proof: The burden of proof of eligibility for exemption from this rule is on the applicant. Persons seeking such an exemption shall maintain adequate records and furnish them to the APCO upon request.

8-33-600 MANUAL OF PROCEDURES

8-33-601 Emission Rate Determination (Vapor Processing Systems): The means by which mass emission rates of vapor processing systems are set forth in the Manual of Procedures, Volume IV, ST-34 (Amended October 7, 1987; June 1, 1994)

8-33-602 Emission Rate Determination (Vapor Balance System): The means for determining mass emission rates from vapor balance systems are set forth in the Manual of Procedures, Volume IV, ST-3.

8-33-603 Vapor Recovery System Loading Pressure: The means of determining gauge pressure in the delivery truck are set forth in the Manual of Procedures, Volume IV, ST-34. (Adopted January 9, 1985; Amended June 1, 1994)

8-33-604 Vapor Tight - Delivery Vehicles: The means for determining vapor integrity for delivery vehicles are set forth in the Manual of Procedures, Volume IV, ST-33.(Adopted October 7, 1987)

8-33-605 Analysis of Samples: Samples of gasoline as specified in Section 8-33-203 shall be analyzed as prescribed in the Manual of Procedures, Volume III, Method 13.(Renumbered January 9, 1985; October 7, 1987)

REGULATION 8

ORGANIC COMPOUNDS

RULE 34

SOLID WASTE DISPOSAL SITES

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REGULATION 8

ORGANIC COMPOUNDS

RULE 34

SOLID WASTE DISPOSAL SITES

(Adopted May 2, 1984)

8-34-100 GENERAL

8-34-101 Description: The purpose of this Rule is to limit the emission of non-methane organic compounds and methane from the waste decomposition process at solid waste disposal sites. The use of materials that contain volatile organic compounds, such as contaminated soil or sludge, in land treatment or refuse cover operations is considered to be an aeration operation and is subject to Regulation 8, Rule 40. (Amended Sept. 17, 1986; Nov. 17, 1993; Oct. 6, 1999)

8-34-110 Limited Exemption, Old Landfills: The requirements of this Rule shall not apply to any landfill meeting the requirements of Sections 8-34-110.1, 110.2, and 110.3, provided the requirements of Section 8-34-405 are satisfied.

110.1 The landfill is a closed landfill or an inactive landfill with no design capacity available for future waste deposition,

110.2 The landfill last received solid waste at least thirty years ago, and

110.3 The owner has demonstrated that the site does not pose a health risk to human beings or a threat to the environment pursuant to California Health and Safety Code, Section 41805.5.(Adopted October 6, 1999)

8-34-111 Limited Exemptions, Small Solid Waste Disposal Sites: The requirements of this Rule shall not apply to any solid waste disposal site meeting the requirements of Sections 8-34-111.1 and 111.2, provided the requirements of Sections 8-34-402 and 405 are satisfied.

111.1 The solid waste disposal site has an in-place tonnage of less than 907,194 megagrams (1,000,000 tons) of decomposable solid waste, and

111.2 The solid waste disposal site has a maximum design capacity of less than 2,500,000 megagrams (2,755,000 tons) or less than 2,500,000 cubic meters (3,269,000 cubic yards).

111.3 Deleted October 6, 1999

(Amended Sept. 17, 1986; Nov. 17, 1993; Jul. 17, 1996; Oct. 6, 1999)

8-34-112 Deleted November 17, 1993

8-34-113 Limited Exemption, Inspection and Maintenance: The requirements of Sections 8-34-301, 303 and 305 shall not apply to solid waste disposal sites during inspection and maintenance of the landfill gas collection or emission control system provided that the following conditions are met:

113.1 Emission of raw landfill gas to the atmosphere is minimized during shutdown.

113.2 The gas collection and emission control systems are not shutdown for more than 240 hours in any calendar year. The

duration of a gas collection system shutdown shall not exceed 5 consecutive days. For the purposes of determining consecutive days of shutdown, collection system startups lasting less than 12 hours shall be considered to be shutdown days.

113.3 The applicable requirements of Section 8-34-501 are fulfilled.

(Adopted Nov. 17, 1993; Amended Jul. 17, 1996; Oct. 6, 1999)

8-34-114 Limited Exemption, Energy Recovery Device and Emission Control System: Until July 1, 2002, for any energy recovery device or emission control system installed and operating before January 1, 1995, the provision of Section 8-34-301.4 shall not apply provided the equipment reduces the amount of organic compounds and methane in the collected gases by at least 90 percent by weight. Effective July 1, 2002, this exemption shall not apply to any energy recovery device or emission control system. (Adopted November 17, 1993; Amended October 6, 1999)

8-34-115 Deleted October 6, 1999

8-34-116 Limited Exemption, Well Raising: The requirements of Sections 8-34-301.1, 301.2 and 305 shall not apply to individual wells involved in well raising provided all of the following conditions are met:

116.1 New fill is being added,

116.2 No more than five gas collection wells or ten percent of the gas collection wells of the landfill gas collection system, whichever number is less, are shut down at any time for well raising purposes. For the purposes of this section, a well shall be deemed shutdown if it has been disconnected from a vacuum source and is not meeting the requirements of Section 8-34-305,

116.3 A gas collection well is not disconnected from a vacuum source for longer than 24 consecutive hours unless fill is actively being placed or compacted in the immediate vicinity around the well,

116.4 Once installed, a gas collection well extension is sealed or capped until the raised well is reconnected to a vacuum source, and

116.5 Well disconnection times are recorded pursuant to Section 8-34-501.

(Adopted July 17, 1996; Amended October 6, 1999)

8-34-117 Limited Exemption, Gas Collection System Components: The requirements of Sections 8-34-301.1, 301.2, and 305 shall not apply to individual landfill gas collection system components that must be temporarily shut down in order to repair the components, to connect new landfill gas collection system components to the existing system, to prevent or extinguish fires, or to perform construction activities meeting the requirements of Sections 8-34-118.1 through 118.9, provided the following requirements are met:

117.1 Existing gas collection system components are being repaired to maintain compliance with this Rule or are being shut down to prevent or extinguish fires,

117.2 New gas collection system components are required to maintain compliance with this Rule and are included in the most recent Collection and Control System Design Plan as specified in Section 8-34-408,

117.3 For other construction activities, the requirements of Sections 8-34-118.1 through 118.9 must be met,

117.4 No more than five gas collection wells or ten percent of the gas collection wells of the landfill gas collection system, whichever number is less, are shut down at any time, except in cases where wells are being shut down to prevent or extinguish fires. For the purposes of this section, a well shall be deemed shutdown if it has been disconnected from a vacuum source and is not meeting the requirements of Section 8-34-305,

117.5 No gas collection well may be disconnected from a vacuum source for longer than 24 consecutive hours, unless the operator receives prior written approval from the APCO for a longer well shutdown time. Under no circumstances shall a gas collection well be disconnected from a vacuum source for longer than 5 consecutive days.

117.6 Well disconnection times are recorded pursuant to Section 8-34-501.

(Adopted October 6, 1999)

8-34-118 Limited Exemption, Construction Activities: The requirements of Sections 8-34- 303 shall not apply to the working face of the landfill or to areas of the landfill surface where the landfill cover material has been removed and refuse has been exposed for the express purpose of installing, expanding, replacing, or repairing components of the landfill gas, leachate, or gas condensate collection and removal systems, provided the following requirements are met:

118.1 The operator shall submit a construction plan in writing to the APCO at least seven calendar days prior to beginning any construction activities, unless the construction activity is urgently required. Appropriate reasons for urgent construction activities include, but are not limited to, preventing or extinguishing fires, minimizing emissions of raw landfill gas to the atmosphere or meeting the requirements of Sections 8-34-414 or 415. For urgent construction activities, the operator shall notify the APCO of the need for an urgent construction activity within 24 hours of discovery of the problem and shall submit an urgent construction activity report to the APCO within 30 calendar days of discovery of the problem. The construction plan or urgent construction activity report shall contain the following:

1.1 A description of the action(s) being taken,

1.2 A description of the areas of the landfill that will be affected by these actions,

1.3 A description of any landfill gas collection system components that will be affected by these actions,

1.4 A map of the landfill showing the affected areas and any affected collection system components,

1.5 The reason the action is required including a copy of the statute, regulation, standard, provision and/or permit clause that obligates the landfill to take the action(s) or written approval for the action(s) from the appropriate enforcement agencies,

1.6 A construction schedule including projected construction start and finish dates, projected equipment installation dates, and projected shutdown times for individual gas collection system components, and

1.7 A description of the mitigation measures planned to minimize potential air quality impacts.

118.2 For construction activities related to the installation, expansion, replacement, or repair of landfill gas collection system components, the action must be required to maintain compliance with this Rule, and any new collection system components must be included in the most recent Collection and Control System Design Plan.

118.3 For construction activities related to leachate or gas condensate collection and removal systems, the action must be required by or approved by the appropriate enforcement agency.

118.4 Emission of raw landfill gas to the atmosphere is minimized during construction,

118.5 Any excavated refuse is covered immediately and then properly disposed of within 24 hours of excavation,

118.6 No drilled wells or excavated trenches shall be left uncovered for more than 8 hours,

118.7 The installation time for each component is minimized,

118.8 Landfill gas collection wells are sealed or capped until the well is connected to a vacuum source,

118.9 The construction dates and times for each well are recorded pursuant to Section 8-34-501.

(Adopted October 6, 1999)

8-34-119 Limited Exemption, Inactive or Closed Landfills: The requirements of Sections 8-34-305, 406, 407, 412, 413, 414, 505, and 506 shall not apply to inactive or closed landfills that last received waste before November 8, 1987 and that have no design capacity available for future waste deposition. (Adopted October 6, 1999)

8-34-120 Limited Exemption, Small Design Capacity Landfills: The requirements of Sections 8-34-305, 406, 407, 412, 413, 414, 505, and 506 shall not apply to solid waste disposal sites with a design capacity of less than 2,500,000 megagrams (2,755,000 tons) or less than 2,500,000 cubic meters (3,269,000 cubic yards). (Adopted October 6, 1999)

8-34-121 Limited Exemption, Low Emission Landfills: The requirements of Sections 8-34-301, 303, 304, and 305 shall not apply to solid waste disposal sites which meet all of the following requirements:

121.1 The solid waste disposal site has an in-place tonnage of less than 907,194 megagrams (1,000,000 tons) of decomposable solid waste, and

121.2 The solid waste disposal site has an NMOC emission rate of less than 50 megagrams per year (55 tons per year) as determined using the procedures in 40 CFR 60.754(a).

(Adopted October 6, 1999)

8-34-122 Limited Exemption, Permanent Collection and Control System Shutdown: The requirements of Sections 8-34-301, 303, 304, and 305 shall not apply to closed landfills which meet all of the following requirements:

122.1 The landfill last accepted waste at least 30 years ago,

122.2 The gas collection system and emission control system have been in operation for a minimum of fifteen years,

122.3 The landfill has an NMOC emission rate of less than 50 megagrams per year (55 tons per year) as determined using the procedures in 40 CFR 60.752(b)(2)(v)(C) and 60.754(b),

122.4 The operator can demonstrate to the satisfaction of the APCO that the landfill, without a gas collection system, would pass a risk screening analysis, as defined in Regulation 2-1-225, performed according to the current Air Toxic Risk Screening Procedure, and

122.5 The APCO has approved the Equipment Removal Report required pursuant to Section 8-34-410.

(Adopted October 6, 1999)

8-34-200 DEFINITIONS

Except as noted below, all terms in this Rule shall be defined as in 40 CFR 60.751.

8-34-201 Solid Waste Disposal Site: A Waste Management Facility, as defined by California Code of Regulations Title 27 §20164, or a Municipal Solid Waste Landfill as defined in 40 CFR 60.31(c) or 60.751. (Amended Sept. 17, 1986; Nov. 17, 1993; Oct. 6, 1999)

8-34-202 Solid Waste: All decomposable and non-decomposable solid, semisolid, and liquid wastes, including garbage, trash, refuse, paper, rubbish, ashes, industrial wastes, demolition and construction wastes, abandoned vehicles and parts thereof, discarded home and industrial appliances, manure, vegetable or animal solid and semisolid wastes, and other discarded solid and semisolid wastes. Solid waste also includes any material meeting the definition of Solid Waste in 40 CFR 60.751. (Adopted Sept. 17, 1986; Amended Jul. 17, 1996; Oct. 6, 1999)

8-34-203 Non-decomposable Solid Waste: Materials which do not degrade biologically to form landfill gas. Examples include, but are not limited to, earth, rock, concrete, asphalt paving fragments, clay products, inert tailings, inert plastics, plasterboard, vehicle tires, glass, inert slag, asbestos, and demolition materials containing minor amounts (less than 10 percent by volume) of wood and metals. Materials that do not meet this definition shall be considered decomposable solid waste. (Adopted Sept. 17, 1986; Amended Nov. 17, 1993; Jul. 17, 1996; Oct. 6, 1999)

8-34-204 Landfill Gas: Any untreated, raw gas derived through a natural process from the decomposition of organic waste deposited in a solid waste disposal site or from the evolution of volatile species in the waste. (Adopted September 17, 1986)

8-34-205 Active Landfill: A landfill that is accepting solid waste for disposal. (Adopted November 17, 1993; Amended October 6, 1999)

8-34-206 Background: The ambient concentration of total organic compounds, including all methane and non-methane organic compounds, determined at least 3 meters (10 feet) upwind from the valve or connector to be inspected and not influenced by any specific emission point as indicated by a hydrocarbon analyzer specified by Section 8-34-504. (Adopted November 17, 1993; Amended October 6, 1999)

8-34-207 Energy Recovery Device: Any combustion device which uses landfill gas to recover energy in the form of steam or electricity, including, but not limited to, gas turbines, internal combustion engines, boilers and boiler-to-steam turbine systems. (Adopted November 17, 1993)

- 8-34-208 Emission Control System:** Any system which disposes of collected landfill gas employing one or more of the following means: combustion, adsorption, gas treatment for subsequent sale, or sale for processing offsite, or an equivalent method that achieves the destruction/treatment efficiency specified in the applicable standards section. (Adopted November 17, 1993; Amended July 17, 1996)
- 8-34-209 Destruction Efficiency:** A measure of the ability of the control device to combust, transform, or otherwise prevent emissions of non-methane organic compounds in landfill gas to the atmosphere, expressed as a percentage. (Adopted November 17, 1993; Amended October 6, 1999)
- 8-34-210 Gas Collection System:** Any system which employs various gas collection wells and connected piping, and mechanical blowers, fans, pumps, or compressors to create a pressure gradient and extract landfill gas. (Adopted November 17, 1993; Amended July 17, 1996)
- 8-34-211 Inactive Landfill:** A landfill that is no longer accepting solid waste for disposal. (Adopted November 17, 1993; Amended October 6, 1999)
- 8-34-212 Landfill:** Any location within a solid waste disposal site used for the permanent disposal of waste where the organic portion of the waste is subject to natural processes of aerobic and anaerobic decomposition. (Adopted November 17, 1993)
- 8-34-213 Component Leak:** The concentration of total organic compounds (non-methane organic compounds and methane) measured above background, expressed as methane and measured 1 centimeter or less from the component leak source. (Adopted November 17, 1993; Amended October 6, 1999)
- 8-34-214 Minimization:** The shutting of valves, insertion of sewer plugs, or any other similar method that reduces emissions of raw landfill gas to the atmosphere. (Adopted November 17, 1993)
- 8-34-215 Non-repeatable, Momentary Readings:** Indications of the presence of non-methane organic compounds and methane which persist for less than five seconds and do not recur when the sampling probe of a portable gas detector is placed in the same location. (Adopted November 17, 1993; Amended October 6, 1999)
- 8-34-216 Operator:** The landowner of a solid waste disposal site and any other person who through a lease, franchise agreement or other arrangement with the landowner becomes responsible to the District for compliance with the provisions of this Rule. (Adopted November 17, 1993)
- 8-34-217 Non-Methane Organic Compound (NMOG):** Any compound which contains at least one atom of carbon except: methane, carbon monoxide, carbon dioxide, metallic carbides, carbonates, and carbonic acid. (Adopted November 17, 1993; Amended October 6, 1999)
- 8-34-218 Enforcement Agency:** The California Regional Water Quality Control Board (RWQCB), California Integrated Waste Management Board (CIWMB), or a designated local enforcement agency that has CIWMB delegated regulatory enforcement authority over solid waste disposal sites. (Adopted July 17, 1996)
- 8-34-219 Continuous Operation:** A landfill gas collection system and emission control system shall be considered to be operated continuously when all existing gas collection wells are operating under vacuum while maintaining landfill gas flow with the collected landfill gas being processed by an emission control system or energy recovery device 24 hours per day. (Adopted July 17, 1996)
- 8-34-220 Leak Repair:** Tightening, adjustment, the addition of sealing material or replacement of components that reduce leakage to the atmosphere below the limit specified in Section 8-34-301.2. (Adopted July 17, 1996; Amended October 6, 1999)
- 8-34-221 Well Raising:** A landfill activity where an existing gas collection well is temporarily disconnected from a vacuum source, and the non-perforated pipe attached to the well is extended vertically to allow the addition of a new layer of solid waste or the final cover; or is extended horizontally to allow the horizontal extension of an existing layer of solid waste or cover material. The extended pipe (well extension) is then re-connected in order to continue collecting gas from that well. (Adopted July 17, 1996; Amended October 6, 1999)
- 8-34-222 Fill:** Solid waste and surface cover material that is placed in a landfill. (Adopted July 17, 1996)
- 8-34-223 Closed Landfill:** A landfill which is no longer accepting solid waste for disposal and has documentation that closure was conducted in accordance with the applicable statutes, regulations, and local ordinances in effect at the time. (Adopted July 17, 1996)

8-34-224 Working Face: The open area where daily waste is deposited and compacted with landfill equipment. (Adopted July 17, 1996)

8-34-225 Landfill Surface: The area of the landfill under which decomposable solid waste has been placed, excluding the working face. Vaults containing equipment that is not part of the gas collection system and that are located at or near the surface of the landfill shall be considered part of the landfill surface. Such vaults may contain gas condensate or leachate management systems, ground water monitoring equipment, perimeter probes used exclusively for detecting subsurface landfill gas migration, electrical, water, sewer, or related equipment. Vaults containing gas collection system equipment, where the operator has demonstrated to the satisfaction of the APCO that the collection system equipment contained within the vault is properly operating and not leaking in excess of the 8-34-301.2 limit, shall be considered part of the landfill surface. (Adopted October 6, 1999)

8-34-226 Controlled Solid Waste Disposal Site: Any solid waste disposal site that is equipped with a landfill gas collection system. (Adopted October 6, 1999)

8-34-227 Surface Leak: The concentration of total organic compounds (non-methane organic compounds and methane) measured above background, expressed as methane. Until July 1, 2002, surface leak concentrations shall be measured at 7.5 centimeters (3 inches) above the landfill surface. Effective July 1, 2002, surface leak concentrations shall be measured at 5 centimeters (2 inches) above the landfill surface. (Adopted October 6, 1999)

8-34-228 Component: Any equipment that is part of the gas collection system or emission control system and that contains landfill gas including, but not limited to, wells, pipes, flanges, fittings, valves, flame arrestors, knock-outs, sampling ports, blowers, compressors, or connectors, but excluding landfill gas analyzers. Vaults containing gas collection system equipment, where the top of the vault is located at or near the surface of the landfill, are considered to be components, unless the operator can demonstrate to the satisfaction of the APCO that the collection system equipment contained within the vault is properly operating and not leaking in excess of the 8-34-301.2 limit. (Adopted October 6, 1999)

8-34-229 Administrator: For the purposes of this Rule, "Administrator" (as referred to in 40 CFR 60.750 et. seq.) means the Air Pollution Control Officer (APCO) of the Bay Area Air Quality Management District, except that the APCO shall not be empowered to approve alternatives to the test methods, standards, or work practices allowed by this Rule, except where such authority has been granted in 40 CFR 60.750 et. seq., such as in 40 CFR 60.752(b)(2)(i), 60.753(c) and (d). (Adopted October 6, 1999)

8-34-300 STANDARDS

8-34-301 Landfill Gas Collection and Emission Control System Requirements: Except as provided in Sections 8-34-110, 111, 113, 114, 116, 117, 121 and 122, an operator shall collect and process landfill gases through a gas collection system and emission control system installed in such a manner that the requirements of Sections 8-34-301.1 and 301.2 and either 301.3 or 301.4 are met:

301.1 The gas collection and emission control systems are operated continuously as defined in Section 8-34-219, unless the requirements of Section 8-34-404 are met; and

301.2 There are no component leaks that exceed 1000 ppm by volume measured as methane at any component that contains landfill gas, unless the leak has been discovered by the operator, recorded pursuant to Section 8-34-501, and repaired within 7 days; and

301.3 Until July 1, 2002, the collected gases are processed in a flare, of the enclosed ground type, which achieves an organic compound and methane destruction efficiency of at least 98 percent by weight. Effective July 1, 2002, the collected gases are processed in an enclosed ground type flare, which reduces the amount of NMOC in the collected gases by at least 98 percent by weight or emits less than 30 ppm by volume of NMOC at the outlet, dry basis, expressed as methane, corrected to 3% oxygen; or

301.4 Until July 1, 2002, the collected gases are processed in an energy recovery device or emission control system that reduces the amount of organic compounds in the collected gases by at least 97 percent by weight and reduces the amount of methane in the collected gases by at least 97 percent by weight. Effective July 1, 2002, the collected gases are processed in an emission control system device, or series of devices, other than a flare, which reduces the amount of NMOC in the collected gases by at least 98 percent by weight or emits less than 120 ppm by volume of NMOC at the outlet, dry basis, expressed as methane, corrected to 3% oxygen.

(Amended Sept. 17, 1986; Nov. 17, 1993; Jul. 17, 1996; Oct. 6, 1999)

8-34-302 Deleted November 17, 1993

8-34-303 Landfill Surface Requirements: Until July 1, 2002 and except as provided in Sections 8-34-110, 111, 113, 118, 121 and 122, at no point on the surface of the landfill shall there be a concentration of organic compounds and methane, measured 7.5 cm (3 in) above the surface of the landfill that exceeds 1000 ppm by volume, expressed as methane above background, other than non-repeatable, momentary readings. Effective July 1, 2002 and except as provided in Sections 8-34-110, 111, 113, 118, 121 and 122, at no point on the landfill surface shall there be a surface leak that exceeds 500 ppm by volume, expressed as methane above background, other than non-repeatable, momentary readings, unless the landfill surface leak has been discovered by the operator and all of the requirements of Section 8-34-415 are satisfied. (Adopted Nov. 17, 1993; Amended Jul. 17, 1996; Oct. 6, 1999)

8-34-304 Gas Collection System Installation Requirements: Gas collection wells or other approved gas collection system components shall be installed and operational in each area, cell, or group of cells in the landfill within 60 days of the sooner of the following dates:

304.1 The date in which the initial solid waste has been in place for a period of 2 years or more, for inactive or closed areas or cells or areas at final grade; or

304.2 The date in which the initial solid waste has been in place for a period of 5 years or more, for active areas or cells; or

304.3 The date in which a cumulative total of 1,000,000 tons of decomposable solid waste has been placed in an area or cell.

304.4 If Sections 304.1 through 304.3 do not apply, and an NMOC Emission Rate Report indicates that the NMOC emission rate calculated in accordance with 40 CFR 60.754(a) will exceed 50 megagrams per year (55 tons per year), then the initial gas collection and emission control system shall be installed and operational by July 1, 2002 or within 30 months of the date that NMOC emissions are first reported to exceed 50 megagrams per year, whichever is later. The operator may elect to recalculate the NMOC emission rate in accordance with 40 CFR 60.754(a)(3) or (4), provided that the operator complies with all provisions of 40 CFR 60.757(b), (c)(1), and (c)(2). (Adopted October 6, 1999)

8-34-305 Wellhead Requirements: Effective July 1, 2002 and except as provided in Sections 8-34-119 or 120, each wellhead in the gas collection system shall meet the requirements of Sections 8-34-305.1 and 305.2 and either 305.3 or 305.4, unless the operator has discovered the excess and has satisfied all of the requirements of Section 8-34-414; or the operator has received permit conditions containing alternative operating levels:

305.1 Each wellhead shall operate under a vacuum (negative pressure); and

305.2 The landfill gas temperature in each wellhead shall be less than 55 °C (131 °F); and either

305.3 The nitrogen concentration in each wellhead shall be less than 20% by volume; or

305.4 The oxygen concentration in each wellhead shall be less than 5% by volume.

(Adopted October 6, 1999)

8-34-400 ADMINISTRATIVE REQUIREMENTS

8-34-401 Deleted November 17, 1993

8-34-402 Small Solid Waste Disposal Site Exemption Petition: Any operator seeking to satisfy the conditions of Section 8-34-111 shall comply with the following requirements:

402.1 A written petition for exemption shall be submitted to the APCO, and

402.2 The petitioner shall submit copies of all permits, waste discharge requirements, site disposal records, and any other data necessary to determine whether an exemption should be granted.

402.3 If the landfill is an active landfill or an inactive landfill with design capacity available for future waste deposition, the exemption granted under Section 8-34-111 shall be for a period of 12 months. A renewal request shall be submitted annually to the APCO until the operator completes all closure requirements in accordance with California Code of Regulation Title 27, Sections 20950 through 21200.

(Adopted Sept. 17, 1986; Amended Nov. 17, 1993; Jul. 17, 1996; Oct. 6, 1999)

8-34-404 Less than Continuous Operation Petition: Any operator seeking to operate less than continuously shall submit a written petition to the APCO that contains the following:

404.1 The landfill gas flow rate and methane concentrations as measured for the entire system or as measured for individual gas collection wells or components for which less than continuous operation is being sought;

404.2 A map showing the locations of individual components; and

404.3 An operating, maintenance, and inspection schedule.

404.4 If the APCO grants written approval, such approval shall contain landfill gas flow rate, methane concentration, and operating conditions.

404.5 A less than continuous operation petition must be renewed every three years or whenever the information submitted pursuant to Section 8-34-404.1 changes.

A petition to operate the entire gas collection and emission control systems less than continuously will only be considered when a landfill is not generating enough landfill gas to operate the emission control system continuously.

(Adopted Nov. 17, 1993; Amended Jul. 17, 1996; Oct. 6, 1999)

8-34-405 Design Capacity Reports: Any operator of a solid waste disposal site shall submit an Initial Design Capacity Report and, if applicable, an Amended Design Capacity Report to the APCO in accordance with the provisions of 40 CFR 60.757(a). The Initial Design Capacity Report is due no later than December 31, 1999, unless the site meets the requirements of 40 CFR 60.750. Sites meeting the requirements of 40 CFR 60.750 must meet the federal compliance times for landfills subject to New Source Performance Standards (NSPS). (Adopted October 6, 1999)

8-34-406 Initial NMOC Emission Rate Report: Except as provided in Sections 8-34-119 or 120, any operator of a solid waste disposal site, which has a maximum design capacity of at least 2,500,000 megagrams (2,755,000 tons) and at least 2,500,000 cubic meters (3,269,000 cubic yards), shall submit an Initial NMOC Emission Rate Report to the APCO in accordance with the provisions of 40 CFR 60.757(b). The Initial NMOC Emission Rate Report is due no later than December 31, 1999, unless the site meets the requirements of 40 CFR 60.750. Sites meeting the requirements of 40 CFR 60.750 must meet the federal compliance times for landfills subject to New Source Performance Standards (NSPS). (Adopted October 6, 1999)

8-34-407 Periodic NMOC Emission Rate Reports: Except as provided in Sections 8-34-119 or 120, any operator of a solid waste disposal site, which has a maximum design capacity of at least 2,500,000 megagrams (2,755,000 tons) and at least 2,500,000 cubic meters (3,269,000 cubic yards), shall submit annual NMOC Emission Rate Reports to the APCO in accordance with the provisions of 40 CFR 60.757(b), unless one of the following criteria apply:

407.1 The solid waste disposal site is closed as defined in 8-34-223, or

407.2 The solid waste disposal site is equipped with a gas collection and emission control system operating in compliance with the provisions of this rule and with the provisions of 40 CFR 60.752(b)(2), 60.753, and 60.755, or

407.3 The NMOC emission rate is calculated to be less than 50 megagrams per year (55 tons per year) in each of the next five years and the operator submits a 5-year report in lieu of an annual report.

(Adopted October 6, 1999)

8-34-408 Collection and Control System Design Plan: Any operator of a solid waste disposal site, which meets one of the criteria listed in Sections 8-34-408.1 through 408.4 below, is required to submit to the APCO a Collection and Control System Design Plan, prepared by a professional engineer and meeting the requirements of this Rule and 40 CFR 60.752(b)(2)(i) and 60.759. The Collection and Control System Design Plan shall be submitted to the APCO as a permit application. The APCO shall review and either approve or deny the Collection and Control System Design Plan in accordance with the permit application procedures identified in Regulation 2, Rule 1. An amended Collection and Control System Design Plan shall be submitted within 90 days of any event that requires a change to this plan.

408.1 An Initial or Periodic NMOC Emission Rate Report indicates that the NMOC emission rate will exceed 50 megagrams per

year (55 tons per year). In this case, the Collection and Control System Design Plan shall be submitted within 1 year of the date of this Initial or Periodic NMOC Emission Rate Report, or

408.2 The solid waste disposal site is equipped with a collection and control system as of October 6, 1999. In this case, the initial Collection and Control System Design Plan is due no later than December 31, 2000, or

408.3 The operator is required to install and operate a gas collection system in the future, pursuant to Section 8-34-304.3. In this case, the Collection and Control System Design Plan is due at least 90 days before the date the gas collection system is required to be in operation, pursuant to Section 8-34-304. If the collection system is required to be in operation prior to March 31, 2001, the Collection and Control System Design Plan is due December 31, 2000, or

408.4 Sections 8-34-408.1 through 408.3 do not apply, but the operator elects to install a gas collection system. In this case, the Collection and Control System Design Plan is due at least 90 days before the operator's projected gas collection system installation date. If the operator plans to install the collection system prior to March 31, 2001, the Collection and Control System Design Plan is due December 31, 2000.

(Adopted October 6, 1999)

8-34-409 Closure Report: In accordance with the provisions of 40 CFR 60.757(d), any operator of a controlled solid waste disposal site, which has ceased accepting waste, shall submit a Closure Report to the APCO within 30 days of waste acceptance cessation. Landfills that are closed as of October 6, 1999 are not subject to this requirement. (Adopted October 6, 1999)

8-34-410 Equipment Removal Report: In accordance with the provisions of 40 CFR 60.757(e), any operator of a controlled solid waste disposal site seeking to satisfy the requirements of Section 8-34-122 shall submit an Equipment Removal Report to the APCO at least 30 days prior to capping any wells or shutting down any control equipment. The Equipment Removal Report shall be submitted to the APCO as a permit application. The Equipment Removal Report shall contain sufficient information to determine compliance with all provisions of Section 8-34-122. The APCO shall review and either approve or deny the Equipment Removal Report in accordance with the permit application procedures identified in Regulation 2, Rule 1. (Adopted October 6, 1999)

8-34-411 Annual Report: In accordance with the provisions of 40 CFR 60.757(f), any operator of a controlled solid waste disposal site shall submit to the APCO Annual Reports containing the information required by Sections 8-34-501, 503, 505, 506, 507, 508, and 509. The initial Annual Report shall include the initial Performance Test Report required by Section 8-34-413 and is due no later than 180 days from the initial start-up of the gas collection system, but not earlier than January 1, 2003. (Adopted October 6, 1999)

8-34-412 Compliance Demonstration Test: Except as provided in Sections 8-34-119 or 120, any operator of equipment that is subject to Sections 8-34-301.3 or 301.4, shall conduct a Compliance Demonstration Test in accordance with the requirements of 40 CFR 60.8 and 60.752(b)(2)(iii)(B) using the test methods identified in 40 CFR 60.754(d). The initial Compliance Demonstration Test shall be conducted within 120 days of initial start up of the gas collection system or by October 1, 2002, whichever is later. Any operator that is subject to this requirement and that is required to have a Major Facility Review Permit, shall conduct annual Compliance Demonstration Tests. (Adopted October 6, 1999)

8-34-413 Performance Test Report: Any operator required to meet Section 8-34-412 shall submit a Performance Test Report to the APCO in accordance with the provisions of 40 CFR 60.8. The initial Performance Test Report shall contain the information specified in 40 CFR 60.757(g) and shall be included in the initial Annual Report required by Section 8-34-411. Any operator required to perform annual Compliance Demonstration Tests shall submit the annual Performance Test Report along with the Annual Report required by Section 8-34-411. (Adopted October 6, 1999)

8-34-414 Repair Schedule for Wellhead Excesses: In accordance with the provisions of 40 CFR 60.755(a)(3 and 5), any operator subject to the requirements of Section 8-34-305 shall meet the following requirements, if any excess of a limit specified in Sections 8-34-305.1, 305.2, 305.3, or 305.4 is detected.

414.1 The operator shall record the date, the excess value and the well identification number.

414.2 The operator shall initiate action to correct the excess within 5 calendar days of discovering the problem.

414.3 If the excess cannot be corrected within 15 days of the date that the problem was first discovered, the gas collection system shall be expanded to correct the excess.

414.4 If a gas collection system expansion is required pursuant to Section 8-34-414.3, the expansion shall be completed and all new wells shall be operating within 120 days of the date that the problem was first discovered.

(Adopted October 6, 1999)

8-34-415 Repair Schedule for Landfill Surface Leak Excesses: In accordance with the provisions of 40 CFR 60.755(c)(4), any operator subject to the requirements of Section 8-34-303 shall meet the following requirements, if any excess of the limit specified in Section 8-34-303 is detected:

415.1 The operator shall mark the location and record the date, location and value of each monitored excess.

415.2 The operator shall initiate action, such as cover maintenance or well vacuum adjustments, to correct the excess within 5 calendar days of discovering the excess.

415.3 The location of the excess shall be re-monitored within 10 calendar days of the date that the excess was first discovered.

415.4 If the re-monitoring pursuant to Section 8-34-415.3 indicates no excess of the Section 8-34-303 limit, the location shall be re-monitored within 1 month of the date that the excess was first discovered.

415.5 If the re-monitoring pursuant to Section 8-34-415.4 indicates no excess of the Section 8-34-303 limit, no further monitoring is required until the next regularly scheduled quarterly monitoring date.

415.6 If monitoring pursuant to Sections 8-34-415.3 or 415.4 indicates a second excess of the Section 8-34-303 limit, additional corrective action shall be initiated within 5 calendar days of detecting the second excess.

415.7 Any location exhibiting a second excess within a quarterly period shall be re-monitored within 10 calendar days of detecting the second excess.

415.8 If the re-monitoring pursuant to Section 8-34-415.7 indicates no excess of the Section 8-34-303 limit, the location shall be re-monitored within 1 month of the date that the second excess was discovered.

415.9 If the re-monitoring pursuant to Section 8-34-415.8 indicates no excess of the Section 8-34-303 limit, no further monitoring is required until the next regularly scheduled quarterly monitoring date.

415.10 If monitoring pursuant to Section 8-34-415.7 or 415.8 indicates a third excess of the Section 8-34-303 limit within a quarterly period, a gas collection system expansion shall be required.

415.11 If a gas collection system expansion is required pursuant to Section 8-34-415.10, the expansion shall be completed and all new wells shall be operating within 120 days of the date that the excess was first discovered.

(Adopted October 6, 1999)

8-34-416 Cover Repairs: Any operator subject to Section 8-34-510 shall repair the landfill surface cover as necessary to maintain compliance with the provisions of Section 8-34-303. (Adopted October 6, 1999)

8-34-500 MONITORING AND RECORDS

8-34-501 Operating Records: Any operator subject to this Rule shall record the following:

501.1 All collection system downtime, including individual well shutdown times and the reason for the shutdown;

501.2 All emission control system downtime and the reason for the shutdown;

501.3 Continuous temperature for all operating flares and any enclosed combustors subject to Section 8-34-507;

501.4 Testing performed to satisfy any of the requirements of this Rule;

501.5 Monthly landfill gas flow rates and well concentration readings for facilities subject to Section 8-34-404.

501.6 For operations subject to Sections 8-34-503 and 506, records of all monitoring dates, leaks in excess of the limits in Section 8-34-301.2 or Section 8-34-303 that are discovered by the operator, including the location of the leak, leak concentration in ppm by volume, date of discovery, the action taken to repair the leak, date of repair, date of any required re-monitoring, and the re-monitored concentration in ppm by volume.

501.7 Annual waste acceptance rate and the current amount of waste in-place.

501.8 Records of the nature, location, amount, and date of deposition of non-degradable wastes, for any landfill areas excluded from the collection system requirement as documented in the Collection and Control System Design Plan.

501.9 For operations subject to Section 8-34-505, records of all monitoring dates and any excesses of the limits stated in Section 8-34-305 that are discovered by the operator, including well identification number, the measured excess, the action taken to repair the excess, and the date of repair.

501.10 Continuous gas flow rate records for any site subject to Section 8-34-508.

501.11 For operations subject to Section 8-34-509, records of key emission control system operating parameters.

501.12 The records required above shall be made available and retained for a period of five years.

(Adopted Nov. 17, 1993; Amended Jul. 17, 1996; Oct. 6, 1999)

8-34-502 Deleted October 6, 1999

8-34-503 Landfill Gas Collection and Emission Control System Leak Testing: For facilities subject to Section 8-34-301.2, testing shall be performed quarterly in accordance with Section 8-34-602. (Adopted Nov. 17, 1993; Amended Jul. 17, 1996; Oct. 6, 1999)

8-34-504 Portable Hydrocarbon Detector: Any instrument used for the measurement of total organic compounds, including all methane and non-methane organic compounds, shall be a gas detector that meets the specifications and performance criteria of and has been calibrated in accordance with EPA Reference Method 21 (40 CFR 60, Appendix A). (Adopted Nov. 17, 1993; Amended Oct. 6, 1999)

8-34-505 Well Head Monitoring: In accordance with the provisions of 40 CFR 60.756(a), any operator of a controlled landfill that is subject to the requirements of Section 8-34-305, shall monitor each individual wellhead on a monthly basis for the parameters listed in Sections 8-34-505.1 and 505.2 and either 505.3 or 505.4. Well head monitoring shall begin no later than August 1, 2002.

505.1 Gauge pressure, and

505.2 Landfill gas temperature, and

505.3 Landfill gas nitrogen concentration, or

505.4 Landfill gas oxygen concentration.

(Adopted October 6, 1999)

8-34-506 Landfill Surface Monitoring: In accordance with the provisions of 40 CFR 60.755(c)(1-3) and 60.756(f), any operator subject to the requirements of Section 8-34-303, shall monitor the landfill surface for total NMOC and methane concentration on a quarterly basis using the equipment and procedures specified by Section 8-34-607, unless the operator meets the requirements of Sections 8-34-119 or 120 or 506.1 through 506.3. Landfill surface monitoring shall begin no later than October 1, 2002.

506.1 The landfill is closed as defined in Section 8-34-223, and

506.2 The operator has detected no excesses of the Section 8-34-303 limit in three consecutive quarters of landfill surface monitoring, and

506.3 The operator shall monitor the landfill surface for total NMOC and methane concentration on an annual basis. The operator shall return to a quarterly monitoring schedule if any excess of the Section 8-34-303 limit is detected.

(Adopted October 6, 1999)

8-34-507 Continuous Temperature Monitor and Recorder: Any operator using a flare or other enclosed combustor to meet the requirements of Section 8-34-301, shall measure the temperature in the combustion zone of the device, using a continuous temperature monitor and recorder meeting the requirements of 40 CFR 60.756(b)(1). (Adopted October 6, 1999)

8-34-508 Gas Flow Meter: In accordance with the provisions of 40 CFR 60.756(b)(2), any operator subject to the requirements of Section 8-34-301 shall install, calibrate, and maintain a gas flow measuring device that records the flow rate of landfill gas to the emission control system at least every 15 minutes. The gas flow meter shall be installed and operating no later than July 1, 2002. (Adopted October 6, 1999)

8-34-509 Key Emission Control System Operating Parameter(s): Any operator using an emission control system other than a flare or other enclosed combustor shall determine the key emission control system operating parameter(s) for the device using District approved methods and shall monitor the parameter(s) on a scheduled approved by the APCO. (Adopted October 6, 1999)

8-34-510 Cover Integrity Monitoring: In accordance with the provisions of 40 CFR 60.755(c)(5), any operator of a controlled solid waste disposal site shall monitor the landfill surface for cover integrity on a monthly basis using procedures specified in the Collection and Control System Design Plan for the site. Cover integrity monitoring shall begin no later than August 1, 2002. (Adopted October 6, 1999)

8-34-600 MANUAL OF PROCEDURES

8-34-601 Determination of Emissions: Emissions of non-methane organic compounds as specified in Section 8-34-301 shall be measured as prescribed by any of the following methods: BAAQMD Manual of Procedures, Volume IV, ST-7 and ST-14 or EPA Reference Methods 18, 25, 25A, or 25C (40 CFR 60, Appendix A). If Method 18 is used, the minimum list of compounds to be tested shall be those published in the most recent Compilation of Air Pollution Emission Factors (AP-42). A source shall be considered in violation if the NMOC emissions measured by any of the referenced test methods exceed the standards of this rule. For the purposes of determining compliance using ST-7, NMOC is the same as organic compounds. (Amended Nov. 17, 1993; Jun. 15, 1994; Oct. 6, 1999)

8-34-602 Collection and Control System Leak Inspection Procedures: For the purposes of Section 8-34-301.2, leaks shall be measured using a portable gas detector as prescribed in EPA Reference Method 21 (40 CFR 60, Appendix A). (Adopted Nov. 17, 1993; Amended Jul. 17, 1996; Oct. 6, 1999)

8-34-603 Landfill Gas Sampling Procedure: For the purposes of Sections 8-34-121.2, 406, 407 or 408, landfill gas samples, which are necessary for determining landfill gas production rate or a site-specific k value, shall be taken either from existing wells or from temporary wells that meet the requirements specified in EPA Reference Method 2E (40 CFR 60, Appendix A). Landfill gas sampling for other purposes shall be performed according to BAAQMD Manual of Procedures, Volume IV, Part 1 or ST-7, or EPA Reference Methods 18, 25, 25A, or 25C (40 CFR 60, Appendix A). If Method 18 is used, the minimum list of compounds to be tested shall be those published in the most recent Compilation of Air Pollution Emission Factors (AP-42). (Adopted Nov. 17, 1993; Amended Jul. 17, 1996; Oct. 6, 1999)

8-34-604 Determination of Concentration: For the purposes of Sections 8-34-121.2, 305, 404, 406, 407, or 408, the percentage concentration of carbon dioxide, methane, nitrogen, or oxygen in the landfill gas shall be determined as prescribed in EPA Reference Method 3C (40 CFR 60, Appendix A). (Adopted Nov. 17, 1993; Amended Jul. 17, 1996; Oct. 6, 1999)

8-34-605 Determination of NMOC Emission Rate: For the purposes of Sections 8-34-121.2, 406, or 407, the non-methane organic compound (NMOC) emission rate shall be determined as prescribed in 40 CFR 60.754(a). For the purposes of Section 8-34-122, the NMOC emission rate shall be determined as prescribed in 40 CFR 60.754(b). For the purposes of Section 8-34-408, the NMOC emission rate for non-productive areas shall be determined as prescribed in 40 CFR 60.759(a)(3)(ii). (Adopted October 6, 1999)

8-34-606 Determination of Maximum Expected Gas Generation Rate: For the purposes of Section 8-34-408, the maximum expected gas generation rate shall be determined as prescribed in 40 CFR 60.755(a)(1). (Adopted October 6, 1999)

8-34-607 Landfill Surface Inspection Procedures: For the purposes of Section 8-34-303, the surface concentration of non-methane organic compounds and methane shall be measured using a portable hydrocarbon detector meeting the requirements of 40 CFR 60.755(d) and the applicable requirements of EPA Reference Method 21 (40 CFR 60, Appendix A). The probe shall be placed 5 centimeters (2 inches) above the ground. Monitoring shall be performed under the meteorological conditions specified in BAAQMD Manual of Procedures. The background concentration shall be determined as specified in BAAQMD Manual of Procedures. In accordance with the provisions of 40 CFR 60.753(d) and 60.755(c)(1-3), the entire perimeter of the landfill surface shall be inspected. The interior landfill shall be inspected along a pattern that traverses the landfill in 30 meter intervals or other APCO approved site-specific spacing. Landfill surface areas with distressed vegetation, cracks or seeps shall also be inspected. Steep slopes and other dangerous areas may be excluded from landfill surface inspection. (Adopted October 6, 1999)

8-34-608 Determination of Gauge Pressure: For the purposes of Section 8-34-305.1 and 505.1, gauge pressure shall be determined using a hand-held manometer, magnahelic gauge, or other APCO approved pressure measuring device. The device shall be

calibrated and operated in accordance with manufacturer's specifications. (Adopted October 6, 1999)

REGULATION 8

ORGANIC COMPOUNDS

RULE 35

COATING, INK AND ADHESIVE MANUFACTURING

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REGULATION 8

ORGANIC COMPOUNDS

RULE 35

COATING, INK AND ADHESIVE MANUFACTURING

(Adopted May 2, 1984)

8-35-100 General

8-35-101 Description: The purpose of this rule is to limit emissions of Organic Compounds from the manufacture of coatings, inks, and adhesives. (Amended March 18, 1992)

8-35-110 Exemptions, Small Manufacturers: Until January 1, 1993, the requirements of Sections 8-35-301 through 320 shall not apply to any coating and/or ink manufacturer, which produces less than 1.89 cubic meters (500 gals.) of coatings and/or ink in any one day. (Amended March 18, 1992)

8-35-111 Exemption, Waterbased Coatings and Paste Inks: Until January 1, 1993, the provisions of Section 8-35-301 of this rule shall not apply to any equipment while it is being used in the production of waterbased coatings and paste inks. (Amended March 18, 1992)

8-35-112 Exemption, Vats Less Than 45 Liters: Until January 1, 1993, the provisions of Section 8-35-301 and 303 of this rule shall not apply to any vat with a volume of 45 liters (12 gallons) or less. (Amended March 18, 1992)

8-35-113 Exemption, Low VOC Coatings, Inks and Adhesives: The provisions of Section 8-35-301 of this rule shall not apply to any equipment while it is being used in the production of low VOC coatings, inks or adhesives. (Adopted March 18, 1992)

8-35-114 Exemption, Specific Operations: The provisions of this rule shall not apply to the manufacture of coatings, inks or adhesives, which may be subject to other rules of Regulation 8. (Adopted March 18, 1992)

114.1 Flexible and Rigid Disc Manufacturing (Rule 38).

114.2 Paper, Fabric and Film Coating (Rule 12). (Adopted March 18, 1992)

8-35-115 Exemption, Adhesive Manufacturers: Until January 1, 1993, the provisions of this rule shall not apply to the manufacture of adhesives. (Adopted March 18, 1992)

8-35-116 Limited Exemption, Recordkeeping: The provisions of Section 8-35-501 shall not apply to solvent, which is used to clean or flush a mill or vat, during the manufacture of a coating, ink, or adhesive and is subsequently incorporated into the same batch. (Adopted March 18, 1992)

8-35-200 DEFINITIONS:

8-35-201 Coatings Manufacturer: Any manufacturing facility that mixes, blends, or compounds paints, varnishes, lacquers, enamels, shellacs, or sealers from raw materials. (Amended March 18, 1992)

8-35-202 Ink Manufacturer: Any manufacturing facility that mixes, blends, or compounds printing inks from raw materials. (Amended March 18, 1992)

8-35-203 Volatile Organic Compounds (VOC): Any organic compound, (excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides of carbonates and ammonium carbonate) which would be emitted during the manufacture of coatings, inks or adhesives. (Amended March 18, 1992)

8-35-204 Waterbased Coating: A paint, varnish, lacquer, enamel, shellac, sealer or ink that contains 10 percent or more, by weight, of water, as determined by analytical procedures as prescribed in the Manual of Procedures, Volume III, Method 21. (Amended March 18, 1992)

8-35-205 Paste Ink: An ink that contains, primarily, Magie Oil or glycol or equivalent solvent.

8-35-206 High Speed Dispersion Mill: A mixer with one or more blades that rotate at high speed in order to disperse coating solids.

8-35-207 Grinding Mill: A mill with cylindrical chambers containing grinding media such as balls, stones, pebbles, or sand that grind and disperse coating solids. (Amended March 18, 1992)

8-35-208 Roller Mill: A mill with horizontal rollers that grind and disperse coating solids. (Amended March 18, 1992)

8-35-209 Adhesive Manufacturer: Any manufacturing facility that mixes, blends or compounds adhesives from raw materials. (Adopted March 18, 1992)

8-35-210 Low VOC Coating, Ink and Adhesive: Any coating, ink or adhesive that contains less than 1% VOC (wt). (Adopted March 18, 1992)

8-35-211 Tote Tank: Any transportable container used to convey coatings, inks, adhesives or any other related materials with a capacity equal to or greater than 209 liters (55 gallons). (Adopted March 18, 1992)

8-35-212 Solvent: Organic compounds which are used as diluents, thinners, dissolvers, viscosity reducers, cleaning agents or for other similar uses. (Adopted March 18, 1992)

8-35-213 Approved Emission Control System: A system for reducing emissions of VOC to the atmosphere, consisting of a control device and a collection system, which is approved in writing by the APCO and achieves the overall abatement efficiency specified in the applicable standards section at all times during normal operation of the equipment being controlled. (Adopted March 18, 1992)

8-35-214 Leak Free: A liquid leak of no greater than three drops per minute. (Adopted March 18, 1992)

8-35-215 Wipe Cleaning: The method of cleaning which utilizes a material such as a rag wetted with a solvent, prior to a physical rubbing process to remove contaminants from surfaces. (Adopted March 18, 1992)

8-35-216 Low Volatility Compounds: For the purposes of this rule, solvents with an initial boiling point greater than 120oC (248oF), and where the initial boiling point exceeds the maximum operating temperature by at least 100oC (180oF). (Adopted March 18, 1992)

8-35-217 Nonporous Cover Material: Cover material, including wood, that does not allow liquid to penetrate. (Adopted March 18, 1992)

8-35-218 Fresh Solvent: For the purpose of this rule, virgin solvent that has never been reused or recycled. (Adopted March 18, 1992)

8-35-219 Key System Operating Parameter: An emission control system operating parameter, such as temperature, flow rate or pressure, that ensures operation of the abatement equipment within manufacturer specifications and compliance with the standards in Section 8-35-301.6, 303.3, and 305. (Adopted June 15, 1994)

8-35-300 STANDARDS

8-35-301 Portable and Stationary Mixing Operating Requirements: Except as provided in Subsection 8-35-301.6, a person shall not manufacture coatings, inks, or adhesives unless all portable and stationary mixing vats are kept covered, except to add ingredients or to take samples, with lids which satisfy the following conditions:

301.1 Lids are maintained in good condition, such that when in place, they maintain contact with the rim for at least 90 percent of the circumference of the rim of the vat.

301.2 Lids may have a slit to allow clearance for insertion of a mixer shaft. The slit shall be covered after insertion of the mixer, except to allow safe clearance for the mixer shaft.

301.3 There shall be no holes, tears, or openings in the lid that would allow for the emission of organic vapors, except under the provision of Subsections 8-35-301.2 and 8-35-301.4.

301.4 The difference between the diameter of the mixer shaft and the diameter of the opening in the lid for the mixer shaft, shall be no greater than 5.1 cm (2 inches).

301.5 Polyethylene or other non-permanent covers may be used provided that the cover material is nonporous, as defined in Section 8-35-217, and the requirements of Subsections 8-35-301.1 through 8-35-301.4 are met.

301.6 The requirements of Subsection 8-35-301.1 through 8-35-301.4 shall not apply, if the emissions from portable and stationary mixing vats are vented to an approved emission control system that has an overall abatement efficiency of 80% or more on a mass basis. Where such reduction is achieved by incineration, at least 90% of the organic carbon shall be oxidized to carbon dioxide. (Adopted May 2, 1984; Amended March 18, 1992)

8-35-302 Deleted March 18, 1992

8-35-303 Equipment Cleaning: A person shall not manufacture a coating, ink, or adhesive unless portable or stationary mixing vats, high dispersion mills, grinding mills, tote tanks and roller mills are cleaned, except as provided in Section 8-35-320, by one or more of the following methods:

303.1 Use a cleaning material that either contains less than 200 grams VOC (wt) per liter or is a low volatility compound, as defined in Section 8-35-216. The low volatility cleaning material shall be collected and stored in closed containers.

303.2 Operate a closed cleaning system that has been approved by the APCO in writing and that meets the following conditions:

2.1 The system, including equipment being cleaned, is maintained leak free,

2.2 Organic solvent must be drained from the cleaned equipment before the system is opened to the atmosphere, and

2.3 Solvent, including waste solvent, shall not be stored or disposed of in such a manner that will cause or allow evaporation into the atmosphere.

303.3 Collect and vent the emissions from equipment cleaning to an approved emission control system that has an overall abatement efficiency of 80% or more on a mass basis. Where such reduction is achieved by incineration, at least 90% of the organic carbon shall be oxidized to carbon dioxide.

303.4 Use organic solvents other than those allowed in Section 8-35-303.1 provided the following conditions are met:

4.1 No more than 228 liters (60 gallons) of fresh solvent shall be used per month. Organic solvent that is reused or recycled (either onsite or offsite), for further use in equipment cleaning or the manufacture of coating, ink, or adhesive shall not be included in this limit.

4.2 Organic solvent, including cleanup solvent is collected and stored in closed containers.

4.3 Cleanup solvent records are maintained as required per Section 8-35-501.(Adopted May 2, 1984;Amended March 18, 1992)

8-35-304 Grinding Mills: Grinding mills installed after November 1, 1985 shall have fully enclosed screens.

8-35-305 Stationary Vats: A person shall not operate a stationary vat, which emits more than 6.8 kg (15 lbs.) per day of organic compounds unless all emissions from the vat have been vented to an approved emission control system that has an overall abatement efficiency of 80% or more on a mass basis. Where such reduction is achieved by incineration, at least 90% of the organic carbon shall be oxidized to carbon dioxide. (Amended March 18, 1992)

8-35-306 Deleted June 15, 1994.

8-35-320 Wipe Cleaning and Cleanup Solvent: The requirements of this Section shall apply to any person using solvent for wipe cleaning:

320.1 A person shall not use open containers for the storage or disposal of cloth or paper impregnated with organic compounds that is used for cleanup, or coating, ink, or adhesive removal.

320.2 A person shall not store spent or fresh organic compounds to be used for cleanup or coating, ink, or adhesive removal in open containers.(Adopted March 18, 1992)

8-35-400 ADMINISTRATIVE REQUIREMENTS

8-35-401 Deleted March 18,1992

8-35-402 Deleted March 18, 1992

8-35-403 Loss of Exemption: Any person, who becomes subject to the requirements of Sections 8-35-301 and 303 through loss of exemption in Section 8-35-110 and 111, shall comply with the following increments of progress:

403.1 By July 1, 1992, submit to the APCO an application for an Authority to Construct and/or a compliance plan as necessary describing the method(s) to be used to comply with the requirements of this Rule.

403.2 By January 1, 1993, be in full compliance with all applicable requirements. (Adopted March 18, 1992)

8-35-404 Deleted June 15, 1994.

8-35-500 MONITORING AND RECORDS

8-35-501 Cleaning Solvent Records: Any person subject to Sections 8-35-303 and 320 shall:

501.1 Record on a monthly basis facilitywide cleaning solvent usage for each solvent or solvent blend.

501.2 Indicate the following for each solvent or solvent blend used.

2.1 Total volume of fresh cleaning solvent used for equipment cleaning.

2.2 Total volume of cleaning solvent recovered for either off-site or on-site recycling.

2.3 Initial boiling point.

501.3 Records shall be maintained and available for inspection by the APCO, and retained for two years. (Adopted May 2, 1984; Amended March 18, 1992; June 15, 1994)

8-35-502 Burden of Proof: Persons seeking to demonstrate compliance with Sections 8-35-301.6, 303.3, and 305 must maintain production records, adequate test data, and/or calculations that would allow the APCO to verify compliance on a daily basis. (Adopted March 18, 1992)

8-35-503 Approved Emission Control System, Recordkeeping Requirements: Any person subject to Sections 8-35-301.6, 303.3, and 305 shall:

503.1 Record key system operating parameters on a daily basis.

503.2 Retain and have such records available for inspection by the APCO for the previous 24-month period. (Adopted June 15, 1994)

8-35-600 MANUAL OF PROCEDURES

8-35-601 Analysis of Samples: Samples of organic compounds shall be analyzed as prescribed in the Manual of Procedures, by the following applicable methods:

601.1 Volume III, Method 31 for the determination of volatile organic content as specified in Section 8-35-210 and 8-35-303.1.

601.2 ASTM D-1078-78 for the determination of initial boiling point as specified in Section 8-35-216 and Section 8-35-303.4. (Adopted May 2, 1984; Amended March 18, 1992)

8-35-602 Determination of Applicability: The applicability of Section 8-35-305 shall be calculated or determined as described in EPA publication AP-42, Sections 5-10.1 and 5-14.1. (Adopted March 18, 1992)

8-35-603 Determination of Emissions: Emissions of organic compounds, as specified in Sections 8-35-301.6, 303.3, and 305 shall be measured as prescribed by any of the following methods: 1) BAAQMD Manual of Procedures, Volume IV, ST-7, 2) EPA Method 25 or 25A. A source shall be considered in violation if the VOC emissions measured by any of the methods exceed the standards of the rule. (Adopted March 18, 1992; Amended June 15, 1994)

8-35-604 Determination of Collection Efficiency: The efficiency of the collection system, as specified in Sections 8-35-213 and 8-35-301.6, 303.3, and 305 shall be determined by the EPA test method cited in 55 FR 26865, 29 June 1990. (Adopted March 18, 1992)

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

REGULATION 8

ORGANIC COMPOUNDS

RULE 36

RESIN MANUFACTURING

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REGULATION 8

ORGANIC COMPOUNDS

RULE 36

RESIN MANUFACTURING

(Adopted June 6, 1984)

8-36-100 GENERAL

8-36-101 Description: The purpose of this rule is to limit the emissions of precursor organic compounds from resin manufacturing operations.

8-36-200 DEFINITIONS

8-36-201 Blending Tank: A vessel in which resin, solvent, or other materials are added, normally to produce a final product blend.

8-36-202 Completed Resin: Resin solids, solvents and additives as delivered for sale or use.

8-36-203 Organic Compound: Any compound of carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate.

8-36-204 Organic Compound, Non-precursor: Methylene chloride, 1,1,1 trichloroethane, 1,1,2 trichlorotrifluoroethane (CFC-113), trichlorofluoromethane (CFC-11), dichlorodifluoromethane (CFC-12), dichlorotetrafluoroethane (CFC-114), chloropentafluoroethane (CFC-115), chlorodifluoromethane (CFC-22), and trifluoromethane (FC-23)

8-36-205 Organic Compound, Precursor: Any organic compound as defined in Section 8-36-203 excepting the non-precursor compounds defined in Section 8-36-204.

8-36-206 Resin: A solid or semi-solid, water insoluble, organic material with little or no tendency to crystallize. Resins may be used as the basic component of plastics and as components of surface coating formulations.

8-36-207 Resin Reactor: Equipment used to produce an organic resin by reacting organic or other materials. This may include a reaction vessel, a stripping column, condensers, and a decant vessel.

8-36-208 Thinning Tank: A vessel which receives resin and/or other reacting products from a resin reactor and to which solvents may be added.

8-36-300 STANDARDS

8-36-301 Resin Reactors, Thinning Tanks, and Blending Tanks: A person shall not operate a resin reactor unless one of the following standards is met:

301.1 Total emissions of precursor organic compounds to the atmosphere from the resin reactor, thinning tank and blending tank are abated by 95 percent or more.

301.2 Total emissions of precursor organic compounds to the atmosphere from all resin reactors, thinning tanks and blending tanks at the facility do not exceed 4.5 kg (10 lbs) per day.

8-36-400 ADMINISTRATIVE REQUIREMENTS

8-36-401 Compliance Schedule: Any person who is subject to the requirements of this rule shall comply with the following increments of progress:

401.1 By November 1, 1984: Submit to the APCO a plan describing the method(s) to be used to comply with the applicable requirements.

401.2 By January 1, 1985: Submit a completed application for any Authority to Construct necessary to comply with the applicable requirements.

401.3 By January 1, 1986: Be in full compliance with all applicable requirements.

8-36-600 MANUAL OF PROCEDURES

8-36-601 Determination of Emissions: Emissions of organic compounds as specified in Section 8-36-301 shall be measured as prescribed in the Manual of Procedures, Volume IV, ST-7.

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

REGULATION 8

ORGANIC COMPOUNDS

RULE 37

NATURAL GAS AND CRUDE OIL PRODUCTION FACILITIES

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ORGANIC COMPOUNDS

RULE 37

NATURAL GAS AND CRUDE OIL PRODUCTION FACILITIES

(Adopted March 20, 1985)

8-37-100 GENERAL

8-37-101 Description: The purpose of this Rule is to limit the emissions of organic compounds from natural gas and crude oil production facilities. (Amended October 17, 1990)

8-37-110 Deleted October 17, 1990

8-37-111 Exemption, Distribution, Storage and Transportation Facilities: The provisions of this Rule shall not apply to natural gas distribution, transportation and storage facilities, including underground storage and associated processing facilities, provided the provisions of Section 8-37-403 are met. (Amended October 17, 1990)

8-37-112 Exemption, Methane: The provisions of this Rule shall not apply to natural gas streams which contain more than or equal to 90 percent methane by volume, provided the provisions of Section 8-37-404 are met. (Amended October 17, 1990)

8-37-113 Exemption, Water Streams: The provisions of this Rule shall not apply to liquid streams with a water content in excess of 90 percent by volume, provided the provisions of Section 8-37-405 are met. (Amended October 17, 1990)

8-37-200 DEFINITIONS

8-37-201 Background: The ambient concentration of organic compounds determined at least 3 meters (10 feet) upwind from the valve, flange, pump, compressor or component to be inspected and not influenced by any specific emission point. (Amended October 17, 1990)

8-37-202 Essential Valve or Flange: A valve or flange which cannot be taken out of service without shutting down the process unit which it serves.

8-37-203 Flange: A projecting rim on a pipe or piping component used to attach it to another segment.

8-37-204 Deleted October 17, 1990

8-37-205 Deleted October 17, 1990

8-37-206 Valve: Any device that regulates the flow of fluids in a piping system by means of an external actuator acting to permit or block passage of liquids or gases.

8-37-207 Leak Minimization: The tightening, adjustment, or addition of packing or gasket material or the replacement of the valve, flange, pump, compressor or other component for the purpose of stopping or reducing leakage to the atmosphere, using best modern practices. (Amended October 17, 1990)

8-37-208 Leak Repair: The tightening, adjustment, or addition of packing or gasket material to a valve, flange, pump, compressor or other component or the replacement of the valve, flange, pump, compressor or other component, which reduces the leakage to the atmosphere below the limit of Section 8-37-301. (Amended October 17, 1990)

8-37-209 Choke: The regulating valve that controls the production rate of oil or gas.

8-37-210 Stuffing Box: The area or packing gland through which the pump polish rod passes and which is surrounded with packing material or "stuffing," to prevent leaks.

8-37-211 Essential Pump or Compressor: A pump or compressor which cannot be taken out of service without stopping production of production well.

8-37-212 Lease Area: The area where the well and associated production equipment is located.

8-37-213 Natural Gas Production Facility: Any facility engaged in the production of natural gas. For the purpose of this Rule, this includes all valves, flanges, chokes, pumps, compressors and other components, from the well head to the storage tank, including the oil and gas separator. Transport loading arms are included. (Amended October 17, 1990)

8-37-214 Crude Oil Production Facility: Any facility engaged in the production of crude oil. For the purpose of this Rule, this includes all valves, flanges, chokes, stuffing boxes, pumps and other components from the well head to the storage tank, including the oil and gas separator. Transport loading arms are included where used for custody transfer. (Amended October 17, 1990)

8-37-215 Liquid Pool: Any organic liquid that results in a pool of crude oil or condensate on the ground with a volume of at least 250 ml or covering an area of three inches in diameter and over one inch deep. (Amended October 17, 1990)

8-37-216 Custody Transfer: The transfer of produced petroleum and/or condensate, after processing and/or treating in the producing operations, from storage tanks or automatic transfer facilities to pipelines or any other forms of transportation.

8-37-217 Relief Valve: A valve set to open when a predesignated pressure is reached.

8-37-218 Component: Pressure relief valves, threaded connections, hatches, sight glasses and fittings.

8-37-219 Organic Compound: Any compound of carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate. (Amended October 17, 1990)

8-37-300 STANDARDS

8-37-301 Valves, Flanges, Chokes and Components: A person shall not use any valve, flange, choke or component handling organic compounds in a natural gas or crude oil production facility if the concentration of organic compounds, measured 1 cm from any leak in such equipment exceeds 10,000 ppm (expressed as methane) above background, unless the following requirements are satisfied:

301.1 If the equipment is not essential, the leak shall be repaired within 24 hours.

301.2 If the equipment is essential, the leak shall be minimized within 24 hours.

301.3 If the equipment leak which has been minimized as required by subsection 301.2 still exceeds the limitations of Section 8-37-301, that equipment shall be repaired at the next scheduled maintenance of the well head. Any such equipment shall not be operated longer than three months before repairs are conducted. (Amended October 17, 1990)

301.4 Deleted October 17, 1990

8-37-302 Liquid Pools: There shall be no open liquid pools of crude oil or condensate in the lease area. (Amended October 17, 1990)

8-37-303 Open Vessels: No open or uncovered vessels of crude material larger than 250 ml shall be kept in the lease area. The well cellar shall be kept covered. (Amended October 17, 1990)

8-37-304 Spills: All spills of crude oil and condensate which causes a liquid pool shall be cleaned up by removal of the liquid within 24 hours of the spill detection.

8-37-305 Pumps and Compressors: A person shall not use any pump or compressor handling organic compounds in natural gas or crude oil production operation if the concentration of organic compounds exceeds 10,000 ppm (as methane), measured at a distance of 1 cm from the detected source, unless the following requirements are satisfied:

305.1 If the pump or compressor is not essential, that pump or compressor shall be removed from service for leak repairs within 24 hours of the discovery of the leak.

305.2 If the spare for the pump or compressor also exceeds the limitation of this section, leak repairs to either pump or compressor shall be completed within 30 days of discovery of its leak and the other pump or compressor may be operated until repairs are completed.

305.3 Deleted October 17, 1990

305.4 Deleted October 17, 1990

305.5 If the pump or compressor has a packed seal and is essential, the leak shall be minimized within 24 hours of its discovery.

305.6 If the pump or compressor is essential, and has been leak minimized as required by subsection 8-37-305.5 and still exceeds the limitation of this section, that pump or compressor shall be repaired at the next scheduled maintenance of the well head or within three months. (Amended October 17, 1990)

305.7 All pumps and compressors shall be visually inspected at least weekly. (Adopted October 17, 1990)

8-37-306 Liquid Leaks: No person shall use any valve, flange, pump, compressor, liquid line or component that has a liquid leak of more than three drops per minute. Such a leak shall be repaired within 24 hours of detection. If repair is not successful, the leaking component shall be replaced within 15 days. (Amended October 17, 1990)

8-37-307 Stuffing Box Leaks: A person shall not use any stuffing box where the concentration of organic compounds exceeds 10,000 ppm (as methane) above background, measured 1 cm from the polish rod box interface or where there is a liquid leak exceeding three drops per minute. (Amended October 17, 1990)

8-37-308 Closed Hatches: All access hatches shall remain closed except during active maintenance or repairs. (Adopted October 17, 1990)

8-37-309 Reinspection of Repaired Components: All components subject to Section 8-37-301, 305, 306, and 307 shall be reinspected within one week of repairs. (Adopted October 17, 1990)

8-37-400 ADMINISTRATIVE REQUIREMENTS

8-37-401 Identification: Any valve, flange, choke, stuffing box, pump or compressor with a leak in excess of the limitations of Sections 8-37-301, 305 or 306 which has been detected by the operator and is awaiting repair shall be identified in a manner which is readily observable by a District inspector. Any leak in such equipment exceeding the limitations of Section 8-37-301, 305 or 306 which is detected by the APCO and which has not been so identified by the operator shall constitute a violation of this Section. (Amended October 17, 1990)

8-37-402 Deleted October 17, 1990

8-37-403 Natural Gas Distribution, Storage and Transportation Facilities Petition: Any person seeking to satisfy the conditions of Section 8-37-111 shall submit a written petition for exemption to the APCO. This petition shall include complete information on any associated processing facilities. (Adopted October 17, 1990)

8-37-404 Methane Petition: Any person seeking to satisfy the conditions of Section 8-37-112 shall comply with the following requirements:

404.1 A written petition for exemption shall be submitted to the APCO showing the percentage of methane in the natural gas stream is more than or equal to 90% by volume.

404.2 If the APCO grants written approval, such petition will be repeated on an annual basis and accompanied by a current gas stream analysis. (Adopted October 17, 1990)

8-37-405 Water Streams Petition: Any person seeking to satisfy the conditions of Section 8-37-113 shall comply with the following requirements:

405.1 A written petition for exemption shall be submitted to the APCO showing the percentage of water in the liquid stream is greater than or equal to 90% by volume.

405.2 If the APCO grants written approval, such petition will be repeated on an annual basis and accompanied by a current liquid stream analysis. (Adopted October 17, 1990)

8-37-500 MONITORING AND RECORDS

8-37-501 Portable Hydrocarbon Detector: Any instrument used for the measurement of organic compounds shall be a combustible gas detector or any other type of instrument approved by the APCO that meets the specifications and performance criteria of, and is calibrated in accordance with, EPA Reference Method 21. (Amended October 17, 1990)

8-37-502 Records: Any person subject to this Rule shall comply with the following recordkeeping requirements:

502.1 Records of equipment repairs as required by Sections 8-27-301, 305 or 306 shall be maintained. These records shall include the dates on which the leaking equipment was discovered, minimized and/or repaired.

502.2 Inspection records shall be maintained for at least two years and shall be made available to the APCO upon request. (Adopted October 17, 1990)

8-37-600 MANUAL OF PROCEDURES

8-37-601 Inspection Procedure: Inspection of valves, pumps, flanges, compressors and components shall be conducted as prescribed by EPA Reference Method 21.

8-37-602 Methane and Water Analysis: Analyses for the purpose of meeting the exemption requirements of Sections 8-37-112 and 8-37-113 shall be done according to the general guidelines of ASTM Methods E-168, E-169 and E-260, or other methods approved by the APCO. (Adopted October 17, 1990)

**REGULATION 8
ORGANIC COMPOUNDS
RULE 38
FLEXIBLE AND RIGID DISC MANUFACTURING**

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REGULATION 8
ORGANIC COMPOUNDS
RULE 38
FLEXIBLE AND RIGID DISC MANUFACTURING

(Adopted October 2, 1985)

8-38-100 GENERAL

- 8-38-101 Description:** The purpose of this Rule is to limit the emissions of volatile organic compounds from the manufacture of flexible and rigid magnetic data storage discs.
- 8-38-110 Exemption, Non-Precut Substrates:** The requirements of this Rule shall not apply to coating, washing, or mixing operations used in the production of disc substrate materials that are in sheets or rolls not cut into final disc form. Such coating operations are subject to Rule 12 of this Regulation unless exempted by that Rule.
- 8-38-111 Exemption, Low VOC Coatings:** The requirements of Sections 8-38-301 and 303 shall not apply to the application, mixing, or milling of any coating with a VOC content of less than 340 grams per liter of coating applied, excluding water (2.8 pounds per gallon).
- 8-38-112 Exemption, Low VOC Solvents:** The requirements of Section 8-38-302 shall not apply to the use of any solvent containing less than 15 percent VOC, by weight.
- 8-38-113 Exemption, Small Coating Lines:** The requirements of Section 8-38-301 shall not apply to any disc coating line which does not emit more than 6.8 kilograms of VOC per operating day (15 lb/day).
- 8-38-114 Exemption, Small Polishing Lines:** The requirements of Section 8-38-302 shall not apply to any disc polishing line which does not emit more than 10 kilograms of VOC per operating day (22 lb/day).
- 8-38-115 Exemption, Small Mixing Operation:** The requirements of Section 8-38-303 shall not apply to any mixing vat with a volume of 0.045 cubic meters (12 gallons) or less.
- 8-38-116 Exemption, Equipment Cleaning:** The requirements of this Rule shall not apply to the emissions of VOC resulting from the cleaning of disc coating or polishing equipment.

8-38-200 DEFINITIONS

- 8-38-201 Flexible Magnetic Data Storage Disc:** A flat, circular plastic film, contained in a non-rigid envelope, with a magnetic coating on which digital information can be stored by selective magnetization of portions of the flat surface.
- 8-38-202 Rigid Magnetic Data Storage Disc:** A flat, circular, non-flexible plate with a magnetic coating on which digital information can be stored by selective magnetization of portions of the flat surface.
- 8-38-203 Disc Coater:** Any device used for applying a magnetizable film to the substrate of flexible or rigid magnetic data storage discs.
- 8-38-204 Disc Polisher:** Any device or technique using a physical rubbing process with an organic solvent on the surface of flexible or rigid magnetic data storage discs for the purpose of removing contaminants or oxidation or for increasing surface smoothness, resolution or gloss. Solvent cleaning devices using immersion or agitation in solvent or solvent vapors are subject to Rule 16 of this Regulation unless exempted by that Rule.
- 8-38-205 Coating Mixing Operation:** Any vat used for blending, milling or dispersing oxide, resin, solvent, or any other compounds in the preparation of a magnetizable coating in the manufacture of flexible or rigid magnetic data storage discs.
- 8-38-206 Disc Coating Line:** All disc coaters at a facility dedicated to the manufacture of a specific magnetic data storage disc product.
- 8-38-207 Disc Polishing Line:** All disc polishers at a facility dedicated to the manufacture of a specific magnetic data storage disc product.

8-38-208 Volatile Organic Compound (VOC): Any organic compound [excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, which would be emitted during the use, application, curing or drying of a solvent or surface coating.

208.1 For the purposes of calculating VOC content of a coating, any water or the following non-precursor organic compounds,
methylene chloride
1,1,1 trichloroethane
1,1,2-trichloro 1,2,2-trifluoroethane (CFC-113)
trichlorofluoromethane (CFC-11)
dichlorodifluoromethane (CFC-12)
dichlorotetrafluoroethane (CFC-114)
chloropentafluoroethane (CFC-115)
acetone
parachlorobenzotrifluoride (PCBTF)
cyclic, branched or linear, completely methylated siloxanes (VMS)
shall not be considered to be part of the coating.

(Amended December 20, 1995)

8-38-209 Approved Emission Control System: A system for reducing emissions to the atmosphere, consisting of an abatement device and a collection system, which achieves the abatement efficiency specified in the applicable standards at all times during the operation and meets the requirements of Regulation 2, Rule 1.

(Adopted June 15, 1994)

8-38-210 Key System Operating Parameter. An emission control system operating parameter, such as temperature, flow rate or pressure, that ensures operation of the abatement equipment within manufacturer specifications and compliance with the standards in Sections 8-38-301, and 302.

(Adopted June 15, 1994)

8-38-300 STANDARDS

8-38-301 Disc Coating Line Requirements: Effective January 1, 1987, a person shall not operate a disc coating line unless the emissions of VOC from the disc coaters are controlled by an approved emission control system which has an overall collection and control efficiency of at least 85 percent on a mass basis and meets the requirements of Regulation 2, Rule 1. (Amended October 6, 1993; June 15, 1994)

8-38-302 Disc Polishing Line Requirements: Effective January 1, 1987, a person shall not operate a disc polishing line unless the emissions of VOC from the disc polishers are controlled by an approved emission control system which has an overall collection and control efficiency of at least 85 percent on a mass basis and meets the requirements of Regulation 2, Rule 1. (Amended October 6, 1993; June 15, 1994)

8-38-303 Coating Mixing Operation Requirements: Effective January 1, 1987, a person shall not operate a coating mixing operation unless vats are covered, except to add ingredients or take samples, with covers that satisfy the following requirements:

303.1 Covers extend at least 1/2 inch beyond the outer rim of the vat or are attached to the rim of the vat; and

303.2 Covers are maintained in good condition such that, when in place, they maintain contact with the rim for at least 90 percent of the circumference of the rim of the vat; and

303.3 Covers may have a slit to allow clearance for insertion of a mixer shaft. The slit shall be covered after insertion of the mixer shaft, except to allow safe clearance for the shaft.

303.4 Polyethylene or other non-permanent covers may be used provided that the requirements of subsections 8-38-303.1 through 303.3 are met.

3-38-304 Deleted October 6, 1993

8-38-400 ADMINISTRATIVE REQUIREMENTS

8-38-401 Deleted October 6, 1993

8-38-402 Qualification for Exemption: By March 1, 1986, persons seeking to claim exemption from the requirements of Section 8-38-301 and/or 302 pursuant to Sections 8-38-111 through 114 shall submit for APCO approval a description of the methods and/or limitations that will ensure qualification for exemption. Such description shall include a list of coatings or solvents and the VOC contents of each to qualify for the exemptions pursuant to Sections 8-38-111 or 112 and daily production records sufficient to qualify for the exemptions pursuant to Sections 8-38-113 or 114.

(Amended October 6, 1993)

8-38-500 MONITORING AND RECORDS

8-38-501 Approved Emission Control System, Recordkeeping Requirements: Any person subject to Sections 301 and 302 shall:

501.1 Maintain a current list of coatings and solvent in use which states the VOC content of each.

501.2 Record on a daily basis the type and amount of coating and solvent used.

501.3 Record on a daily basis key system operating parameters. Key system operating parameters are those necessary to ensure compliance with VOC content of coating requirements, such as temperature, flow rate, and pressure, when applicable.

501.4 Retain and have such records available for inspection by the APCO for the previous 24-month period.

(Adopted June 15, 1994)

8-38-502 Burden of Proof: Any person claiming an exemption pursuant to Sections 8-38-113, 114, or 115, must have information available, such as purchase orders or hazardous waste manifests, that would allow the APCO to verify facility usage.

(Adopted June 15, 1994)

8-38-600 MANUAL OF PROCEDURES

8-38-601 Analysis of Samples: Samples of VOC as specified in Sections 8-38-111 and 112 shall be analyzed as prescribed in the Manual of Procedures, Volume III, Method 21 or 22.

8-38-602 Determination of Emissions: Emissions of volatile organic compounds as specified in Sections 8-38-113, 114, 301, 302 and subsection 304.7 shall be measured as prescribed by any of the following methods 1) BAAQMD Manual of Procedures, Volume IV, ST-7, 2) EPA Method 25 or 25A. A source shall be considered in violation if the VOC emissions measured by any of the referenced test methods exceed the standards of this rule. (Adopted October 2, 1985; Amended June 15, 1994)

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

REGULATION 8

ORGANIC COMPOUNDS

RULE 39

GASOLINE BULK PLANTS

AND GASOLINE DELIVERY VEHICLES

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REGULATION 8

ORGANIC COMPOUNDS

RULE 39

GASOLINE BULK PLANTS

AND GASOLINE DELIVERY VEHICLES

(Adopted October 7, 1987)

8-39-100 GENERAL

8-39-101 Description: The purpose of this Rule is to limit emissions of organic compounds from gasoline transfer operations at gasoline bulk plants and delivery vehicles.(Amended June 1, 1994)

8-39-110 Exemptions

8-39-111 Delivery Vehicle Exemptions: The requirements of Subsections 8-39-304.1 and 304.2 and 304.3 do not apply to gasoline delivery vehicles which deliver exclusively to :

111.1 Storage tanks installed prior to February 18, 1987, with an annual throughput of less than 227 cubic meters (60,000 gallons) which were not equipped with Phase I vapor recovery as of July 1, 1983.

111.2 Storage tanks with a storage capacity of less than 2.2 cubic meters (550 gallons) used primarily for the fueling of implements of husbandry as defined in Division 16, Chapter 1, of the California Vehicle Code.

111.3 Storage tanks where the APCO determines that Phase I vapor recovery is not feasible. (Amended June 1, 1994)

8-39-112 Delivery to Exempt Facilities: The requirements of Section 8-39-302 do not apply to bulk gasoline distribution facilities which load exclusively to gasoline delivery vehicles servicing stationary tanks which are exempt from Phase I as defined in Section 8-39-209 provided that submerged fill is used.

8-39-113 Tank Gauging and Inspection Exemption: Any tank may be opened for gauging or inspection when loading operations are not in progress provided that such tank is not pressurized.

8-39-114 Maintenance and Repair Exemption: The requirements of Section 8-39-306 shall not apply to spills and vapor leaks resulting from maintenance or repair operations provided proper operating practices are employed to minimize evaporation of gasoline into the atmosphere.

8-39-200 DEFINITIONS

8-39-201 CARB Certified Vapor Recovery System: A vapor recovery system which has been certified by the California Air Resources Board (CARB) pursuant to Section 41954 of the Health and Safety Code.

8-39-202 Gasoline Bulk Plant: A distributing facility which receives gasoline by tank truck, stores it in stationary tanks, and loads it into tank trucks for delivery to service stations or other distribution points.

8-39-203 Gasoline: Petroleum distillates used as motor fuel with a Reid vapor pressure greater than 4.0 pounds.

8-39-204 Leak Free: A liquid leak of less than four drops per minute excluding losses which occur upon disconnecting transfer fittings, provided such disconnect losses do not exceed 10 milliliters (0.34 fluid ounces) per disconnect, averaged over three disconnects.

8-39-205 Submerged Fill Pipe: Any discharge pipe or nozzle which meets either of the following conditions:

205.1 Where the tank is filled from the top, the end of the discharge pipe or nozzle must be totally submerged when the liquid level is 15 cm (6 in.) from the bottom of the tank.

205.2 Where the tank is filled from the side, the discharge pipe or nozzle must be totally submerged when the liquid level is 46 cm (18 in.) from the bottom of the tank.

8-39-206 Switch Loading: For the purpose of this Rule, switch loading is the loading of organic liquids with a Reid vapor pressure of less than 4.0 pounds into a delivery vehicle where the previous load was gasoline.

8-39-207 Vapor Tight: A leak of less than 100 percent of the lower explosive limit on a combustible gas detector measured at a distance of 2.5 cm (1 in.) from the source or no visible evidence of air entrainment in the sight glasses of liquid delivery hoses.

8-39-208 Vapor Tight - Gasoline Cargo Tank: A leak that does not exceed the standards specified in the CARB

"Certification and Test Procedures for Vapor Recovery Systems on Gasoline Delivery Tanks."

8-39-209 Deleted June 1, 1994

8-39-210 Organic Compound: Any compound of carbon, excluding methane, carbon monoxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate. (Adopted June 1, 1994)

8-39-300 STANDARDS

8-39-301 Phase I Requirements: A person shall not transfer or allow the transfer of gasoline from gasoline delivery vehicles into stationary tanks at gasoline bulk plants unless a CARB certified Phase I vapor recovery system is used.

8-39-302 Gasoline Bulk Plant Limitations: A person shall not load or permit the loading of gasoline into or out of a gasoline bulk plant unless a CARB certified vapor recovery system is properly connected and used. Such systems shall not emit into the atmosphere more than 60 grams of organic compounds per cubic meter (0.50 pounds per 1,000 gallons) of organic liquid loaded. Switch loading shall be subject to this standard. Where multiple processors are used, each processor shall be subject to this standard. (Amended June 1, 1994)

8-39-303 Vapor Recovery System Requirements: Vapor recovery systems installed at gasoline bulk plants shall be subject to CARB certification.

8-39-304 Delivery Vehicle Requirements: Gasoline delivery vehicles are subject to the following requirements:

304.1 Vapor Integrity Requirement: A person shall not operate, or allow the operation of, a gasoline delivery vehicle unless valid State of California decals, as required by Section 41962 of the Health and Safety Code which attest to the vapor integrity of the tank, are displayed.

304.2 Vapor Recovery Requirement: Any gasoline delivery vehicle loading at a facility subject to the requirements of Section 8-39-302 shall be equipped with and use a vapor recovery system.

304.3 Vapor Return Requirement: A person shall not load at a facility exempt under Section 8-39-112 if the preceding load, or any portion thereof, was delivered to a storage tank equipped with Phase I.

304.4 Purging Requirement: A person shall not purge gasoline vapor from the tank of a delivery vehicle to the atmosphere.

8-39-305 Equipment Maintenance: All equipment associated with delivery and loading operations shall be maintained to be leak free, vapor tight and in good working order.

8-39-306 Operating Practices: Gasoline shall not be spilled, discarded in sewers, stored in open containers, or handled in any other manner that would result in evaporation to the atmosphere.

8-39-307 Loading Practices: Loading operations which use vapor processing equipment shall be operated in such a manner that the vapor processing capacity is not exceeded.

8-39-308 Vapor Recovery System Requirements - Loading Rack: The system shall be maintained and operated in a manner that prevents gauge pressure in the delivery tank from exceeding 46cm (18 in.) of water column during product loading.

8-39-400 ADMINISTRATIVE REQUIREMENTS

8-39-401 Equipment Installation and Modification: A person shall not install or modify stationary gasoline storage tanks greater than 1 cubic meter (260 gallons) or vapor recovery equipment, exclusive of repair, unless an authority to construct has been obtained pursuant to Section 301 of Regulation 2, Rule 1.

8-39-402 Implementation: Any person who must install or modify vapor recovery equipment as required by Section 8-39-302 of this rule shall meet the following increments of progress:

- (a) By April 1, 1988 submit an application to the APCO for Authorities to Construct.
- (b) By April 1, 1989, be in final compliance.

8-39-403 Stationary Tanks: Any person who must install Phase I vapor recovery on stationary tanks at a gasoline dispensing facility as required by the March 4, 1987 amendments to Regulation 8, Rule 7 shall meet the following increments of progress:

- (a) By September 1, 1989, submit an application to the APCO for Authorities to Construct.
- (b) By March 1, 1990, be in final compliance. (Adopted October 7, 1987; Amended December 2, 1987)

8-39-500 MONITORING AND RECORDS

8-39-501 Burden of Proof: The burden of proof of eligibility for exemption from this rule is on the applicant. Persons seeking such an exemption shall maintain adequate records and furnish them to the APCO upon request.

8-39-600 MANUAL OF PROCEDURES

8-39-601 Emission Rate Determination (Vapor Processing Systems): The means by which mass emission rates of vapor processing systems are measured are set forth in the Manual of Procedures, Volume IV, ST-34. (Amended June 1, 1994)

8-39-602 Emission Rate Determination (Vapor Balance System): The means for determining mass emission rates from vapor balance systems are set forth in the Manual of Procedures, Volume IV, ST-3.

8-39-603 Vapor Recovery System Loading Pressure: The means of determining gauge pressure in the delivery truck are set forth in the Manual of Procedures, Volume IV, ST-34. Amended June 1, 1994)

8-39-604 Vapor Tight - Delivery Vehicles: The means for determining vapor integrity for delivery vehicles are set forth in the Manual of Procedures, Volume IV, ST-33.

8-39-605 Analysis of Samples: Samples of gasoline as specified in Section 8-39-203 shall be analyzed as prescribed in the Manual of Procedures, Volume III, Method 13.

**REGULATION 8
ORGANIC COMPOUNDS
RULE 40
AERATION OF CONTAMINATED SOIL AND
REMOVAL OF UNDERGROUND STORAGE TANKS**

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**REGULATION 8
ORGANIC COMPOUNDS
RULE 40
AERATION OF CONTAMINATED SOIL AND
REMOVAL OF UNDERGROUND STORAGE TANKS**

(Adopted July 16, 1986)

8-40-100 GENERAL

8-40-101 Description: The purpose of this Rule is to limit the emission of organic compounds from soil that has been contaminated by organic chemical or petroleum chemical leaks or spills, and to describe an acceptable procedure for controlling emissions from underground storage tanks during removal or replacement.

(Amended 2/15/89; 12/15/99)

8-40-110 Exemption, Storage Piles: Calculations of aeration volume under Section 8-40-204 shall not include storage piles that are covered per Section 8-40-305, nor shall they include active storage piles.

(Amended December 15, 1999)

8-40-111 Exemption, Excavated Hole: The exposed surfaces of an excavated hole shall not be included in calculations of aerated volume under Section 8-40-204.

8-40-112 Exemption, Sampling: Contaminated soil exposed for the sole purpose of sampling shall not be considered to be aerated. Inactive storage piles may remain uncovered for no longer than one hour for soil sampling purposes.

(Amended December 12, 1999)

8-40-113 Exemption, Non-volatile Hydrocarbons: The requirements of all sections of this Rule shall not apply if the soil is contaminated solely by a known organic chemical or petroleum liquid and that chemical or liquid has an initial boiling point of 302°F or higher provided that the soil is not heated.

(Amended February 15, 1989)

8-40-114 Exemption, Contaminated Soil Excavation During Organic Liquid Service Pipeline Leak Repairs: The requirements of Section 8-40-402 shall not apply if contaminated soil is being excavated in order to repair leaking organic liquid service pipelines and if no more than 5 cubic yards of contaminated soil are generated, and provided the requirements in Section 8-40-404 are satisfied.

(Adopted 2/15/89; Amended 12/15/99)

8-40-115 Exemption, Contaminated Soil Excavation Unrelated to Underground Storage Tank Activities: The requirements of Section 8-40-402 shall not apply where contaminated soil is discovered during excavations unrelated to underground storage tank activities, and provided the requirements in Section 8-40-405 are satisfied.

(Adopted 2/15/89; Amended 12/15/99)

8-40-116 Exemption, Small Volume: The provisions of this rule shall not apply to excavation or aeration projects where:

116.1 The total volume of contaminated soil is no more than 1 cubic yard, or

116.2 The total volume of contaminated soil is no more than 8 cubic yards and organic content does not exceed 500 ppmw as determined by the procedures in Sections 8-40-601 and 8-40-602. The exemption of this subsection may be applied to any single excavation site or facility no more than once in any 3 month period.

(Adopted December 15, 1999)

8-40-117 Exemption, Accidental Spills: The provisions of this rule shall not apply to soil contaminated by accidental spillage of five gallons or less of liquid organic compounds.

(Adopted December 15, 1999)

8-40-118 Exemption, Aeration Projects of Limited Impact: The requirements of Sections 8-40-403 and 8-40-405 shall not apply to any aeration project in which total project emissions of volatile organic compounds are less than 150 lbs, and total project emissions of toxic air contaminants are less than the limits listed in Table 2-1-316 in District Regulation 2, Rule 1.

(Adopted December 15, 1999)

8-40-200 DEFINITIONS

- 8-40-201 Active Storage Pile:** A storage pile to which soil is currently being added or from which soil is currently being removed. Activity must have occurred within one hour to be current. (Amended December 15, 1999)
- 8-40-202 Aeration:** Exposure of excavated soil containing volatile organic compounds to the air. (Amended December 15, 1999)
- 8-40-203 Aeration Depth:** The smaller of the following: the actual average depth of contaminated soil; or 0.15 meters (0.5 feet) multiplied by the daily frequency with which soil is turned. (Amended February 15, 1989)
- 8-40-204 Aeration Volume:** The volume of soil being aerated shall be calculated as follows: the exposed surface area (in square feet or square meters) shall be multiplied by the aeration depth. The exposed surface area includes the pile of excavated soil unless the pile is covered per Section 8-40-305. (Amended 2/15/89; 12/15/99)
- 8-40-205 Contaminated Soil:** Soil which has an organic content exceeding 50 ppmw as measured using the procedure in Section 8-40-602, or soil which registers an organic concentration greater than 50 ppmv (expressed as methane, C1) when measured using the procedure in Section 8-40-604. (Amended December 15, 1999)
- 8-40-206 Organic Compound:** Any compound of carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate.
- 8-40-207 Organic Content:** The concentration of volatile organic compounds measured in the composite sample collected and analyzed using the procedures in Sections 8-40-601 and 8-40-602. (Amended December 15, 1999)
- 8-40-208 Vapor Free:** The process of purging gases from a tank using dry ice to replace organic vapors with an inert atmosphere.
- 8-40-209 Ventilation:** The process of purging gases from a tank by blowing or drawing another gas through the tank.
- 8-40-210 Emergency Removal or Replacement or Excavation:** A removal or replacement of a tank or an excavation of contaminated soil carried out pursuant to an order of a state or local government agency issued because the contaminated soil poses an imminent threat to public health and safety. (Adopted 2/15/89; Amended 12/15/99)
- 8-40-211 Organic Concentration:** The concentration of volatile organic compounds measured in ppmv (expressed as methane, C1) above the soil surface using the procedures in Section 8-40-604. (Adopted December 15, 1999)
- 8-40-212 Organic Liquid Service:** The conveyance or storage of volatile organic compounds that are typically liquid at standard temperature and pressure, as applied to tanks and pipelines. This does not include septic tanks, sewer lines, storm water drainage, fresh water lines, natural gas lines, or electrical conduit. (Adopted December 15, 1999)
- 8-40-213 Volatile Organic Compound (VOC):** Any organic compound, as described in Section 8-40-206, which would be emitted to the atmosphere. (Adopted December 15, 1999)
- 8-40-214 Vapor Suppressant:** Any material demonstrated to be at least as effective as water spray at reducing VOC emissions from contaminated soil to the atmosphere. (Adopted December 15, 1999)
- 8-40-215 Backfill:** Replacement of contaminated soil to an excavated pit below existing grade or to a engineered fill location below final grade performed in such a way as to minimize exposure of contaminated soil to the atmosphere. To constitute backfill, replacement of soil may be back into the original excavation, or any other final fill site located on the site where the original excavation occurred. Backfill does not include the use of contaminated soil in daily, intermediate, or final cover operations at solid waste disposal sites (as defined in Regulation 8-34-201). (Adopted December 15, 1999)
- 8-40-216 Storage Pile:** A pile of excavated contaminated soil located above existing grade level. (Adopted December 15, 1999)

8-40-300 STANDARDS

8-40-301 Uncontrolled Contaminated Soil Aeration: Until June 1, 2000, a person shall not aerate contaminated soil at a rate in excess of that specified in Table 1 for the degree of organic content. The limitations in Table 1 shall apply to the entire facility and indicate the volume of contaminated soil that may be added, on any one day, to contaminated soil that is already aerating. These limited aeration rates shall also apply to the use of contaminated soil in daily, intermediate, or final cover operations at solid waste disposal sites (as defined in Regulation 8-34-201).

Table 1
Allowable Rate of Uncontrolled Aeration

ORGANIC CONTENT ppm (weight)	RATE OF UNCONTROLLED AERATION	
	Cubic meters/day	Cubic yards/day
< 50	Exempt	Exempt
50 - 99	459.0	600
100 - 499	91.8	120
500 - 999	45.9	60
1000 - 1999	22.9	30
2000 - 2999	11.5	15
3000 - 3999	7.6	10
4000 - 4999	5.7	8
> 5000	0.08	0.1

Effective June 1, 2000, a person shall not aerate contaminated soil except as provided in sections 8-40-304 through 306. This prohibition includes the use of contaminated soil in daily, intermediate, or final cover operations at solid waste disposal sites (as defined in Regulation 8-34-201). (Amended 2/15/89; 12/15/99)

8-40-302 Controlled Contaminated Soil Aeration: Until June 1, 2000, contaminated soil may be aerated at rates exceeding the limitations of 8-40-301 provided emissions of organic compounds to the atmosphere are reduced by at least 90% by weight. (Amended December 15, 1999)

8-40-303 Deleted December 15, 1999

8-40-304 Active Storage Piles: Effective June 1, 2000, contaminated soil shall be kept visibly moist by water spray, treated with a vapor suppressant, or covered with continuous heavy duty plastic sheeting or other covering to minimize emissions of organic compounds to the atmosphere. Covering shall be in good condition, joined at the seams, and securely anchored to minimize headspace where vapors may accumulate. For any active storage pile, the surface area not covered by plastic sheeting or other covering shall not exceed 6,000 square feet. (Adopted December 15, 1999)

8-40-305 Inactive Storage Piles: Effective June 1, 2000, contaminated soil shall be covered during periods of inactivity longer than one hour. The contaminated soil shall be covered with continuous heavy duty plastic sheeting or other covering to minimize emissions to the atmosphere. The covering shall be in good condition, joined at the seams, and securely anchored to minimize headspace where vapors may accumulate. (Adopted December 15, 1999)

8-40-306 Contaminated Soil - Excavation and Removal: Effective June 1, 2000, any person excavating and/or permanently removing contaminated soil shall adopt the following procedure:

306.1 During excavation, all exposed contaminated soil surfaces above existing grade level shall be kept visibly moist by water spray, treated with an approved vapor suppressant, or covered with continuous heavy duty plastic sheeting or other covering to minimize emissions of organic compounds to the atmosphere. The covering shall be in good condition, joined at the seams, and securely anchored to minimize headspace where vapors may accumulate.

306.2 All contaminated soils loaded into trucks or trailers for off site disposal or treatment shall be covered with continuous heavy duty plastic sheeting or other covering so as to minimize emissions to the atmosphere. The covering

shall be in good condition, joined at the seams, and securely anchored to minimize headspace where vapors may accumulate.

- 306.3 All contaminated soil shall be stockpiled separately from soil which is not contaminated, unless emissions of VOC from the storage pile are minimized according to the provisions of this Rule.
- 306.4 Within 45 days of excavation, or within 90 days for soil of organic content less than 500 ppmw as determined by the procedures in Sections 8-40-601 and 8-40-602, the following shall take place:
 - 4.1 all contaminated soil shall be backfilled and covered with at least 6 inches of uncontaminated soil, or
 - 4.2 all contaminated soil shall be removed from the site, or
 - 4.3 treatment to remove the contamination shall be initiated.
- 306.5 Treatment of contaminated soil to remove the contamination shall be subject to all applicable District Rules and Regulations.
- 306.6 During backfilling, all exposed contaminated soil surfaces shall be kept visibly moist by water spray, or treated with an approved vapor suppressant, or covered with continuous heavy duty plastic sheeting or other covering to minimize emissions of organic compounds to the atmosphere. During periods of inactivity longer than 12 hours, backfilled contaminated soil shall be covered with at least 6 inches of uncontaminated soil, or covered with continuous heavy duty plastic sheeting or other covering to minimize emissions of organic compounds to the atmosphere. The covering shall be in good condition, joined at the seams, and securely anchored to minimize headspace where vapors may accumulate. (Adopted December 15, 1999)

8-40-310 Underground Storage Tanks - Removal or Replacement: Any person wishing to permanently remove or replace an underground storage tank which previously contained organic compounds shall follow the following procedure:

- 310.1 All piping shall be drained or flushed into the tank or other container.
- 310.2 All liquids and sludges shall be removed, to the extent possible, from the tank. A hand pump shall be used to remove the bottom few inches of product if necessary.
- 310.3 Vapors shall be removed from the tank using one of the following three methods:
 - 3.1 The tank may be filled with water, displacing vapors and hydrocarbon liquids.
 - 3.2 Vapor freeing.
 - 3.3 Ventilation.
- 310.4 Effective June 1, 2000, all soils disturbed and/or excavated as part of the tank removal shall be subject to the requirements of Sections 8-40-301 through 306, unless the soil has been determined to be not contaminated by measurement of organic content using the procedures in Section 8-40-601 and 8-40-602. (Amended 2/15/89; 6/15/94; 12/15/99)

8-40-311 Vapor Freeing: No person shall vapor free an underground storage tank of 250 gallons or greater capacity, unless emissions of organic compounds to the atmosphere are reduced by at least 90% by weight. The emission control system shall be operated until the concentration of organic compounds in the tank is less than 5,000 ppm expressed as methane. (Amended December 15, 1999)

8-40-312 Ventilation: No person shall ventilate an underground storage tank of 250 gallons or greater capacity, unless emissions of organic compounds to the atmosphere are reduced by at least 90% by weight. The emission control system shall be operated until the concentration of organic compounds in the tank is less than 5,000 ppm expressed as methane. (Amended December 15, 1999)

8-40-400 ADMINISTRATIVE REQUIREMENTS

8-40-401 Reporting, Removal or Replacement of Tanks: The person responsible for the removal or replacement of tanks which are subject to the provisions of Section 8-40-310 shall provide written notice to the APCO of intention to remove or replace tanks. The written notice shall be postmarked at least 5 days prior to commencement of

such removal or replacement. In the case of emergency removal or replacement of tanks, notice shall be provided as early as possible prior to the commencement of such emergency removal or replacement, to be followed by written verification not later than 30 working days after the removal or replacement is completed. The written notice of intention shall include:

401.1 Names and addresses of persons performing and responsible for the tank removal or replacement.

401.2 Location of site at which tank removal or replacement will occur.

401.3 Scheduled starting date of tank removal or replacement. The scheduled starting date may be delayed for no more than 5 working days, provided the APCO is notified by telephone as early as possible prior to the new starting date.

401.4 Procedures to be employed to meet the requirements of Sections 8-40-310.

401.5 If applicable, name, title and authority of the state or local government representative who has ordered a tank removal or replacement which is subject to emergency procedures.

401.6 Procedures to be employed to meet the requirements of Sections 8-40-301 through 306.

(Adopted 2/15/89; Amended 12/15/99)

8-40-402 Reporting, Excavation of Contaminated Soil: The person responsible for the excavation of known contaminated soil subject to the provisions of Sections 8-40-301 through 8-40-306 shall provide written notice to the APCO of intention to excavate. The written notice shall be postmarked at least 5 days prior to commencement of such excavation. In the case of emergency excavations, notice shall be provided as early as possible prior to the commencement of such emergency excavation, to be followed by written verification not later than 30 working days after excavation is completed. Written notice of intention to excavate may be submitted to the APCO at the same time written notice of intention to remove or replace tanks is submitted provided that such notification precedes the commencement of either tank removal or replacement or contaminated soil excavation by at least 5 days as indicated by postmark. The written notice of intention shall include:

402.1 Names and addresses of persons performing and responsible for excavation.

402.2 Location of site at which excavation will occur.

402.3 Scheduled starting date of excavation. The scheduled starting date may be delayed for no more than 5 working days, provided the APCO is notified by telephone as early as possible prior to the new starting date.

402.4 Procedures to be employed to meet the requirements of Sections 8-40-301 through 306.

402.5 If applicable, name, title and authority of the state or local government representative who has ordered an excavation which is subject to emergency procedures.

402.6 Estimated quantity of contaminated soil to be excavated.

402.7 Estimated average organic content of contaminated soil.

(Adopted 2/15/89; Amended 12/15/99)

8-40-403 Reporting, Aeration of Soil: The person responsible for aeration of any soil shall provide written notice to the APCO of intention to aerate soil, with the following information. The written notice shall be postmarked at least 5 days prior to commencement of such excavation. The District shall again be notified within 24 hours of a change in one or more of the following parameters:

403.1 Estimated total quantity of soil to be aerated

403.2 Estimated quantity of soil to be aerated per day

403.3 Estimated average organic content of soil

403.4 Chemical composition of organic compounds (i.e., gasoline, methylene chloride, etc.)

403.5 A basis on which these estimates were derived (soil analysis test reports, etc.)

403.6 Names and addresses of persons performing and responsible for the aeration project.

403.7 Location of site at which the aeration project will occur.

(Amended, Renumbered 2/15/89; Amended 12/15/99)

- 8-40-404 Reporting, Contaminated Soil Excavation During Organic Liquid Service Pipeline Leak Repairs:** The person responsible for the excavation of no more than 5 cubic yards of contaminated soil generated by an organic liquid service pipeline leak repair shall provide written notice to the APCO as early as possible, but not later than 3040 working days, after excavation is completed. The written notice shall include:
- 404.1 Names and addresses of persons performing and responsible for excavation
 - 404.2 Location of site at which excavation occurred.
 - 404.3 Date of excavation.
 - 404.4 Quantity of contaminated soil excavated.
 - 404.5 Estimated average organic content of contaminated soil.
 - 404.6 Procedures to be employed to meet the requirements of Sections 8-40-301 through 306. (Adopted 2/15/89; Amended 12/15/99)
- 8-40-405 Reporting, Contaminated Soil Excavations Unrelated to Underground Storage Tank Activities:** The person responsible for contaminated soil excavations unrelated to underground storage tank activities where contaminated soil is discovered shall provide notice as early as possible upon detection of such contaminated soil, to be followed by written verification not later than 30 working days after excavation is completed. The written verification shall include:
- 405.1 Names and addresses of persons performing and responsible for excavation.
 - 405.2 Location of site at which excavation occurred.
 - 405.3 Date of excavation.
 - 405.4 Quantity of contaminated soil excavated.
 - 405.5 Estimated average organic content of contaminated soil.
 - 405.6 Procedures to be employed to meet the requirements of Sections 8-40-301 through 306. (Adopted 2/15/89; Amended 12/15/99)

8-40-600 MANUAL OF PROCEDURES

- 8-40-601 Contaminated Soil Sampling:** Composite samples shall be collected and analyzed for-excavated contaminated soil as follows:
- 601.1 Until June 1, 2000, for every 50 cubic yards of excavated contaminated soil to be aerated as per Table 1 in Section 8-40-301 Aat least one composite sample shall be collected from each storage pile within 12 hours of excavation.
 - 601.2 For excavation projects seeking exemption under the provisions of Section 8-40-116.2, at least one composite sample shall be collected and analyzed.
 - 601.3 For excavation projects subject to Sections 8-40-306.4 (90 day limit only) or 8-40-310.4, involving 250 cubic yards of contaminated soil or less, at least one composite sample shall be collected an analyzed for every 50 cubic yards of excavated contaminated soil.
 - 601.4 For excavation projects subject to Sections 8-40-306.4 (90 day limit only) or 8-40-310.4, involving more than 250 cubic yards of contaminated soil, at least one composite sample shall be collected and analyzed for every 100 cubic yards of excavated contaminated soil.
 - 601.5 Each composite sample shall consist of four separate soil samples taken using the procedures described below. The soil samples shall remain separate until they are combined in the laboratory just prior to analysis.
 - 601.6 Each pile for which a composite sample is required shall be considered to have four equal sectors. One sample shall be taken from the center of each sector. Samples shall be taken from at least twelve inches below the surface of the pile. Samples shall be taken using one of the following methods:
 - 6.1 Sarriples shall be taken using a driven-tube type sampler, capped and sealed with inert materials, and extruded in the lab in order to reduce the loss of volatile materials; or

6.2 Samples shall be taken using a clean brass tube (at least twelve inches long) driven into the soil with a suitable instrument. The ends of the brass tube shall then be covered with aluminum foil, then plastic end caps, and finally wrapped with a suitable tape. The samples shall then be immediately placed on ice, or dry ice, for transport to a laboratory.

(Amended 2/15/89; 12/15/99)

8-40-602 Measurement of Organic Content: Organic content of soil shall be determined by EPA Reference Methods 8015B and 8021B or any method determined to be equivalent by the United States Environmental Protection Agency and approved in writing by the APCO or designee.

(Amended 2/15/89; 10/6/93; 12/15/99)

8-40-603 Determination of Emissions: Emissions of organic compounds as specified in Sections 8-40-302, 8-40-311 and 8-40-312 shall be measured as prescribed by any of the following methods: 1) BAAQMD Manual of Procedures, Volume IV, ST-7, 2) EPA Method 25 or 25A. A source shall be considered in violation if the VOC emissions measured by any of the referenced test methods exceed the standards of this rule.

(Amended 2/15/99; 6/15/94; 12/15/99)

8-40-604 Measurement of Organic Concentration: Organic concentration as specified in Section 8-40-205 shall be measured at a distance of three inches from the surface of the excavated soil with an organic vapor analyzer complying with 40 CFR Part 60 Appendix A, EPA Method 21 Section 3, "Determination of Volatile Organic Compound Leaks, Monitoring Instrument Specifications," or any method determined to be equivalent by the United States Environmental Protection Agency and approved in writing by the APCO or designee. For the purpose of determining contamination, the soil surface of the excavated soil pile may be disturbed to obtain a measurement.

(Adopted December 15, 1999)

8-40-605 Analysis of Samples, Initial Boiling Point: Samples of organic compounds shall be analyzed by ASTM D-1078-93 for the determination of initial boiling point as specified in Section 8-40-113.

(Adopted December 15, 1999)



REGULATION 8

ORGANIC COMPOUNDS

RULE 41

VEGETABLE OIL MANUFACTURING OPERATIONS

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REGULATION 8

ORGANIC COMPOUNDS

RULE 41

VEGETABLE OIL MANUFACTURING OPERATIONS

(Adopted December 17, 1986)

8-41-100 GENERAL

8-41-101 Description: The purpose of this Rule is to limit emissions of precursor organic compounds from the vegetable oil solvent extraction operations.

8-41-110 Exemption, Laboratory and Experimental Operations: The requirements of this Rule shall not apply to equipment used exclusively for research, laboratory analysis or determination of product quality.

8-41-111 Exemption, Startup and Shutdown: The requirements of this Rule shall not apply to the solvent extraction plant during the first 24 hours of startup and the final 24 hours of shutdown.

8-41-200 DEFINITIONS

8-1-209 Organic Compound, Precursor: Any organic compound as defined in 1- 233 excepting the non-precursor organic compounds, 1-234.

8-41-201 Organic Compounds: Any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonates, and methane

8-41-202 Vegetable Oil Plant: Any facility engaged in the extraction or refining of vegetable oil.

8-41-203 Solvent Extraction: Removal of vegetable oil from the seed or bean using a solvent in a contact

system.

8-41-204 Desolventizer-Toaster: A process unit in which steam and air are forced through and across the meal to volatilize the solvent.

8-41-205 Equipment in Organic Service: Any pump, valve, pressure relief valve, sight glass sample connection, open-ended valve, or connector in VOC service.

8-41-206 Repaired: Equipment is adjusted or otherwise altered to maintain proper operating characteristic, including freedom from leakage.

8-41-207 Leaking Equipment: Any equipment from which precursor organic compounds can be detected or observed to be leaking, or producing a concentration in air exceeding 10,000 ppm (expressed as methane) one centimeter from the leak.

8-41-208 Mineral Oil Scrubber: A packed tower using mineral oil as an adsorbent for the extractant solvent.

8-41-209 Meal: Spent seed flakes containing adsorbed solvent after extraction.

8-41-210 Tumbler or Cooler: A device which reduces the temperature or moisture from the meal.

8-41-211 Conveyor: Any device which removes the meal by a mechanical means from one location to another location.

8-41-300 STANDARDS

8-41-301 Extractor, Desolventizer-Toaster: A person shall not operate any extractor or desolventizer-toaster that emits more than 6.8 kg (15 lb) of organic compounds per day (excluding the meal discharge), unless such emissions are controlled by one of the following:

301.1 A condenser and mineral oil scrubber which captures and reduces precursor organic compounds by at least 90 per cent by weight.

301.2 An emission control device, approved by the APCO, which captures and reduces precursor organic compounds by at least 90 per cent by weight.

8-41-302 Conveyor, Desolventizer-Toaster: A person shall not operate a vegetable oil plant unless the desolventizer-toaster discharge conveyor prior to the cooler is vented to a mineral oil scrubber with a precursor organic compound capture and control efficiency of at least 90 per cent by weight.

8-41-303 Equipment in Organic Service: Each calendar month, a person operating a vegetable oil plant shall inspect all equipment for any indication of gaseous or liquid leakage of organic compounds. If the concentration of precursor organic compounds measured one cm. from any leak in such equipment exceeds 10,000 ppm (expressed as methane), or if leaks are visible, the leaking equipment shall be repaired within 10 days.

8-41-400 ADMINISTRATIVE REQUIREMENTS:

8-41-401 Compliance Schedule: The owner or operator subject to this Rule shall comply with the following increments of progress:

401.1 By January 2, 1987 submit to the APCO a plan describing the methods to be used to comply with the applicable requirements.

401.2 By March 1, 1987 submit a completed application for an Authority to Construct if needed.

401.3 By August 1, 1987 be in full compliance with requirements of this Rule.

8-41-500 MONITORING AND RECORDS

8-41-501 Portable Hydrocarbon Detector: Any instrument used for the measurement of organic compounds shall be a gas detector that meets the specifications and performance criteria of and has been calibrated in accordance with EPA Reference Method 21 (40 CFR 60, Appendix A). (Amended June 1, 1994)

8-41-502 Record Keeping: The owner or operator of a vegetable oil plant shall be subject to the following requirements:

502.1 A readily visible identification, in the form of a weatherproof tag shall be attached to the leaking equipment. The identification may be removed upon repair.

502.2 The leaking equipment shall be repaired with an initial attempt as soon as possible but no later than 10 calendar days after it is detected.

502.3 When a leak is detected, the owner or operator shall record the date of detection and the date of repair. The log record of leak detection and repair shall be maintained for 2 years at the facility and be made available to a District representative upon request.

8-41-503 Air Pollution Abatement Equipment, Recordkeeping Requirements: Any person operating air pollution abatement equipment to comply with Section 8-14-301, and 302 shall record on a daily basis key system operating parameters to demonstrate continuous operation and compliance of the air pollution abatement equipment during periods of emission producing activities. Key system operating parameters are those necessary to ensure compliance, such as temperature, flow rates, and pressure. (Adopted June 1, 1994)

8-41-600 MANUAL OF PROCEDURES

8-41-601 Determination of Emissions: Emissions of organic compounds as specified in 8-41-301 and 8-41-303 shall be measured by any of the following methods 1) BAAQMD Manual of Procedures, Volume IV ST-7, 2) EPA Method 25, 3) EPA Method 25A. A source shall be considered in violation if the VOC emissions measured by any of the test methods exceed the standards of this rule.(Amended June 1, 1994)

8-41-602 Inspection Procedures: For the purposes of Section 8-41-303, leaks shall be measured using a portable gas detector as prescribed in EPA Reference Method 21 (40 CFR 60, Appendix A). (Adopted June 1, 1994)

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

REGULATION 8

ORGANIC COMPOUNDS

RULE 42

LARGE COMMERCIAL BREAD BAKERIES

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REGULATION 8

ORGANIC COMPOUNDS

RULE 42

LARGE COMMERCIAL BREAD BAKERIES

(Adopted September 20, 1989)

8-42-100 GENERAL

8-42-101 Description: The purpose of this rule is to limit the emission of precursor organic compounds from bread ovens at large commercial bread bakeries.

8-42-110 Exemption, Small Bakeries: Except for Section 8-42-502, this rule shall not apply to bakeries whose total production of bread, buns, and rolls per operating day is less than 45,450 kg (100,000 pounds), averaged over all operating days in any one month. (Amended June 1, 1994)

8-42-111 Exemption, Low Emitting Ovens: Ovens demonstrated to the satisfaction of the APCO to emit less than 68.2 kg (150 pounds) of ethanol per operating day averaged over a period of one year shall be exempt from the requirements of Section 8-42-301.

8-42-112 Exemption, Existing Ovens: The requirements of Section 8-42-303 shall not apply to ovens, which commenced operation prior to January 1, 1988 and which are demonstrated to the satisfaction of the APCO to emit less than 113.7 kg (250 pounds) of ethanol per operating day, averaged over a period of one year.

8-42-113 Exemption, Miscellaneous Bakery Products: This rule does not apply to equipment used exclusively for the baking of bakery products other than bread, buns, and rolls. Such products include, but are not limited to, muffins, croutons, breadsticks, and crackers.

8-42-114 Exemption, Chemically Leavened Products: This rule does not apply to equipment used exclusively for the baking of bakery products leavened chemically in the absence of yeast.

8-42-200 DEFINITIONS

8-42-201 Approved Emission Control System: A system for reducing emissions of precursor organic compounds to the atmosphere consisting of a control device, which has been approved by the APCO and which

satisfies the following conditions:

201.1 The control device shall achieve the control efficiency specified in the applicable standards section at all times during normal operation of the equipment being controlled.

201.2 The collection system shall vent all exhaust from the oven stack or stacks to the control device during normal operation.

8-42-202 Baseline Emissions: The average amount of precursor organic compounds emitted per operating day from an oven between January 1, 1988 and December 31, 1988. Emissions shall be calculated in accordance with Section 8-42-602.

8-42-203 Bread: A perishable foodstuff prepared from a dough whose primary ingredients are flour, sugar, salt, water, and yeast and which is baked into loaves, buns, or rolls.

8-42-204 Fermentation Time: Elapsed time between adding yeast to the dough or sponge and placing the loaves into the oven, expressed in hours.

8-42-205 Large Commercial Bread Bakery: Any bakery producing more than 45,454 kg (100,000 pounds) of breads, buns, and rolls per day.

8-42-206 Leaven: To raise a dough by causing gas to thoroughly permeate it.

8-42-207 Yeast Percentage: Pounds of yeast per hundred pounds of total recipe flour, expressed as a percentage.

8-42-208 Key System Operating Parameter: An emission control system operating parameter, such as temperature, flow rate or pressure, that ensures operation of the abatement equipment within manufacturer specifications and compliance with the standards in Sections 8-42-302, and 303. (Adopted June 1, 1994)

8-42-300 STANDARDS

8-42-301 New and Modified Bakery Ovens: Effective January 1, 1989, a person subject to this rule shall not operate the following equipment unless the requirements of Section 8-42-302 are met:

301.1 Any newly constructed oven commencing operation after January 1, 1989.

301.2 Any newly constructed oven replacing an existing oven and commencing operation after January 1, 1989.

301.3 Any existing oven which has been modified, with modifications completed after January 1, 1989, at a cost exceeding 50% of replacement cost of the oven.

301.4 Any oven with a change in production after January 1, 1989, resulting in an emission increase, averaged over a 30 day period, of 68.2 kg (150 pounds) per operating day above the baseline emissions.

8-42-302 Emission Control Requirements, New and Modified Ovens: All new and modified ovens shall be required to vent all emissions to an approved emission control system capable of reducing emissions of precursor organic compounds by 90% on a mass basis.

8-42-303 Emission Control Requirements, Existing Ovens: Effective January 1, 1992, all existing ovens which commenced operation prior to January 1, 1989, shall be required to vent emissions to a control system meeting the following standards:

303.1 Emission collection system shall capture all emissions of precursor organic compounds from all oven stacks.

303.2 Collected emissions shall be vented to an approved emission control device which has a destruction efficiency of at least 90% on a mass basis.

8-42-304 Delayed Compliance, Existing Ovens: In lieu of complying with the requirements of Section 8-42-303, an applicant may elect to replace those ovens subject to Section 8-42-303 with new ovens meeting the requirements of Section 8-42-302 by January 1, 1994. Such election must be made by January 1, 1991, subject to approval of the APCO. In approving such an election, the APCO may require the posting of a bond and may impose permit conditions on the existing subject ovens in order to assure compliance with the January 1, 1994 installation of new ovens.

8-42-400 ADMINISTRATIVE REQUIREMENTS

8-42-401 Compliance Schedule: Any person subject to the requirements of Section 8-42-303 of this rule shall comply with the following increments of progress:

401.1 By January 1, 1990: Submit a status report to the APCO stating the options under consideration for retrofitting or replacing existing ovens.

401.2 By January 1, 1991: Submit a plan describing the methods proposed to be used to comply with 8-42-303.

401.3 By March 31, 1991: Submit a completed application for any Authority to Construct necessary to comply with these requirements.

401.4 By January 1, 1992: Be in full compliance with all applicable requirements.

8-42-402 Delayed Compliance Schedule: Any person seeking to comply with this rule under Section 8-42-304 shall comply with the following increments of progress:

402.1 By January 1, 1991: Submit a plan describing the methods proposed to be used to comply with 8-42-302.

402.2 By January 1, 1992: Submit to the APCO a status report on the purchase of the new ovens.

402.3 By January 1, 1993: Submit a completed application for any Authority to Construct necessary to comply with these requirements.

402.4 By January 1, 1994: Be in full compliance with all applicable requirements.

8-42-500 MONITORING AND RECORDS

8-42-501 Approved Emission Control System, Recordkeeping Requirements: Any person operating air pollution abatement equipment to comply with Section 8-42-302, or 303 shall record key system operating parameters on a daily basis (Adopted June 1, 1994)

8-42-502 Burden of Proof: Any person claiming the small bakery exemption per Section 8-20-110 must have information available, such as production records, that would allow the APCO to verify this exemption. (Adopted June 1, 1994)

8-42-600 MANUAL OF PROCEDURES

8-42-601 Determination of Emissions: Emissions of organics shall be measured as prescribed in the Manual of Procedures, Source Test Procedure ST-32.

8-42-602 Emission Calculation Procedures: If emission measurements conducted in accordance with Section 8-

42-601 are not available for a specific bakery product, oven emissions shall be calculated using the emission factors in Table I.

TABLE I

Yt*	Pounds VOC/ton bakery product	Yt*	Pounds VOC/ton bakery product
1.0	.8488	16.0	7.5176
1.5	1.0711	16.5	7.7399
2.0	1.2934	17.0	7.9622
2.5	1.5157	17.5	8.1845
3.0	1.7380	18.0	8.4068
3.5	1.9603	18.5	8.6291
4.0	2.1826	19.0	8.8514
4.5	2.4049	19.5	9.0737
5.0	2.6272	20.0	9.2959
5.5	2.8495	20.5	9.5182
6.0	3.0718	21.0	9.7405
6.5	3.2941	21.5	9.9628
7.0	3.5163	22.0	10.1851
7.5	3.7386	22.5	10.4074
8.0	3.9609	23.0	10.6297
8.5	4.1832	23.5	10.8520
9.0	4.4055	24.0	11.0743
9.5	4.6278	24.5	11.2966
10.0	4.8501	25.0	11.5189
10.5	5.0724	25.5	11.7412
11.0	5.2947	26.0	11.9635
11.5	5.5170	26.5	12.1857
12.0	5.7393	27.0	12.4080
12.5	5.9616	27.5	12.6303
13.0	6.1839	28.0	12.8526
13.5	6.4061	28.5	13.0746
14.0	6.6284	29.0	13.2972
14.5	6.8507	29.5	13.5195
15.0	7.0730	30.0	13.7418
15.5	7.2953		

*Yt = (yeast percentage) * (fermentation time).

If yeast is added in 2 steps, Yt = [(initial yeast percentage) * (total fermentation time) + (remaining yeast percentage) * (remaining fermentation time)].

**REGULATION 8
ORGANIC COMPOUNDS
RULE 43
SURFACE PREPARATION AND COATING OF MARINE VESSELS**

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**REGULATION 8
ORGANIC COMPOUNDS
RULE 43
SURFACE PREPARATION AND COATING OF MARINE VESSELS**

(Adopted November 23, 1988)

8-43-100 GENERAL

8-43-101 Description: The purpose of this Rule is to limit the emission of volatile organic compounds from the surface preparation and coating of marine vessels, components and structures intended for exposure to a marine environment, including oil drilling platforms and navigational aids.

(Amended October 16, 2002)

8-43-110 Exemption, Pleasure Craft and Fishing Vessels: The provisions of this Rule shall not apply to the coating of pleasure craft or commercial fishing vessels using coatings purchased in containers of one gallon or less.

8-43-111 Exemption, Low Usage Coatings: The requirements of Section 8-43-301 and 302 shall not apply to any coating used in volumes less than 75.7 l (20 gal) in any one calendar year, provided the requirements of Section 8-43-401 are satisfied.

8-43-112 Exemption, Aerosol Cans: The provisions of this Rule shall not apply to coating operations employing hand held aerosol cans. Application of coating from aerosol cans is subject to the provisions of Regulation 8, Rule 49 or to the California Air Resources Board aerosol coating product regulation found in Title 17 of the California Code of Regulations, beginning at Section 94520.

(Amended 6/20/90; 10/16/02)

8-43-113 Exemption, Solid Film Lubricant: The provisions of this Rule shall not apply to any solid film lubricant.

8-43-114 Exemption, Touch-up: The provisions of this Rule shall not apply to Touch-up operations.

8-43-115 Exemption, Aircraft and Aerospace Vehicles: The provisions of this Rule shall not apply to the coating of aircraft and aerospace vehicles subject to Rule 29 of Regulation 8.

8-43-116 Exemption, Architectural Coatings: The provisions of this Rule shall not apply to bridges, piers or other stationary structures which require architectural coatings subject to Regulation 8, Rule 3.

(Amended October 6, 1993)

8-43-117 Exemption, Aluminum Hull Coatings: The provisions of this Rule shall not apply to antifoulant coating used on aluminum hulls, provided records are maintained as specified in Section 8-43-501.

8-43-118 Deleted October 16, 2002

8-43-119 Exemption, Historic Vessels: The brush or roller application of up to 55 gallons of coatings per year to historic vessels by a public museum or park is exempt from the VOC limits of Sections 8-43-301 and 302, provided records are maintained as specified in Section 8-43-501.

(Adopted April 18, 2001)

8-43-120 Limited Exemption, Specific Surface Preparation Operations: The requirements of Section 8-43-321 shall not apply to surface preparation solvent used on (i) surfaces prepared for adhesive bonding of dissimilar substrates, (ii) gears, turbines, turbine generators and associated housings with faying or working surfaces where surfaces are required to undergo material testing or application of transfer dyes, (iii) electrical and electronic components, or (iv) cleaning associated with research and development operations; performance testing to determine coating, adhesive or ink performance; or testing for quality control or quality assurance purposes.

(Adopted October 16, 2002)

8-43-121 Limited Exemption, Military Components: The requirements of Section 8-43-321 shall not apply to the surface preparation of any military component for which a contract exists that specifies the use of an organic solvent that does not comply with

the standards in Section 8-43-321, provided that contract has been entered into prior to December 1, 2005.

(Adopted October 16, 2002)

8-43-200 DEFINITIONS

8-43-201 Air-Dried Coating: Any coating which is not heated above 90°C (194°F) for the purpose of curing or drying.

8-43-202 Baked Coating: Any coating which is cured or dried in an oven where the oven air temperature exceeds 90°C (194°F).

8-43-203 Coating Operation: The sum of all steps involved in the application, drying and/or curing of surface coatings.

8-43-204 Antifoulant Coating: Any coating applied to the underwater portion of a vessel to prevent or reduce the attachment of biological organisms and registered with the Environmental Protection Agency (EPA) as a pesticide.

8-43-205 Heat-Resistant Coating: Any coating which, during normal use, must withstand temperatures of at least 80°C (175°F).

8-43-206 High-Gloss Coating: Any coating which achieves at least 85% reflectance on a 60° meter when tested by ASTM Method D-523.

8-43-207 High-Temperature Coating: Any coating which, during normal use, must withstand temperatures of at least 426°C (800°F).

8-43-208 Inorganic Zinc Coating: A coating derived from zinc dust incorporated into an inorganic silicate binder for the express purpose of providing corrosion protection.

8-43-209 Navigational Aids: Buoys or other Coast Guard waterway markers. For the purposes of subsection 8-43-302.6, specialty coating limit applies only to the re-coating of in-use navigational aids done at the usage site to be returned immediately to the water.

8-43-210 Pleasure Craft: Privately owned vessels used for non-commercial purposes.

8-43-211 Pretreatment Wash Primer: Any coating which contains a minimum of 1/2% acid by weight applied directly to bare metal surfaces and is necessary to provide surface etching.

8-43-212 Deleted October 6, 1993

8-43-213 Solid Film Lubricant: A very thin coating consisting of an organic binder system containing as its chief pigment material one or more of the following: molybdenum disulfide, graphite, polytetrafluoroethylene (PTFE) or other solids that act as a dry lubricant between meeting surfaces.

8-43-214 Touch-up: That portion of the surface preparation or coating operation which is incidental to the main coating process but necessary to cover minor imperfections or mechanical damage incurred prior to intended use.

(Amended October 16, 2002)

8-43-215 Volatile Organic Compounds: Any organic compound (excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate) which would be emitted during use, application, curing or drying of a solvent or surface coating.

215.1 For purposes of calculating VOC content of a coating, any water or any of the following non-precursor organic compounds shall not be considered to be part of the coating:

- acetone
- methyl acetate
- parachlorobenzotrifluoride (PCBTF)
- cyclic, branched or linear, completely methylated siloxanes (VMS)

215.2 For the purposes of calculating the VOC content of a surface preparation or cleaning solvent, any water or the non-precursor organic compounds listed in subsection 8-43-215.1, above, shall be considered part of the volume of solvent but shall not be considered part of the VOC content of the solvent.

(Amended 12/20/95; 10/16/02)

8-43-216 Undersea Weapons System: All components of a weapons system that is launched or fired undersea.

- 8-43-217 Military Exterior Topcoat:** An exterior topcoat applied to military vessels, including U.S. Coast Guard vessels subject to specified chemical, biological, and radiological washdown requirements.
- 8-43-218 Specialty Interior Coating:** An extreme performance coating used on interior surfaces aboard ships which has the fire retardant properties and has a toxicity index of less than 0.03 in addition to existing military physical and performance requirements.
- 8-43-219 Wire Spray Aluminum:** A process of applying a molten aluminum coating to a steel substrate using an oxy-fuel combustion spray gun.
- 8-43-220 Sealant Coat for Wire Spray Aluminum:** A coating approximately one mil thick of epoxy, thinned one for one with appropriate solvent.
- 8-43-221 Special Marking Coating:** Coating used specifically for items such as flight decks, ships numbers and other demarcations for safety and other purposes.
- 8-43-222 Tack Coat:** An epoxy coat up to two mils thick applied to allow adhesion to a subsequent coating where the existing epoxy coating has aged beyond the time limit specified by the manufacturer for the application of the next coat.
- 8-43-223 Repair and Maintenance of Commercial Vessels:** The partial recoating of in-use non-U.S. Navy vessels over existing thermoplastic coatings.
- 8-43-224 Thermoplastic Coating:** A single package lacquer drying coating where the resin would become pliable with the application of heat such as vinyl, chlorinated rubber or bituminous.
- 8-43-225 Extreme High-Gloss Coating:** Any coating which achieves at least 95% reflectance on a 60° meter when tested by ASTM Method D-523.
- 8-43-226 Low Activation Interior Coating:** A special composition coating used on interior surfaces aboard ships to minimize the activation of pigments on painted surfaces within a radiation environment.
- 8-43-227 Key System Operating Parameter:** An air pollution abatement equipment operating parameter, such as temperature, flow rate or pressure, that ensures operation of the abatement equipment within manufacturer specifications and compliance with the standards in Sections 8-43-301, 302, 320 and/or 321.
- (Adopted 6/1/94; 10/16/02)*
- 8-43-228 Approved Emission Control System:** A system for reducing emissions to the atmosphere, consisting of an abatement device and a collection system, which achieves the abatement efficiency specified in the applicable standards at all times during the operation and meets the requirements of Regulation 2, Rule 1.
- (Adopted October 16, 2002)*
- 8-43-229 Surface Preparation:** The cleaning of marine vessels, components and structures subject to a marine environment prior to coating, further treatment, sale, or intended use. Solvent cleaning of marine components subject to and in compliance with Regulation 8, Rule 16: Solvent Cleaning Operations, is not subject to the surface preparation standards in this Rule.
- (Adopted October 16, 2002)*
- 8-43-230 Electrical and Electronic Components:** Components and assemblies of components that generate, convert, transmit, or modify electrical energy. Electrical and electronic components include, but are not limited to, wires, windings, stators, rotors, magnets, contacts, relays, printed circuit boards, printed wire assemblies, wiring boards, integrated circuits, resistors, capacitors and transistors. Cabinets in which electrical and electronic components are housed are not considered electrical and electronic components.
- (Adopted October 16, 2002)*
- 8-43-300 STANDARDS**
- 8-43-301 Limits:** Effective September 1, 1989, except as otherwise provided by this Rule, a person shall not apply to any marine vessel, component or structure intended for exposure to a marine environment any coating with a VOC content in excess of the following limits, expressed as grams of VOC per liter of coating applied, excluding water, unless emissions to the atmosphere are controlled to an equivalent level (pounds VOC per gallon of solids) by an air pollution abatement equipment with an

abatement device efficiency of at least 85% that meets the requirements of Regulation 2, Rule 1.

301.1 Baked Coatings: 275 grams/liter (2.3 pounds/gallon)

301.2 Air-Dried Coatings: 340 grams/liter (2.8 pounds/gallon)

(Amended 10/6/93; 6/1/94)

8-43-302 Specialty Coating Limits: A person shall not apply to any marine vessel, component or structure intended for exposure to a marine environment any specialty coating with a VOC content in excess of the following limits, expressed as grams of VOC per liter (pounds per gallon) of coating applied, excluding water, unless emissions to the atmosphere are controlled to an equivalent level (pounds VOC per gallon of solids) by an air pollution abatement equipment with an abatement device efficiency of at least 85% which meets the requirements of Regulation 2, Rule 1.

302.1 Anti-foulant 400 (3.3)

302.2 Heat Resistant (Air Dried) 420 (3.5)

Heat Resistant (Baked) 360 (3.0)

302.3 High-Gloss (Air Dried) 340 (2.8)

High Gloss (Baked) 275 (2.3)

302.4 High-Temperature 500 (4.2)

302.5 Inorganic Zinc 340 (2.8)

302.6 Navigational Aids 550 (4.6)

302.7 Pretreatment Wash Primer 420 (3.5)

302.8 Undersea Weapons System (Air Dried) 340 (2.8)

Undersea Weapons System (Baked) 275 (2.3)

302.9 Military Exterior Topcoat 340 (2.8)

302.10 Specialty Interior 340 (2.8)

302.11 Sealant Coat for Wire 610 (5.1)

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302.14 Repair and Maintenance 340 (2.8)

Thermoplastic

302.15 Extreme High-Gloss (Air Dried) 490 (4.1)

Extreme High Gloss (Baked) 420 (3.5)

302.16 Low Activation Interior 420 (3.5)

Coating

(Amended 10/6/93; 6/1/94; 4/18/01)

8-43-303 Deleted October 6, 1993

8-43-304 Prohibition of Specification: No person shall require for use or specify the application of a coating or solvent subject to this Rule if such use or application results in a violation of any provision of this Rule. The prohibition of this Section shall apply to all written or oral contracts under the terms of which any coating or solvent is applied to any marine vessel, component or structure intended for exposure to a marine environment at any physical location within the District.

(Amended October 16, 2002)

8-43-305 Compliance Statement Requirement: The manufacturer shall include a designation of VOC (as defined in Section 8-43-215) expressed in grams per liter or pounds per gallon on data sheets for all coatings and solvents which are offered for sale in the District to be used on marine vessels, components and structures intended for exposure to a marine environment.

(Amended October 16, 2002)

8-43-306 Deleted October 6, 1993

8-43-307 Deleted October 6, 1993

8-43-320 Solvent Evaporative Loss Minimization: Unless emissions to the atmosphere are controlled by an approved emission control system with an overall abatement efficiency of at least 85%, any person using solvent for surface preparation or cleanup or any person mixing, using or disposing of coatings containing organic solvent:

320.1 Shall use closed containers for the storage or disposal of cloth or paper used for solvent surface preparation and cleanup.

- 320.2 Shall close containers of coating, catalyst, and fresh or spent solvent when not in use.
- 320.3 Shall not use organic solvent for the cleanup of spray equipment, including paint lines, with a VOC content in excess of 50 g/l (0.42 lbs/gal) unless either (i) the solvent is pressurized through spray equipment with atomizing air off or dispensed from a small non-atomizing container, and collected and stored in a closed container until recycled or properly disposed of offsite, or (ii) a spray gun washer subject to and in compliance with the requirements of Regulation 8, Rule 16 is used.

(Amended October 16, 2002)

- 8-43-321 Surface Preparation Standards:** Effective June 1, 2003, no person shall use a surface preparation solvent with a VOC content that exceeds 50 g/l (0.42 lbs/gal) for surface preparation of any marine vessel, component or structure subject to a marine environment unless emissions to the atmosphere are controlled to an equivalent level by an approved emission control system with an abatement device efficiency of at least 85 percent that meets the requirements of Regulation 2, Rule 1.

(Adopted October 16, 2002)

8-43-400 ADMINISTRATIVE REQUIREMENTS

- 8-43-401 Low-Usage Coatings Petition:** Any person seeking to satisfy the conditions of Section 8-43-111 shall comply with the following requirements:

- 401.1 The user or specifier shall petition the APCO in writing that substitute complying coatings are not available.
- 401.2 If the APCO grants written approval, such petition will be repeated on an annual basis.

8-43-402 Deleted October 16, 2002

8-43-500 MONITORING AND RECORDS

- 8-43-501 Coating Records:** Any person using coatings or solvents subject this Rule shall:

- 501.1 Maintain, or have available, a current list of coatings in use which provides all of the coating data necessary to evaluate compliance, including the following information, as applicable:
- a. coating, catalyst and reducer used
 - b. mix ratio of components used
 - c. VOC content of coating as applied
 - d. military specification of the component or area coated
 - e. VOC content of solvent used for cleanup and surface preparation
- 501.2 Have available monthly records that provide the following information on a daily basis, as applicable:
- a. coating and mix ratio of components in the coating used
 - b. quantity of each coating applied
 - c. identification of specialty coating limit category
 - d. oven temperature
- 501.3 Have available monthly records of the type and amount of surface preparation and clean-up solvent, unless more frequently specified by permit conditions imposed by Regulation 2-1-403.
- 501.4 Records shall be retained and available for inspection by the APCO for the previous 24 month period.

(Amended October 16, 2002)

8-43-502 Deleted October 6, 1993

- 8-43-503 Air Pollution Abatement Equipment, Recordkeeping Requirements:** Any person operating air pollution abatement equipment to comply with Sections 8-43-301, 302, 320 or 321, in addition to Section 8-43-501, shall record key system operating parameters on a daily basis.

(Adopted 6/1/94; Amended 10/16/02)

8-43-600 MANUAL OF PROCEDURES

- 8-43-601 Analysis of Samples:** Samples of volatile organic compounds as specified in Sections 8-43-301 and 302 shall be analyzed as prescribed in the Manual of Procedures, Volume III, Method 21 or 22.
(Amended October 6, 1993)
- 8-43-602 Determination of Emissions:** Emissions of volatile organic compounds as specified in Sections 8-43-301 302, 320 and/or 321 shall be measured as prescribed by any of the following methods 1) BAAQMD Manual of Procedures, Volume IV, ST-7, 2) EPA Method 25 or 25A. When either EPA Method 25, or 25A is used, control device equivalency shall be determined as prescribed in 55 FR 26865 (June 29, 1990). A source shall be considered in violation if the VOC emissions measured by any of the referenced test methods exceed the standards of this rule.
(Amended 6/1/94; 10/16/02)
- 8-43-603 Determination of Acid Content:** Measurement of acid content as specified in Section 8-43-211 shall be determined in accordance with ASTM Method D-1613-96.
(Adopted 10/6/93; Amended 10/16/02)
- 8-43-604 Analysis of Solvent Samples:** Samples of volatile organic compounds as specified in Section 8-43-320 and 321 shall be analyzed as prescribed in the Manual of Procedures, Volume III, Method 31.
(Adopted October 16, 2002)
- 8-43-605 Analysis of Exempt Compounds:** Samples of PCBTF, VMS, and methyl acetate shall be analyzed by the Manual of Procedures, Volume III, Method 41, 43 and by ASTM Method D-6133-00, respectively.
(Adopted October 16, 2002)

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

REGULATION 8

ORGANIC COMPOUNDS

RULE 44

MARINE VESSEL LOADING TERMINALS

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REGULATION 8

ORGANIC COMPOUNDS

RULE 44

MARINE VESSEL LOADING TERMINALS

(Adopted January 4, 1989)

8-44-100 GENERAL

8-44-101 Description: The purpose of this Rule is to limit emissions of precursor organic compounds into the atmosphere from the loading of organic liquid or the loading into tank vessels with prior cargo of organic liquid at marine terminals.

8-44-110 Exemption, Loading Events: Sections 8-44-301 through 305 of this Rule shall not apply to loading events of less than 159 cubic meters (1,000 bbls).

8-44-111 Exemption, Marine Vessel Fueling: Sections 8-44-301 through 305 of this Rule shall not apply to the loading of organic liquids associated with the fueling (bunkering) of marine vessels.

8-44-112 Exemption, Lightering: This Rule shall not apply to the transfer of organic liquids from one marine vessel to another marine vessel.

8-44-113 Delayed Compliance, Limited Trade Vessel: Until July 1, 1992, sections 8-44-301 through 304 of this Rule shall not apply to the loading of organic liquids into vessels making infrequent visits.

8-44-114 Delayed Compliance, Small Terminals: Until July 1, 1992, sections 8-44-301 through 304 of this Rule shall not apply to small terminals.

8-44-200 DEFINITIONS

8-44-201 Marine Terminal: Any facility or structure constructed to load or unload organic liquid bulk cargo into marine tank vessels.

8-44-202 Marine Vessel: Any tugboat, tanker, freighter, passenger ship, barge or other boat, ship or watercraft (as defined in Section 39037.1 of the California Health and Safety Code) except those used primarily for recreation.

8-44-203 Tank Vessel: Any vessel which is specially constructed or converted to carry liquid bulk cargo in tanks.

8-44-204 Organic Liquid: For the purpose of this Rule, organic liquid is defined as all gasoline, gasoline blending stocks, aviation gas and aviation fuel (JP-4 type) and crude oil.

8-44-205 Emission Control Equipment: Any equipment, machinery, apparatus or device used to recover or reduce emissions of organic vapors from escaping into the atmosphere.

8-44-206 Organic Compound, Precursor: Any organic compound as defined in Regulation 1, Section 233 excepting the non-precursor organic compounds in Regulation 1-234.

8-44-207 Loading Event: An incident or occurrence beginning with the connecting of marine terminal storage tanks to a tank vessel by means of piping or hoses, the transferring of organic liquid cargo from the storage tank into the tank vessel and ending with the disconnecting of the pipes or hoses.

8-44-208 Leak Free: A liquid leak of less than four drops per minute.

8-44-209 Gas Tight: A condition that exists when the concentration of precursor organic compounds, measured 1 centimeter from any source, does not exceed 10,000 ppm (expressed as methane) above background.

8-44-210 Crude Oil: A naturally occurring mixture consisting predominantly of hydrocarbons and/or sulfur, nitrogen and oxygen derivatives of hydrocarbons which is removed from the earth in a liquid state or is capable of being so removed.

8-44-211 Loading of Organic Liquid: The loading of an organic liquid or the loading into a tank vessel where the prior cargo was an organic liquid.

8-44-212 Infrequent Visits: Not more than two loading events for any tank vessel in the District in any calendar year.

8-44-213 Small Terminal: Any marine terminal with a total organic liquid loading of less than 159,000 cubic meters (1,000,000 bbls) in any calendar year after 1985. Any marine terminal that loads more than 159,000 cubic meters (1,000,000 bbls) in any calendar year after 1985 cannot qualify for the small terminal exemption.

8-44-300 STANDARDS

8-44-301 Marine Terminal Loading Limit: By July 1, 1991, a person shall not load or permit the loading of an organic liquid into a marine tank vessel within the District unless:

301.1 The emissions of precursor organic compounds are limited to 5.7 grams per cubic meter (2 lbs per 1000 bbls) of organic liquid loaded, or

301.2 The emissions of precursor organic compounds are reduced at least 95 percent by weight from uncontrolled conditions.

8-44-302 Emission Control Equipment: The emission control equipment shall be designed and operated to collect and process all organic compound emissions from the loading of organic liquids into marine vessels.

8-44-303 Operating Practice: Effective July 1, 1991, all hatches, pressure relief valves, connections, gauging ports and vents associated with the loading of organic liquid into marine vessels at a marine terminal shall be maintained to be leak free and gas tight. The owner or operator of any equipment associated with the loading of organic liquid into tank vessels at a marine terminal shall maintain that equipment to be leak free and gas tight.

8-44-304 Equipment Maintenance: Effective July 1, 1991, a person shall not load or permit the loading of organic liquid into a marine vessel unless:

304.1 The owner or operator of the tank vessel loading organic liquid certifies to the terminal that the vessel is leak free, gas tight and in good working order, and

304.2 Loading ceases any time gas or liquid leaks as defined by Section 8-44-208 or 209 are discovered. Loading may continue only after leak(s) have been repaired.

8-44-305 Ozone Excess Day Prohibition: Effective July 1, 1989, and thereafter, loading of organic liquid into any marine tank vessel shall not be allowed on any day that the District predicts an excess of any Federal Ambient Air Quality Standard for ozone unless the emissions of precursor organic compounds are reduced at least 95% by weight from uncontrolled conditions, or they are limited to 5.7 grams per cubic meter (2 lbs/1000 barrels).

8-44-400 ADMINISTRATIVE REQUIREMENTS

8-44-401 Compliance Schedule: Any owner or operator of a marine terminal subject to Sections 8-44-301 through 305 of this Rule shall comply with the following increments of progress:

401.1 By July 1, 1989, submit to the APCO a control plan which describes the steps and schedule that will be taken to achieve compliance with the requirements of this Rule. This plan must be updated annually until final compliance with Section 8-44-301 is achieved.

401.2 By January 1, 1990, submit to the APCO an application for an authority to construct any shore side equipment required to comply with the requirements of Section 8-44-301.

Failure to meet any provision of the plans submitted in accordance with Section 8-44-401 is considered a violation.

8-44-402 Safety/Emergency Operations: Nothing in this rule shall be construed as to:

402.1 Require any act or omission that would be in violation of any regulation or other requirement of the United States Coast Guard or;

402.2 Prevent any act or omission that is necessary to secure the safety of a vessel or for saving life at sea.

8-44-500 MONITORING AND RECORDS

8-44-501 Record Keeping: Effective February 1, 1989, a person subject to Sections 8-44-110, 111, 113, 114, 301 through 305 of this Rule shall maintain operating records regarding each loading event. The records shall be maintained at the terminal for at least two years and shall be made available to the APCO upon request. The

records shall include but are not limited to:

501.1 The name and location of the marine terminal at which the loading event occurred.

501.2 The company responsible for the operation of the marine terminal.

501.3 The date(s) and times at which the tank vessel arrived and departed from the marine terminal.

501.4 The name, registry of the vessel loaded and legal owner of the vessel.

501.5 The prior cargo carried by that tank vessel.

501.6 The type and amount of organic liquid cargo loaded into the tank vessel.

501.7 The condition of the tanks prior to being loaded, i.e., cleaned, crude oil washed, gas freed, etc.

8-44-502 Burden of Proof: Persons seeking to demonstrate compliance with Subsection 8-44-301.1 must maintain adequate test data and provide verification opportunities to the APCO on request.

8-44-600 MANUAL OF PROCEDURES

8-44-601 Determination of Emissions: Emissions of precursor organic compounds as specified in Section 8-44-301 shall be measured as prescribed in the Manual of Procedures, Volume IV, ST-34. This test shall be conducted so that the emissions from at least the last 50 percent of the total organic liquid loaded are included.

8-44-602 Efficiency and Mass Emission Determination (Vapor Processing System): The means by which mass emission rates of vapor processing systems are determined is set forth in the Manual of Procedures, Volume IV, ST-4.

8-44-603 Leak Tests And Gas Tight Determinations: The measurement of precursor organic compounds from equipment to determine whether they are leak free and gas tight shall be in accordance with the provisions contained in EPA reference method 21.

**REGULATION 8
ORGANIC COMPOUNDS
RULE 45
MOTOR VEHICLE AND MOBILE EQUIPMENT COATING OPERATIONS**

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**REGULATION 8
ORGANIC COMPOUNDS
RULE 45
MOTOR VEHICLE AND MOBILE EQUIPMENT COATING OPERATIONS**

(Adopted June 7, 1989)

8-45-100 GENERAL

- 8-45-101 Description:** The purpose of this Rule is to limit the emission of volatile organic compounds from the finishing or refinishing of motor vehicles, mobile equipment and their parts and components.
- 8-45-110 Exemption, Original Equipment Manufacturer:** The provisions of this Rule shall not apply to Original Equipment Manufacturer (OEM) coatings applied at manufacturing or assembly plants which are subject to Regulation 8, Rule 13.
- 8-45-111 Exemption, Touch-up:** The provisions of this Rule shall not apply to touch-up operations.
- 8-45-112 Exemption, Graphic Design Applications:** The provisions of this Rule shall not apply to graphic design applications.
- 8-45-113 Exemption, Military Vehicles and Ground Support Equipment:** The provisions of this Rule shall not apply to the coating of military vehicles and ground support equipment which is subject to the provisions of Regulation 8, Rule 19. Military vehicles include tanks and armored personnel carriers but do not include passenger vehicles. (Amended November 2, 1994)
- 8-45-114 Exemption, Radiators and Engine Components:** The provisions of this Rule shall not apply to the coating of radiators and engine components which is subject to the provisions of Regulation 8, Rule 19. (Amended November 2, 1994)
- 8-45-115 Exemption, Aerosol Paint Products:** The provisions of this Rule shall not apply to the application of aerosol paint products which is subject to the provisions of Regulation 8, Rule 49. (Adopted June 20, 1990)
- 8-45-116 Limited Exemption, Transfer Efficiency:** The provisions of Section 8-45-303 shall not apply to the application of high viscosity or thixotropic coatings with application equipment that is supplied with and is an integral part of the coating container or to the application of corrosion protective coatings to enclosed interior spaces. (Adopted November 2, 1994)

8-45-200 DEFINITIONS

- 8-45-201 Antiglare/Safety Coating:** A coating which minimizes light reflection for safety purposes. (Amended November 2, 1994)
- 8-45-202 Deleted November 2, 1994**
- 8-45-203 Camouflage Coating:** A coating applied on motor vehicles to conceal such vehicles from detection.
- 8-45-204 Catalyst:** A substance whose presence enhances the reaction between chemical compounds.
- 8-45-205 Color Match:** The ability of a repair coating to blend into an existing coating so that color difference is not visible.
- 8-45-206 Electrostatic Application:** The application of charged atomized paint droplets which are deposited by electrostatic attraction.
- 8-45-207 Deleted November 2, 1994**
- 8-45-208 Final Stage Manufacture:** Where an incomplete vehicle chassis is delivered to a manufacturer for installation and paint of a truck body and/or components to form a completed vehicle.

- 8-45-209 Graphic Design Application:** The application of logos, letters, numbers and graphics to a painted surface, with or without the use of a template.
- 8-45-210 Ground Support:** Vehicles used in support of aircraft activities at airports.
- 8-45-211 Group I Vehicles:** Passenger cars, large/heavy duty truck cabs and chassis, light- and medium-duty trucks and vans, and motorcycles.
- 8-45-212 Group II Vehicles and Equipment:** Public transit buses and mobile equipment.
- 8-45-213 High-Volume, Low-Pressure (HVL) Spray:** Equipment used to apply coatings by means of a gun which is designed to be operated and which is operated between 0.1 and 10 psig air atomizing pressure measured dynamically at the center of the air cap and at the air horns. (Amended October 6, 1993; November 2, 1994)
- 8-45-214 Large/Heavy Duty Trucks:** Any truck having a manufacturer's gross vehicle weight rating of over 10,000 pounds.
- 8-45-215 Light and Medium-Duty Trucks and Vans:** Any truck or van having a manufacturer's gross vehicle weight rating of 10,000 pounds or less.
- 8-45-216 Metallic/Iridescent Topcoat:** Any coating which contains more than 5 g/l (.042 lb/gal) of metal or iridescent particles, as identified on a technical or material safety data sheet, as applied, where such particles are visible in the dried film.
- 8-45-217 Mobile Equipment:** Any equipment which may be drawn or is capable of being driven on rails or on a roadway, including, but not limited to, trains, railcars, truck bodies, truck trailers, camper shells, mobile cranes, bulldozers, street cleaners, golf carts and implements of husbandry. (Amended November 2, 1994)
- 8-45-218 Precoat:** Any coating which is applied to bare metal primarily to deactivate the metal surface prior to application of a subsequent water-base primer surfacer. Effective April 1, 1995, a precoat shall be a coating that dries by oxidation or chemical polymerization. (Amended November 2, 1994)
- 8-45-219 Pretreatment Wash Primer:** Any coating which contains a minimum of 0.5% acid by weight, is necessary to provide surface etching and is applied directly to bare metal surfaces to provide corrosion resistance and adhesion.
- 8-45-220 Primer:** Any coating applied prior to the application of a topcoat for the purpose of corrosion resistance and adhesion of the topcoat. Primer Surfacer and primer sealer shall be considered as primer when applied to Group II vehicles. (Amended November 2, 1994)
- 8-45-221 Primer Sealer:** Any coating applied for the purpose of sealing the underlying metal or coating system prior to the application of a topcoat. (Amended November 2, 1994)
- 8-45-222 Primer Surfacer:** Any coating applied prior to the application of a topcoat for the purpose of corrosion resistance, adhesion of the topcoat, and which promotes a uniform surface by filling in surface imperfections.
- 8-45-223 Reducer:** The solvent used to thin enamel.
- 8-45-224 Refinishing:** Any coating of vehicles, their parts and components, or mobile equipment, including partial body collision repairs, for the purpose of protection or beautification and which is subsequent to the original coating applied at an Original Equipment Manufacturing (OEM) plant coating assembly line.
- 8-45-225 Specialty Coatings:** Unique coatings and compliant coatings with additives which are necessary due to unusual job performance requirements. Said coatings include, but are not limited to, adhesion promoters, uniform finish blenders, elastomeric materials, gloss flatteners, bright metal trim repair, and anti-glare/safety coatings. (Amended November 2, 1994)
- 8-45-226 Deleted November 2, 1994**
- 8-45-227 Multi-State Topcoat System:** A topcoat system composed of either a basecoat / clearcoat, a basecoat/midcoat/clearcoat, or a groundcoat
The VOC content of a basecoat/clearcoat coating system shall be calculated according to the following formula:

$$VOC_{MS} = \frac{VOC_{bc} + 2VOC_{cc}}{3}$$

The VOC content of a 3-Stage coating system shall be calculated according to the following formula:

$$VOC_{MS} = \frac{VOC_{bc} + VOC_{mc} + 2VOC_{cc}}{4}$$

The VOC content of a 4-Stage coating system shall be calculated according to the following formula:

$$VOC_{MS} = \frac{VOC_{gc} + VOC_{bc} + VOC_{mc} + 2VOC_{cc}}{5}$$

Where:

VOC_{MS} is the sum of the VOC content, as applied, and used to determine compliance with the standards in Section 8-45-301.

VOC_{gc} is the VOC content, as applied, of a pigmented groundcoat, basecoat or tinted primer sealer.

VOC_{bc} is the VOC content, as applied, of a pigmented basecoat or translucent midcoat.

VOC_{mc} is the VOC content, as applied, of a translucent midcoat or tinted clearcoat.

$2VOC_{cc}$ is two times the VOC content, as applied, of a transparent clearcoat.

(Amended November 2, 1994)

8-45-228 Topcoat: Any coating applied over a primer, primer system, or an original OEM finish for the purpose of protection or appearance. For the purposes of this Rule, the VOC limits for solid color and metallic/iridescent topcoats are for single stage applications. A multi stage topcoat may be either a solid or metallic/iridescent color, the VOC_{MS} of a multi stage topcoat system will determine compliance with the VOC standards in Section 8-45-301.1 or 301.2.

(Amended November 2, 1994)

8-45-229 Touch-up Coating: A coating applied by brush or air brush to repair minor surface damage and imperfections.

(Amended June 20, 1990)

8-45-230 Transfer Efficiency: The ratio of the amount of coating solids adhering to the object being coated to the total amount of coating solids used in the application process, expressed as a percentage.

8-45-231 Volatile Organic Compound: Any organic compound (excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate) which would be emitted during use, application, curing or drying of a solvent or surface coating.

231.1 For purposes of calculating VOC content of a coating, any water or any of the following compounds:

- acetone
- parachlorobenzotrifluoride (PCBTF)
- cyclic, branched or linear, fully methylated siloxanes
- shall not be considered to be part of the coating.

231.2 For the purposes of calculating the VOC content of surface preparation solvent subject to 308.4 or temporary protective coating, any water shall be considered to be part of the product. The following compounds:

- acetone
- parachlorobenzotrifluoride (PCBTF)
- cyclic, branched or linear, completely methylated siloxanes (VMS)
- shall not be considered part of the VOC content of the solvent

(Amended November 2, 1994; December 20, 1995; November 6, 1996)

8-45-232 Aerosol Paint Product: A mixture of resins, pigments, liquid solvents and gaseous propellants, packaged in a disposable can for hand-held application.
(Adopted June 20, 1990)

8-45-233 Key System Operating Parameter: An air pollution abatement operating parameter, such as temperature, flow rate or pressure, that ensures operation of the abatement equipment within manufacturer specifications and compliance with the standards in Section 8-45-301.
(Adopted June 1, 1994)

8-45-234 Utility Body: A body designed for and mounted on a light or medium duty truck or van.
(Adopted November 2, 1994)

8-45-235 Temporary Protective Coating: A coating applied for the purpose of protecting adjacent areas to that being painted from overspray. The temporary protective coating is removed after primer or topcoat application.
(Adopted November 2, 1994)

8-45-300 STANDARDS

8-45-301 Limits: Effective on the dates specified, any person who applies coatings to Group I or II vehicles, mobile equipment, their parts and components, shall comply with Subsections 301.1 or 301.2 below:

301.1 Group I Vehicles: A person shall not refinish Group I vehicles, their parts and components, using any coating with a VOC content in excess of the following limits, expressed as grams of VOC per liter (or pounds per gallon) of coating applied, excluding water and exempt solvents, unless emissions to the atmosphere are controlled to an equivalent level by air pollution abatement equipment with an abatement device efficiency of at least 85% and which meets the requirements of Regulation 2, Rule 1:

	January 1, 1992 VOC	April 1, 1995 VOC
Pretreatment Wash Primer	780 g/l (6.5 lbs/gal)	780 g/l (6.5 lbs/gal)
Precoat	780 g/l (6.5 lbs/gal)	600 g/l (5.0 lbs/gal)
Primer/Primer Surfacer	340 g/l (2.8 lbs/gal)	250 g/l (2.1 lbs/gal)
Primer Sealer	420 g/l (3.5 lbs/gal)	420 g/l (3.5 lbs/gal)
Solid Color Topcoat	600 g/l (5.0 lbs/gal)	420 g/l (3.5 lbs/gal)
Metallic/Iridescent Topcoat	600 g/l (5.0 lbs/gal)	520 g/l (4.3 lbs/gal)
Multi -Stage Topcoat System	600 g/l (5.0 lbs/gal)	540 g/l (4.5 lbs/gal)

301.2 Group II Vehicles and Mobile Equipment: A person shall not finish or refinish Group II vehicles and equipment or their parts and components using any coating with a VOC content in excess of the following limits, expressed as grams of VOC per liter (or pounds per gallon) of coating applied, excluding water and exempt solvents, unless emissions to the atmosphere are controlled to an equivalent level by air pollution abatement equipment with an abatement device efficiency of at least 85% and which meets the requirements of Regulation 2, Rule 1:

	January 1, 1992 VOC	April 1, 1995 VOC
Pretreatment Wash Primer	780 g/l (6.5 lbs/gal)	780 g/l (6.5 lbs/gal)
Precoat	780 g/l (6.5 lbs/gal)	600 g/l (5.0 lbs/gal)
Primer	340 g/l (2.8 lbs/gal)	250 g/l (2.1 lbs/gal)
Primer Sealer	340 g/l (2.8 lbs/gal)	340 g/l (2.8 lbs/gal)
Topcoat	420 g/l (3.5 lbs/gal)	420 g/l (3.5 lbs/gal)

Metallic/Iridescent Topcoat	420 g/l (3.5 lbs/gal)	420 g/l (3.5 lbs/gal)
Camouflage	420 g/l (3.5 lbs/gal)	420 g/l (3.5 lbs/gal)

(Amended November 2, 1994)

8-45-302 Deleted October 6, 1993

8-45-303 Transfer Efficiency: A person shall not apply any coating to any Group I or II vehicles or mobile equipment or their parts and components unless one of the following methods is used:

- 303.1 Electrostatic application equipment, operated in accordance with the manufacturer's recommendations;
- 303.2 High-Volume, Low-Pressure (HVLP) spray equipment, operated in accordance with the manufacturer's recommendations; or
- 303.3 Any other coating application which achieves a transfer efficiency equivalent to the application methods listed in subsection 303.1 or 303.2. Prior written approval from the APCO shall be obtained for each equivalent method used.

(Amended October 6, 1993; November 2, 1994)

8-45-304 Prohibition of Specification: No person shall solicit or require for use or specify the application of a coating on a Group I or II vehicle, mobile equipment, or part or component thereof if such use or application results in a violation of the provisions of this Rule. The prohibition of this Section shall apply to all written or oral contracts under the terms of which any coating which is subject to the provisions of this Rule is to be applied to any motor vehicle, mobile equipment, or part or component at any physical location within the District.

8-45-305 Prohibition of Sale: A person shall not offer for sale, sell within the District, or ship into the District, any coating if such product is prohibited by any of the provisions of this Rule. The prohibition of this Section shall apply to the sale of any coating which will be applied at any physical location within the District.

(Amended November 2, 1994)

8-45-306 Compliance Statement Requirement: The manufacturer of coatings subject to this Rule shall include a designation of VOC (as defined in Section 8-45-231) as supplied, including coating components, expressed in grams per liter or pounds per gallon, excluding water and exempt solvents, on data sheets.

8-45-307 Deleted November 2, 1994

8-45-308 Surface Preparation and Solvent Loss Minimization: Any person using organic solvent for surface preparation and cleanup or mixing, using or disposing of coating or stripper containing organic solvent:

- 308.1 Shall close containers used for the storage or disposal of cloth or paper used for solvent surface preparation and cleanup.
- 308.2 Shall close containers of fresh or spent solvent, coating, catalyst, thinner, reducer, or solvent when not in use.
- 308.3 Shall not use organic compounds for the cleanup of spray equipment, including paint lines, unless equipment for collecting the organic compounds and minimizing their evaporation to the atmosphere is used.
- 308.4 Effective April 1, 1995, the VOC content of surface preparation solvent shall not exceed 72 g/l (0.6 lb/gal). This limit shall not apply to surface preparation solvent applied from a hand held spray bottle. The VOC content of surface preparation solvent used to clean plastic parts shall not exceed 780 g/l (6.5 lbs/gal).

(Amended November 2, 1994).

8-45-309 Deleted October 6, 1993

8-45-310 Deleted October 6, 1993

8-45-311 Small Production/Utility Bodies: A person shall not coat utility bodies where the coating must match that of the vehicles upon which they will be mounted using any

coating with a VOC content in excess of the standards set forth in Subsection 301.1, provided production is less than 20 vehicles per day.

8-45-312 Specialty Coatings: A person shall not use any specialty coating with a VOC content in excess of 840 g/l (7.0 lbs/gal), as applied, excluding water and exempt solvents. Use of all specialty coatings except antiglare/safety coatings shall not exceed 5.0 percent of all coatings applied, on a monthly basis.

(Amended November 2, 1994)

8-45-313 Temporary Protective Coating: A person shall not use any temporary protective coating with a VOC content in excess of 60 g/l (0.5 lbs/gal), excluding water.

(Adopted November 2, 1994)

8-45-314 Precoat Limitation: A person shall not use precoat in excess of 25%, by volume, of the amount of waterborne primer surfacer used.

(Adopted November 2, 1994)

8-45-315 HVLP Marking: Effective April 1, 1995, a person shall not sell or offer for sale for use within the District any HVLP gun without a permanent marking denoting the maximum inlet air pressure in psig at which the gun will operate within the parameters specified in Section 8-45-213.

(Adopted November 2, 1994)

8-45-316 Filtration: Effective April 1, 1995, a person shall not apply single or multi-stage topcoats subject to Section 8-45-301 to any vehicle except when exhausted through a properly maintained particulate filtration media. The filter system shall meet the requirements of Regulation 2, Rule 1.

(Adopted November 2, 1994)

8-45-400 ADMINISTRATIVE REQUIREMENTS

8-45-401 Deleted November 2, 1994

8-45-500 MONITORING AND RECORDS

8-45-501 Coating Records: Any person subject to Sections 8-45-301.1 and 301.2 shall:

501.1 Maintain and have available during an inspection a current list of coatings in use that provides all of the coating data necessary to evaluate compliance, including the following information, as applicable:

- a. coating, catalyst and reducer used
- b. mix ratio of components used
- c. VOC content of coating as applied

501.2 Record, on a weekly basis, the following information:

- a. coating and mix ratio of components in the coating used
- b. quantity of each coating applied

501.3 Record, on a daily basis, the following information:

- a. quantity and mix ratio of each specialty coating applied

501.4 Record on a monthly basis the type and amount of solvent used for cleanup and surface preparation.

501.5 Records shall be retained and available for inspection by the APCO for the previous 24-month period.

(Amended November 2, 1994)

8-45-502 Air Pollution Abatement Equipment, Recordkeeping Requirements: Any person operating air pollution abatement equipment to comply with Sections 8-45-301.1 and 301.2, in addition to Section 8-45-501 shall record on a daily basis:

- a. coating and mix ratio of components in the coating used
- b. key system operating parameters.

(Adopted June 1, 1994; Amended November 2, 1994)

- 8-45-503 Precoat Limitation Records:** Any person using precoat shall retain purchase invoices to verify compliance with Section 8-45-314. Such invoices shall be available for inspection upon request. (Adopted November 2, 1994)
- 8-45-504 Sales Records:** Any person within the District selling coatings subject to this Rule shall make receipts of customer purchases available for inspection upon request. Cash sales shall be recorded including the customer's name and business address. (Adopted November 2, 1994)
- 8-45-600 MANUAL OF PROCEDURES**
- 8-45-601 Analysis of Samples:** Samples of volatile organic compounds as specified in Sections 8-45-301.1 or 301.2 shall be analyzed as prescribed in the Manual of Procedures (MOP), Volume III, Method 21 or 22. Samples of volatile organic compounds as specified in Section 8-45-308.4 shall be analyzed as prescribed in the MOP, Volume III, Method 31. Samples containing parachlorobenzotrifluoride shall be analyzed as prescribed in the MOP, Vol. III, Method 41. Samples containing volatile methylsiloxanes shall be analyzed as prescribed in the MOP, Vol. III, Method 43. (Amended November 2, 1994; November 6, 1996)
- 8-45-602 Determination of Emissions:** Emissions of volatile organic compounds as specified in Sections 8-45-301.1 or 301.2 shall be measured as prescribed by any of the following methods: 1) BAAQMD Manual of Procedures, Volume IV, ST 7, 2) EPA Method 25 or 25A. When either EPA Method 25 or 25A is used, control device equivalency shall be determined as prescribed in 55 FR 26865 (June 29, 1990). For the purpose of determining abatement device efficiency, any acetone, PCBTF or VMS shall be included as a volatile organic compound. A source shall be considered in violation if the VOC emissions measured by any of the referenced test methods exceed the standards of this rule. (Amended June 1, 1994; November 6, 1996)
- 8-45-603 Deleted October 6, 1993**
- 8-45-604 Determination of Acid Content:** Measurement of acid content as specified in Section 8-45-219 shall be determined in accordance with ASTM Test Method D-1613-85. (Adopted October 6, 1993)

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

REGULATION 8

ORGANIC COMPOUNDS

RULE 46

MARINE TANK VESSEL TO MARINE TANK VESSEL LOADING

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REGULATION 8

ORGANIC COMPOUNDS

RULE 46

MARINE TANK VESSEL TO MARINE TANK VESSEL LOADING

(Adopted July 12, 1989)

8-46-100 GENERAL

8-46-101 Description: The purpose of this Rule is to limit emissions of precursor organic compounds into the atmosphere resulting from the loading of liquid into a marine tank vessel from another marine tank vessel.

8-46-110 Exemption, Loading Events: Sections 8-46-301 through 305 of this Rule shall not apply to loading events of less than 159 cubic meters (1,000 bbls).

8-46-200 DEFINITIONS

8-46-201 Crude Oil: A naturally occurring mixture consisting predominantly of hydrocarbons and/or sulfur, nitrogen and oxygen derivatives of hydrocarbons which is removed from the earth in a liquid state or is capable of being so removed.

8-46-202 Emission Control Equipment: Any equipment, machinery, apparatus or device used to recover or reduce emissions of precursor organic compounds from escaping into the atmosphere.

8-46-203 Gas Tight: A condition that exists when the concentration of precursor organic compounds, measured 1 centimeter from any source, does not exceed 10,000 ppm (expressed as methane) above background.

8-46-204 Leak Free: A liquid leak of less than four drops per minute.

8-46-205 Loading Event: An incident or occurrence beginning with the connecting of a marine tank vessel to a marine tank vessel by means of pipes or hoses, the transferring of liquid cargo from one marine tank vessel to the other marine tank vessel and ending with the disconnecting of the pipes or hoses. In addition, emissions resulting from venting of precursor organic compounds within the District prior to or after a loading event are included in that loading event.

8-46-206 Marine Tank Vessel: Any marine vessel which is specially constructed or converted to carry liquid bulk cargo in tanks.

8-46-207 Marine Terminal: Any facility or structure constructed to load or unload organic liquid bulk cargo into or out of marine tank vessels.

8-46-208 Marine Vessel: Any tugboat, tanker, freighter, passenger ship, barge or other boat, ship or watercraft (as defined in Section 39037.1 of the California Health and Safety Code) except those used primarily for recreation.

8-46-209 Organic Compound, Precursor: Any organic compound as defined in Regulation 1, Section 233 excepting the non-precursor organic compounds in Regulation 1, Section 234.

8-46-210 Organic Liquid: For the purpose of this Rule, organic liquid is defined as all gasoline, gasoline blending stocks, aviation gas and aviation fuel (JP-4 type) and crude oil.

8-46-300 STANDARDS

8-46-301 Marine Tank Vessel To Marine Tank Vessel Loading Limit: By July 1, 1991, a person shall not conduct a loading event within the District unless:

301.1 The emissions of precursor organic compounds are limited to 5.7 grams per cubic meter (2 lbs per 1000 bbls) of liquid loaded into a marine tank vessel from another marine tank vessel, or

301.2 The emissions of precursor organic compounds are reduced at least 95 percent by weight from uncontrolled conditions.

8-46-302 Emission Control Equipment: The emission control equipment shall be designed and operated to collect and process all emissions of precursor organic compounds resulting from a loading event.

8-46-303 Operating Practice: Effective July 1, 1991, all hatches, pressure relief valves, connections, gauging ports and vents associated with a loading event shall be maintained to be leak free and gas tight. The owner or operator of any equipment associated with the loading event shall maintain that equipment to be leak free and gas tight.

8-46-304 Equipment Maintenance: Effective July 1, 1991, a person shall not initiate or continue a loading event unless:

304.1 The owners or operators of the marine tank vessels certify that the marine tank vessels are leak free, gas tight and in good working order, and

304.2 Loading ceases any time gas or liquid leaks as defined by Sections 8-46-203 and 204, respectively, are discovered. Loading may continue only after leak(s) have been repaired.

8-46-305 Ozone Excess Day Prohibition: Effective July 15, 1989, and thereafter, loading events shall not be allowed on any day that the District predicts an excess of any Federal Ambient Air Quality Standard for ozone unless the emissions of precursor organic compounds meet the standards of Section 8-46-301.

8-46-400 ADMINISTRATIVE REQUIREMENTS

8-46-401 Compliance Schedule:

401.1 Any owner or operator of a marine tank vessel to be used in lightering operations subject to Sections 8-46-301 through 305 of this Rule shall, by January 1, 1990, submit to the APCO a control plan which

describes the steps and schedule that will be taken to achieve compliance with the requirements of this Rule.

401.2 Any owner or operator of a marine terminal shall, by January 1, 1990, submit to the APCO a control plan which describes the steps and schedule that will be taken to achieve compliance with the requirements of this Rule.

401.3 This plan must be updated annually until final compliance with Section 8-46-301 is achieved.

401.4 Failure to meet any provision of a plan submitted in accordance with Section 8-46-401 is considered a violation.

8-46-402 Safety/Emergency Operations: Nothing in this rule shall be construed as to:

402.1 Require any act or omission that would be in violation of any regulation or other requirement of the United States Coast Guard or;

402.2 Prevent any act or omission that is necessary to secure the safety of a vessel or for saving life at sea.

8-46-403 Notification: Until July 1, 1993, the operator of a marine tank vessel intending to engage in a loading event shall notify the APCO. Notification should be in writing although notification by telephone or in person may be made during normal District business hours. Notification must be received by the APCO at least 24 hours prior to the loading event and include names of marine tank vessels, operators, cargo, location, plus estimated start and duration of loading event.

8-46-500 MONITORING AND RECORDS

8-46-501 Record Keeping: Effective January 1, 1990, a person subject to Sections 8-46-110, and 301 through 305 of this Rule shall maintain operating records regarding each loading event. The records shall be maintained for at least two years and shall be made available to the APCO upon request. The records shall include but are not limited to:

501.1 The location of each loading event.

501.2 The company responsible for the operation of the loading event.

501.3 The date(s) and times at which the marine tank vessels arrived and departed from location of the loading event.

501.4 The name, registry of the vessels and legal owner of the marine tank vessels participating in the loading event.

501.5 The prior cargo carried by the receiving marine tank vessel.

501.6 The type and amount of liquid cargo loaded into the receiving marine tank vessel.

501.7 The condition of the receiving tanks prior to being loaded,(i.e., cleaned, crude oil washed, gas freed, etc).

501.8 Equipment maintenance certification required in accordance with Section 8-46-304.

501.9 Amount of ballast water added to unsegregated ballast tanks.

501.10 Description of operating procedure to prevent venting while ballasting into unsegregated ballast tanks.

501.11 The departure and arrival ports or marine terminals for all the marine tank vessels participating in a loading event.

8-46-502 Burden of Proof: Persons seeking to demonstrate compliance with Subsection 8-46-301 must maintain adequate test data and provide verification opportunities to the APCO on request.

8-46-600 MANUAL OF PROCEDURES

8-46-601 Determination of Emissions: Emissions of precursor organic compounds as specified in Section 8-46-301 shall be measured as prescribed in the Manual of Procedures, Volume IV, ST-34. This test shall be conducted so that the emissions from at least the last 50 percent of the total liquid loaded are included.

8-46-602 Efficiency and Mass Emission Determination (Vapor Processing System): The means by which mass emission rates of vapor processing systems are determined is set forth in the Manual of Procedures, Volume IV, ST-4.

8-46-603 Leak Tests And Gas Tight Determinations: The measurement of precursor organic compounds from equipment to determine whether they are leak free and gas tight shall be in accordance with the provisions contained in EPA Reference Method 21.

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

REGULATION 8

ORGANIC COMPOUNDS

RULE 47

AIR STRIPPING AND SOIL VAPOR EXTRACTION OPERATIONS

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REGULATION 8

ORGANIC COMPOUNDS

RULE 47

AIR STRIPPING AND SOIL VAPOR EXTRACTION OPERATIONS

(Adopted December 20, 1989)

8-47-100 GENERAL

8-47-101 Description: The purpose of this Rule is to limit emissions of organic compounds from contaminated groundwater and soil. The provisions of this Rule shall apply to new and modified air stripping and soil vapor extraction equipment used for the treatment of groundwater or soil contaminated with organic compounds.

8-47-109 Exemption, Small Operations: The provisions of Section 8-47-301 shall not apply to operations that satisfy both of the following requirements:

109.1 Operations that emit no more than one of the following compounds: benzene, vinyl chloride, trichloroethylene, perchloroethylene or methylene chloride; and

109.2 Benzene emissions do not exceed 0.05 pounds per day, vinyl chloride emissions do not exceed 0.2 pounds per day or trichloroethylene, perchloroethylene or methylene chloride emissions do not exceed 0.5 pounds per day.

8-47-110 Exemption, Sewage Treatment Facilities: The requirements of this Rule shall not apply to aeration of wastewater at sewage treatment facilities.

8-47-111 Exemption, Industrial Wastewater Treatment Facilities: The requirements of this Rule shall not apply to industrial wastewater treatment facilities.

8-47-112 Exemption, Specified Operation: This Rule shall not apply to operations that are subject to the requirements of Regulation 8, Rule 40.

8-47-113 Exemption, Air Stripping and Soil Vapor Extraction Operations Less Than 1 Pound per Day: The provisions of Section 8-47-301 shall not apply to operations with total emissions of less than 1 pound per day of benzene, vinyl chloride, perchloroethylene, methylene chloride and/or trichloroethylene, provided the requirements of Section 8-47-402 are satisfied. Once an exemption pursuant to this section is granted, if the emissions of an operation exceed 1 pound per day, then that operation is subject to Section 8-47-301. The operator of the source may submit a petition to the APCO in writing requesting review under this exemption if uncontrolled emissions have been shown, due to sustained remediation activities, to have dropped to a constant emission rate of less than 1 pound per day.

8-47-200 DEFINITIONS

8-47-201 Air Stripping: Equipment which is used to transfer organic compounds from contaminated water to the atmosphere by bringing water into intimate contact with air.

8-47-202 Soil Vapor Extraction: An underground and/or aboveground active system installed to extract organic compounds from the soil and vent them to the atmosphere. Operations subject to Regulation 8, Rule 40, are not subject to this Rule.

8-47-203 Active System: A system which forcibly aerates soil by mechanically drawing air through the soil or applying heat to the soil.

8-47-204 Organic Compound: Any compound of carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate.

8-47-300 STANDARDS

8-47-301 Emission Control Requirement, Specific Compounds: Any air stripping and soil vapor extraction operations which emit benzene, vinyl chloride, perchloroethylene, methylene chloride and/or trichloroethylene shall be vented to a control device which reduces emissions to the atmosphere by at least 90 percent by weight.

8-47-302 Organic Compounds: Any air stripping and soil vapor extraction operations with a total organic compound emission greater than 15 pounds per day shall be vented to a control device which reduces the total organic compound emissions to the atmosphere by at least 90 percent by weight.

8-47-400 ADMINISTRATIVE REQUIREMENTS

8-47-401 Reporting, Superfund Amendments and Reauthorization Act (SARA) Sites: Any person responsible for air stripping or soil vapor extraction operations which have not applied for a District permit shall provide written notification to the APCO of intention to operate. This notice shall include:

401.1 Address of the remediation site.

401.2 Schedule of starting date 30 days prior to start-up.

401.3 Written certification that the proposed operation will be in compliance with the requirements of this Rule.

401.4 Any person seeking to satisfy the conditions of Section 8-47-113 shall submit the risk analysis for APCO approval as required in Section 8-47-402.

8-47-402 Less Than 1 Pound Per Day Petition: Any person seeking to satisfy the conditions of Section 8-47-113 shall:

402.1 Submit a petition to the APCO in writing requesting review and written approval of a risk analysis for the benzene, vinyl chloride, perchloroethylene, methylene chloride and/or trichloroethylene organic compound emissions that are less than 1 pound per day.

8-47-500 MONITORING AND RECORDS

8-47-501 Records: Any person subject to the requirement of this Rule shall keep records of the following:

501.1 Any water analysis results as required by Section 8-47-601.

501.2 Any vapor monitoring results that have been collected to monitor the performance of a control device. Such records shall be retained for a minimum of two years from date of entry and be made available to District staff upon request.

8-47-600 MANUAL OF PROCEDURES

8-47-601 Air Stripper Water Sampling: For each of the first three days of operation at least one sample of influent water into the air stripper shall be collected and analyzed. At least one sample shall be collected and analyzed thereafter for each calendar month of operation. Samples shall be collected in accordance with the EPA's or the Regional Water Quality Control Board's Analytical Methods. (Amended October 6, 1993)

8-47-602 Measurement of Organic Content: Organic compound concentration in the water shall be determined by the Regional Water Quality Control Board's Analytical Methods. (Amended October 6, 1993)

8-47-603 Determination of Emissions: Emissions of organic compounds, as specified in sections 8-47-301 and 8-47-302, shall be measured as prescribed by any of the following methods 1) BAAQMD Manual of Procedures, Volume IV, ST-7, 2) EPA Method 25 or 25A. A source shall be considered in violation if the VOC emissions measured by any of the referenced test methods exceed the standards of this rule. (Adopted December 20, 1989; Amended June 15, 1994)

REGULATION 8
ORGANIC COMPOUNDS
RULE 49
AEROSOL PAINT PRODUCTS
(ADOPTED JUNE 20, 1990)

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8-49-100 GENERAL

- 8-49-101 **Description:** The purpose of this rule is to limit emissions of organic compounds from the use of hand-held aerosol paint products.
- 8-49-110 **Exemption, Non-Paint Aerosol Products:** The provisions of this rule shall not apply to aerosol lubricants, mold releases, asphaltic automotive underbody coatings, electrical coatings, cleaners, belt dressings, anti-static sprays, layout fluids and removers, adhesives, maskants, dyes or inks. (Adopted August 21, 1991)
- 8-49-111 **Exemption, Shipment and Use Outside District:** The provisions of this rule shall not apply to aerosol coatings sold, manufactured or warehoused in the District for shipment and use outside of the District. (Adopted August 21, 1991)

8-49-200 DEFINITIONS

- 8-49-201 **Aerosol:** A suspension of solid or liquid particles in a gas.
- 8-49-202 **Aerosol Paint Product:** A mixture of pigments, resins, liquid solvents and gaseous propellants, packaged in a disposable can for hand-held application.
- 8-49-203 **Organic Compound, Non-Precursor:** Methylene chloride, 1,1,1-trichloroethane, 1,1,2-trichlorotrifluoroethane (CFC-113), trichlorofluoromethane (CFC-11), dichlorodifluoromethane (CFC-12), dichlorotetrafluoroethane (CFC-114), chloropentafluoroethane (CFC-115), chlorodifluoromethane (HCFC-22), trifluoromethane (HFC-23), dichlorotrifluoroethane (HCFC-123), tetrafluoroethane (HFC-134a), dichlorofluoroethane (HCFC-141b), chlorodifluoroethane (HFC-142b), 2-chloro-1,1,1,2-tetrafluoroethane (HCFC-124), pentafluoroethane (HFC-125), 1,1,1,2-tetrafluoroethane (HFC-134), 1,1,1-trifluoroethane (HFC-143a), and 1,1-difluoroethane (HFC-152a). (Amended August 21, 1991)
- 8-49-204 **Organic Compound, Precursor:** Any compound of carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate, excepting the non-precursor organic compounds listed in Section 8-49-203.
- 8-49-205 **Solids:** The non-volatile portion of an aerosol paint product, consisting of the film-forming ingredients (pigments and resins).
- 8-49-206 **Paint:** A mixture of pigments, resins, and liquid solvents which can be applied to a surface to form a thin and closely adherent coating. For the purposes of this regulation, this definition shall include but shall not be limited to clear coatings, primers, metallic coatings, and wood stains.
- 8-49-207 **Propellant:** A liquified or compressed gas which expels the contents of a container when the pressure is released.
- 8-49-208 **Art Varnish:** A coating labelled exclusively as such which provides a protective sealant for oil paintings or other closely related art uses. (Adopted August 21, 1991)
- 8-49-209 **Auto Body Primer:** A heavily pigmented automotive primer or primer surfacer coating labelled exclusively as such and applied directly to an uncoated vehicle body substrate or on top of a precoat for purposes of corrosion resistance, building a repair area to a condition in which it, after drying, can be sanded to a smooth surface. (Adopted August 21, 1991)

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- 8-49-210 **Automotive Bumper and Trim Products:** Coatings formulated and labeled exclusively as such which are used to repair and refinish automotive bumpers and plastic trim parts including adhesion promoters and chip sealants.
(Adopted August 21, 1991)
- 8-49-211 **Aviation Propeller Coating:** An epoxy coating formulated and labeled exclusively as such which provides abrasion resistance and corrosion protection for aircraft propellers.
(Adopted August 21, 1991)
- 8-49-212 **Aviation Zinc Primer:** Zinc chromate or zinc oxide coatings formulated to military specification MIL-P-8989 and labeled exclusively as such.
(Adopted 8 21 91)
- 8-49-213 **Clear Coating:** A coating which is colorless, containing binders but no pigment, and which is formulated to form a transparent or translucent solid film.
(Adopted August 21, 1991)
- 8-49-214 **Corrosion Resistant Brass/Bronze/Copper Coating:** A clear coating formulated and labeled exclusively as such to prevent tarnish and corrosion of brass, bronze and copper surfaces.
(Adopted August 21, 1991)
- 8-49-215 **Enamel:** A coating which cures by chemical cross-linking of its base resin. Enamels can be readily distinguished from lacquers because enamels are not resolvable in their original solvent.
(Adopted August 21, 1991)
- 8-49-216 **Engine Paint:** A coating, labeled exclusively as such, applied to the exterior surface of motor vehicle engine blocks or components attached to a motor vehicle engine. The cans shall be labeled with the Original Equipment Manufacturer's (O.E.M.) part number.
(Adopted August 21, 1991)
- 8-49-217 **Exact Match Finish, Automotive:** A topcoat labeled exclusively as such, which is formulated to exactly match the color of the original, factory-applied automotive finish coating during touch-up or minor repair operations. The cans shall be labeled with the Original Equipment Manufacturer's (O.E.M.) part number. Can contents shall not exceed six ounces by weight if offered for retail sale.
(Adopted August 21, 1991)
- 8-49-218 **Exact Match Finish, Industrial:** A coating which is formulated to exactly match the color of an original, factory-applied industrial coating. The cans shall be labeled with the manufacturer's name for which they were formulated, and with the Original Equipment Manufacturer's (O.E.M.) part number. This category applies primarily to touch-up of manufactured products prior to shipment or during initial installation; retail sales will be allowed through authorized O.E.M. dealers only.
(Adopted August 21, 1991)
- 8-49-219 **Flat Paint Products:** A coating which, when fully dry, has a gloss of 5 or less on a 60° meter.
(Adopted August 21, 1991)
- 8-49-220 **Floral Spray:** A coating labeled exclusively as such, which is sprayed on fresh flowers for the purpose of preserving and protecting their appearance.
(Adopted August 21, 1991)
- 8-49-221 **Fluorescent Coating:** A coating labeled as such which converts absorbed incident light energy into emitted light of a different hue.
(Adopted August 21, 1991)
- 8-49-222 **Glass Coating:** A coating labeled exclusively as such, which is applied to glass to tint or darken the color of the glass while retaining transparency.
(Adopted August 21, 1991)
- 8-49-223 **Ground Traffic/Marking Coating:** A coating used to delineate vehicular or pedestrian traffic flow in a manufacturing facility or on a public highway, or to mark or define locations used by public utilities (e.g. gas, telephone, electric).
(Adopted August 21, 1991)
- 8-49-224 **High Temperature Coating:** A coating labeled exclusively as such, which is formulated for and applied to substrates which will, in normal use, be subjected to temperatures in excess of 400°F.
(Adopted August 21, 1991)
- 8-49-225 **Hobby/Model/Craft Coating:** A coating primarily for hobby applications. Can contents shall not exceed six ounces by weight.
(Adopted August 21, 1991)

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- 8-49-226 **Lacquer:** A thermoplastic film-forming material dissolved in organic solvent, which dries primarily by solvent evaporation, and hence is resolvable in its original solvent. (Adopted August 21, 1991)
- 8-49-227 **Marine Spar Varnish:** A coating labelled exclusively as such which provides a protective sealant for marine wood products. (Adopted August 21, 1991)
- 8-49-228 **Metallic Coating:** A topcoat containing metallic particles which impart a metallic appearance when dry. (Adopted August 21, 1991)
- 8-49-229 **Multi-Component Kits:** Aerosol spray paint systems which require the application of more than one component (e.g. foundation coat and top coat), where both components are sold together in one package and neither is sold separately. (Adopted August 21, 1991)
- 8-49-230 **Non-Flat Paint Products:** A coating which, when fully dry, has a gloss of greater than 5 on a 60° meter. (Adopted August 21, 1991)
- 8-49-231 **Photographic Emulsion Coating:** A coating formulated and labelled exclusively as such, applied to finished photographs to allow corrective retouching or protection of the image. (Adopted August 21, 1991)
- 8-49-232 **Primer:** A coating formulated and labelled as such to be applied to a surface to provide a bond between that surface and subsequent coats. (Adopted 8.21.91)
- 8-49-233 **Retail Sales:** The sale of goods directly to a non-commercial consumer. For the purposes of this Rule, sales to jobbers and industrial end-users shall not be deemed retail sales. (Adopted August 21, 1991)
- 8-49-234 **Shellac Sealer:** A clear or pigmented coating formulated solely with the resinous secretion of the lac beetle (*Laccifer lecca*), thinned with alcohol, and formulated to dry by evaporation without a chemical reaction. (Adopted August 21, 1991)
- 8-49-235 **Slip-Resistant Epoxy Coating:** An epoxy ester coating labelled exclusively as such which is formulated with synthetic grit, and used as a safety coating. (Adopted August 21, 1991)
- 8-49-236 **Spatter Coating:** A coating wherein spots, globules, or spatters of individual or contrasting colors appear on or within the surface of a contrasting or similar background. (Adopted August 21, 1991)
- 8-49-237 **Vinyl/Fabric/Polycarbonate:** A coating labelled exclusively as such, which is used exclusively to coat vinyl, fabric, or polycarbonate substrates. (Adopted 8/21/91)
- 8-49-238 **Webbing/Veiling Coating:** A coating labelled exclusively as such, which is formulated to give a stranded or spider webbed appearance when applied. (Adopted August 21, 1991)
- 8-49-239 **Weid-Through Primer:** A coating formulated and labelled exclusively as such which provides a bridging or conducting effect to provide corrosion protection following welding. (Adopted August 21, 1991)
- 8-49-240 **Wood Stain:** A coating which is formulated to change the color of a wood surface but not conceal the surface. (Adopted August 21, 1991)
- 8-49-241 **Wood Touch-Up/Repair/Restoration:** A coating formulated and labelled exclusively as such which provides an exact color or sheen match on finished wood products. (Adopted August 21, 1991)
- 8-49-242 **Workable Art Fixative:** A clear coating formulated and labelled exclusively as such which provides protection for pencil, charcoal, chalk and pastel drawings, while providing a workable surface. (Adopted August 21, 1991)
- 8-49-243 **Volatile Organic Compounds (VOC):** Any precursor or non-precursor organic compound which would be emitted during the use, application, curing or drying of an aerosol paint product. (Adopted August 21, 1991)

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8-49-300 STANDARDS

8-49-301 Limits: A person shall not sell, offer for sale, apply, solicit or manufacture for sale within the District any hand-held aerosol paint product with a VOC content in excess of the following limits, expressed as percent VOC by weight of product:

301.1	General Coatings	VOC Limits (%)
	Clear Coating	67
	Flat Paint Products	60
	Fluorescent	65
	Ground Traffic Marking Coating	66
	Metallic Coating	80
	Non-Flat Paint Products	65
	Primer	60
301.2	Specialty Coatings	
301.2.1	Specialty Clear and Tinted Coatings	
	Corrosion Resistant Brass/Bronze/Copper Coating	92
	Photographic Emulsion Coating	95
	Art Varnish	92
	Marine Spar Varnish	92
	Vinyl/Fabric/Polycarbonate	95
	Webbing/Veiling Coating	95
	Wood Stain	95
	Workable Art Fixative	95
301.2.2	Exact Match Finish	
	Engine Enamel	80
	Automotive	88
	Industrial	88
301.2.3	Miscellaneous Coatings	
	Auto Body Primer	80
	High Temperature Coating	80
	Hobby/Model/Craft Coatings	
	Enamel	80
	Lacquer	88
	Clear, Metallic	95
	Shellac Sealer	
	Clear	88
	Pigmented	75
	Spatter Coating	80
301.3	Non-Retail Specialty Coatings	
	Automotive Bumper and Trim Products	95
	Aviation Propeller Coating	84
	Aviation Zinc Primer	82
	Floral Spray	95
	Glass Coating	95
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	Weld-Through Primer	75
	Wood Touch-up/Repair/Restoration	95

(Amended August 21, 1991)

9/14/92

- 8-49-302 Prohibition of Non-Intended Use:** A person shall not use within the District any coating subject to the standards of Section 8-49-301 for any use other than that shown on the product label. (Adopted August 21, 1991)
- 8-49-303 Multi-Component Applications:** A person shall not sell, offer for sale, apply, sell or manufacture for sale within the District any multi-component aerosol kit as defined in Section 8-49-229 unless the total VOC emitted from the use of that multi-component kit does not exceed the VOC which would be allowed from a single-component product in the same specialty category listed in Section 8-49-301. (Adopted August 21, 1991)
- 8-49-304 Prohibition of Retail Sale:** If any coating subject to the VOC limitations of Section 8-49-301.3, Non-Retail Specialty Coatings is offered for retail sale to the general public, that coating shall be subject to the VOC standards in Section 8-49-301.1, General Coatings. Retail sale of exact match industrial coatings will be allowed through authorized Original Equipment Manufacturer (O.E.M.) dealers only. (Adopted August 21, 1991)
- 8-49-305 Interim Limit:** Until July 1, 1992 any product which has been reformulated to meet the 2.0 grams VOC/grams solid limit (67%) in effect June 20, 1990 shall be legal for manufacture, sale and use within the District, provided the requirements of Section 8-49-403 are met. (Adopted August 21, 1991)

8-49-400 ADMINISTRATIVE REQUIREMENTS

- 8-49-401 Labelling Requirements:** Each container of any aerosol paint product subject to this rule manufactured for sale, sold or offered for sale within the District shall be permanently and exclusively labelled (e.g. "for automotive use only") by coating type and shall display the maximum organic compound content expressed as % VOC as determined under Section 8-49-601. (Amended August 21, 1991)
- 8-49-402 Duplicate Specification Standards:** If anywhere on the container of any aerosol paint product listed in section 8-49-301, or on any sticker or label affixed thereto, or in any sales or advertising literature, any representation is made that the product may be used as, or is suitable for use as a product for which a lower VOC standard is specified, then the lowest applicable VOC standard shall apply. (Adopted August 21, 1991)
- 8-49-403 Reformulated Product Petitioning Requirement:** Any person seeking to meet the interim limit pursuant to Section 8-49-305 shall petition the APCO in writing. The petition shall contain the following information:
- 403.1 Date of product reformulation
 - 403.2 VOC of product prior to reformulation
 - 403.3 Average monthly sales data of product in the Bay Area immediately prior to and subsequent to reformulation.
 - 403.4 Earliest expected date of reformulation to current VOC standards.
- (Adopted August 21, 1991)

8-49-500 MONITORING AND RECORDS

- 8-49-501 Recordkeeping Requirement:** Each persons who manufactures hand-held aerosol paint products for sale in the District shall maintain sales data by category and organic compound content expressed as % VOC by weight. These data shall be submitted to the APCO every three months. The first sales data shall be due October 31, 1991; subsequent reports shall be due at three month intervals. (Amended August 21, 1991)

9/14/92

8-49-600 MANUAL OF PROCEDURES

8-49-601 **Determination of Compliance, Hand-Held Aerosol Paint Products:** The means by which compliance of hand-held aerosol paint products is determined are found in the Manual of Procedures, Volume III, Method 35 and 36. (Amended 8-21-91)

**REGULATION 8
ORGANIC COMPOUNDS
RULE 50
POLYESTER RESIN OPERATIONS
(Adopted December 5, 1990)**

8-50-100 GENERAL

- 8-50-101 Description:** The purpose of this Rule is to limit organic compound emissions from the manufacturing of products using polyester resins.
- 8-50-110 Limited Exemption, Touch-up and Repair:** The requirements of Sections 8-50-301 shall not apply to touch-up and repair.

8-50-200 DEFINITIONS

- 8-50-201 Catalyst:** A substance added to the resin to initiate polymerization.
- 8-50-202 Cleaning Materials:** Materials used to clean hands, tools, molds, application equipment, work area, and other process related equipment.
- 8-50-203 Closed-mold System:** A system of forming objects from polyester resins by placing the material in a confining cavity and applying pressure and/or heat.
- 8-50-204 Control System:** A control device and collection system designed in accordance with good engineering practices.
- 8-50-205 Corrosion-resistant Materials:** Halogenated, furan, bisphenol-A, Vinyl-ester, or isophthalic resins used to make products for corrosive or fire retardant services.
- 8-50-206 Cross-linking:** The chemical process of joining two or more polymer chains together.
- 8-50-207 Fiberglass:** A fiber similar in appearance to wool or cotton fiber but made from glass.
- 8-50-208 Gel Coat:** A polyester resin surface coating that provides a cosmetic enhancement and improves resistance to degradation from exposure to the environment.
- 8-50-209 Inhibitor:** A substance used to slow down or prevent a chemical reaction.
- 8-50-210 Low-VOC Emission Resin System:** A polyester resin material which contains additives to reduce monomer evaporation loss.
- 8-50-211 Monomer:** A relatively low molecular weight organic compound that combines with itself or other similar compounds to become a polymerized thermosetting resin.
- 8-50-212 Polyester:** A complex polymeric ester containing difunctional acids.
- 8-50-213 Polyester Resin Material:** Any VOC containing materials used in polyester resin operations which include, but are not limited, to unsaturated polyester resins such as isophthalic, orthophthalic, halogenated, bisphenol-A, vinyl-ester, or furan resins; cross-linking agents; catalysts, gel coats, inhibitors, accelerators, promoters, and any other VOC containing materials.
- 8-50-214 Polyester Resin Operations:** Methods used for the production or rework of product by mixing, pouring, hand laying-up, impregnating, injecting, forming, spraying, and/or curing unsaturated polyester materials with fiberglass, fillers, or any other reinforcement materials and associated clean-up.
- 8-50-215 Polymer:** A substance consisting of a large number of chemical groups and which is formed by the chemical linking of monomers.
- 8-50-216 Polymerize:** Transformation from a liquid to a solid or semi-solid state to achieve desired product physical properties, including hardness.
- 8-50-217 Repair:** The part of the fabrication process that requires the addition of polyester material to portions of a previously fabricated product in order to mend minor structural damage immediately following normal fabrication operations.

- 8-50-218 Resin:** Any class of organic polymers of natural or synthetic origin used in reinforced products to surround and hold fibers, and is solid or semi-solid in the polymerized state.
- 8-50-219 Touch-up:** The portion of the fabrication process that is necessary to cover minor imperfections.
- 8-50-220 Volatile Organic Compound (VOC):** Any organic compound (excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate) which would be emitted during use, application, curing or drying of a solvent or polyester resin material.
- 220.1 For purposes of calculating the VOC content of a polyester resin material, any water or any of the following non-precursor organic compounds shall not be considered to be part of the polyester resin material:
- acetone
 - parachlorobenzotrifluoride (PCBTF)
 - cyclic, branched or linear completely methylated siloxanes (VMS)
- 220.2 For the purposes of calculating the VOC content of a solvent, any water shall be considered part of the material. (Amended December 20, 1995)
- 8-50-221 Vapor Suppressant:** A substance added to resin to minimize the outward diffusion of monomer vapor into the atmosphere.
- 8-50-222 Waste Materials:** Materials including, but not limited to, any scrap resulting from cutting and grinding operations, any paper or cloth used for cleaning operations, waste resins, non-polymerized waste resins, and any spent cleaning materials.
- 8-50-223 Airless Spray:** Equipment used to apply materials by use of fluid pressure without atomizing air, including heated airless spray.
- 8-50-224 Air Assisted Airless Spray:** Equipment used to apply materials that uses fluid pressure to atomize coating and air pressure between 0.1 and 10 psig to adjust the spray pattern.
- 8-50-225 High-Volume Low-Pressure (HVL) Spray:** Equipment used to apply materials by means of a gun which operates between 0.1 and 10 psig air pressure.
- 8-50-226 Electrostatic Air Spray:** Equipment used to apply materials by charging atomized particles that are deposited by electrostatic attraction.
- 8-50-227 Approved Emission Control System:** A system for reducing emissions of VOC to the atmosphere, consisting of a control device and a collection system, which achieves the overall abatement efficiency specified in the applicable standards section at all times during operation of the equipment being controlled.
(Adopted June 15, 1994)
- 8-50-228 Key System Operating Parameter:** An emission control system operating parameter, such as temperature, flow rate or pressure, that ensures operation of the abatement equipment within manufacturer specifications and compliance with the standard in Section 8-50-303.
(Adopted June 15, 1994)
- 8-50-300 STANDARDS**
- 8-50-301 Process Requirements:** Effective June 1, 1991, a polyester resin operation shall use one or more of the following emission reducing methods except as provided in Section 8-50-304:
- 301.1 Use polyester resin material with a monomer content of no greater than 35 percent by weight.
 - 301.2 Use a resin containing vapor suppressant, such that weight loss from VOC emissions do not exceed 60 grams per square meter of exposed surface area during resin polymerization.
 - 301.3 Use a closed-mold system.

- 8-50-302 Spraying Operations:** A polyester resin operation using spray application equipment shall use one or more of the following spray equipment:
 302.1 Airless Spray
 302.2 Air-assisted Airless Spray
 302.3 Electrostatic Spray
 302.4 High-volume, Low-pressure Spray
- 8-50-303 Emission Control Requirement:** The requirements of Sections 8-50-301 and 302 shall not apply to polyester resin operations which install and properly operate an approved emission control system that meets the requirements of Regulation 2, Rule 1 and reduces organic compound emissions by at least 85 percent overall.
 (Amended June 15, 1994)
- 8-50-304 Corrosion-resistant Materials:** Effective June 1, 1991, any polyester resin operation using corrosion-resistant materials to manufacture products for corrosive or fire retardant service shall use a polyester resin material with a monomer content of no greater than 50 percent by weight.
- 8-50-305 Surface Preparation and Clean-up Solvent:** The requirements of this section shall apply to any polyester resin operation using organic solvent for surface preparation and clean-up.
 305.1 A polyester resin operation shall use closed containers for the storage of all polyester resin materials, cleaning materials and any unused VOC-containing materials except when accessed for use.
 305.2 A polyester resin operation shall use self-closing containers for the disposal of all polyester resin materials, cleaning materials, waste materials, and any unused VOC containing materials in such a manner as to effectively control VOC emissions to the atmosphere.
 305.3 A polyester resin operation shall not use organic compounds for the clean-up of spray equipment including spray lines unless equipment for collecting the cleaning material and minimizing their evaporation to the atmosphere is used.
 305.4 A polyester resin operation shall use cleaning materials that contain no greater than 200 grams of VOC per liter of material.
- 8-50-306 Equipment Requirements:** Effective June 1, 1991, all resin baths shall be covered to reduce organic compound emissions.
- 8-50-307 Gel Coat Requirement:** A person shall not use a gel coat which contains more than 250 grams of volatile compounds per liter of coating applied.

8-50-500 MONITORING AND RECORDS

- 8-50-501 Records:** Effective June 1, 1991, any polyester resin operation shall comply with the following requirements, as applicable:
 501.1 Maintain a list of resin, catalyst, and cleaning material used.
 501.2 Maintain a list of the weight of VOC (in percent) in the polyester resin materials and the grams of VOC per liter for the cleaning materials.
 501.3 For vapor suppressed resins, maintain a list of the weight loss (grams per square meter) during resin polymerization, the monomer percentage, and the gel time for each resin.
 501.4 Maintain records on a daily basis that provide the following information as applicable:
 a. the amount of each of the polyester resin materials and cleaning materials used.
 b. the volume of resin and cleaning materials used for touch-up and repair.
 501.5 Such records shall be retained and available for inspection by the APCO for the previous 24-month period.

8-50-502 Approved Emission Control System, Recordkeeping Requirements: Any person operating an approved emission control system to comply with Section 8-50-303 shall record key system operating parameters on a daily basis.

(Adopted June 15, 1994)

8-50-600 MANUAL OF PROCEDURES

8-50-601 Analysis of Samples: Samples from polyester resin operations shall be analyzed as follows:

601.1 Samples of gel coat as specified in Sections 8-50-307 shall be analyzed as prescribed in the Manual of Procedures, Volume III, Method 26.

601.2 Samples of cleaning materials as specified in Section 8-50-305.4 shall be analyzed as prescribed in the Manual of Procedures, Volume III, Method 31.

601.3 Samples of polyester resin material as specified in Sections 8-50-301 and 304 shall be analyzed as prescribed in the Manual of Procedures, Volume III, Method 23.

8-50-602 Determination of Emissions: Emissions from polyester resin operations as specified in Section 8-50-303 shall be analyzed as prescribed by any of the following methods: 1) BAAQMD Manual of Procedures, Volume IV, ST-7, 2) EPA Method 25 or 25A. A source shall be considered in violation if the VOC emissions measured by any of the referenced test methods exceed the standards of this rule.

(Amended June 15, 1994)

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

RULE 8.51 -- ADHESIVE AND SEALANT PRODUCTS

(Adopted November 18, 1992) (Amended May 2, 2001)

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8-51-100 GENERAL

8-51-101 Description: The purpose of this Rule is to limit the emissions of organic compounds from adhesive and sealant products. Any operation determined to be exempt from the provisions of this Rule shall be subject to the provisions of Rule 4, if not already subject to another Rule of Regulation 8.

8-51-111 Exemption, Aerosol Adhesive Products: The provisions of this Rule shall not apply to aerosol adhesive products as defined in Section 8-51-204.
(Amended November 16, 1994, January 7, 1998, May 2, 2001)

8-51-112 Exemption, Aerospace and Undersea-based Weapons Systems Components: The provisions of this Rule shall not apply to the use of adhesive or sealant products in the manufacture or repair of aerospace or undersea-based weapons systems components.

8-51-113 Exemption, Consumer Adhesives: The requirements of this Rule shall not apply to adhesives subject to the California Air Resources Board consumer products regulation found in Title 17 of the California Code of Regulations, beginning at Section 94507. (Amended June 5, 1996, January 7, 1998)

8-51-114 Exemption, Low Usage: The requirements of Section 8-51-302 shall not apply to the combined use of non-complying adhesive products at a facility in a volume of less than 75.7 liters (20 gallons) in any calendar year.
(Amended June 5, 1996)

8-51-115 Exemption, Low VOC Adhesive or Sealant Products: The requirements of this Rule shall not apply to any adhesive or sealant product with a VOC content, as defined in Section 8-51-226, of less than 20 grams per liter of VOC.
(Amended January 7, 1998)

8-51-116 Exemption, Medical Equipment Manufacturing: The requirements of this Rule shall not apply to the use of

adhesive products in the manufacture of medical equipment. (Amended June 5, 1996)

8-51-117 Exemption, Research and Development Operations: Except for the recordkeeping requirement of Section 8-51-501.1.a, the provisions of this Rule shall not apply to the testing and evaluation of adhesive or sealant products in research and development laboratories, quality assurance laboratories, or analytical laboratories, or to research and development facilities which produce only non-commercial products solely for research and development purposes. (Amended November 16, 1994, May 2, 2001)

8-51-118 Exemption, Specific Operations: The requirements of this Rule shall not apply to the use of adhesives in the following operations.

118.1 Adhesives and sealants applied in Metal, Can and Coil Operations subject to Regulation 8, Rule 11.

118.2 Adhesives applied to Paper, Fabric and Film subject to Regulation 8, Rule 12.

118.3 Adhesive and sealant products applied in Light and Medium Duty Motor Vehicle Assembly Plants subject to the requirements of Regulation 8, Rule 13.

118.4 Adhesives applied in Graphic Arts Operations subject to the requirements of Regulation 8, Rule 20.

118.5 Adhesives applied in Flat Wood Paneling Operations subject to the requirements of Regulation 8, Rule 23.

8-51-119 Exemption, Tire Repair: The requirements of this Rule shall not apply to adhesive or sealant products used in tire repair provided the label conspicuously states "For Tire Repair Use Only."

8-51-120 Exemption, Prohibition of Sale: The requirements of Section 8-51-307 shall not apply to the following:

120.1 Adhesive and sealant products shipped, supplied or sold to persons outside the District for use outside the District.

120.2 Adhesive or sealant products sold to any person who complies with the requirements of Section 8-51-305.

120.3 Any manufacturer of adhesive or sealant products, provided the manufacturer has provided the maximum VOC content and category information for the product and the product was not sold directly to a user or a sales outlet located in the District, or the product was sold to an independent distributor located in the District that is not a subsidiary of, or under the direct control of the manufacturer.

120.4 The VOC limits for "Contact Bond Adhesives" in Section 8-51-301.4, provided, however, that no person shall sell or offer for sale any contact bond adhesive with a VOC content that exceeds 540 grams per liter.

(Adopted November 16, 1994; Amended January 7, 1998, May 2, 2001)

8-51-121 Exemption, ABS, CPVC, PVC and Plastic Welding Cement Primers: Until August 1, 2001 the requirements of this rule shall not apply to adhesive primer used in conjunction with ABS, CPVC, PVC, and other plastic welding adhesive applications.

(Adopted November 16, 1994; Amended May 2, 2001)

8-51-122 Deleted January 7, 1998

8-51-123 Exemption, Small Container: The requirements of this Rule shall not apply to any adhesive or sealant product sold in units of product, less packaging, that weigh one pound or less or contain 16 fluid ounces or less except that, effective August 1, 2001, this exemption shall not apply to plastic welding adhesive and plastic welding adhesive primer. (Adopted June 5, 1996; Amended May 2, 2001)

8-51-124 Exemption, Consumer Contact Bond Adhesive: The requirements of Section 8-51-301.4 shall not apply to contact bond adhesives that are subject to the Consumer Product Safety Commission regulations in 16 C.F.R. Part 1302, that have a flash point greater than 20oF. as determined pursuant to those regulations, that are sold in packages that contain 3.79 liters (1 gallon) or less, and that are used at a home, a construction site, or at any location other than in a facility, as defined in Regulation 1.

(Adopted June 5, 1996; Amended January 7, 1998)

8-51-125 Limited Exemption, Low Usage of Contact Bond Adhesive: The requirements of Section 8-51-301.4 shall not apply to a facility that uses no more than 55 gallons of contact bond adhesive in a twelve month period, provided that the VOC content, as defined in Section 8-51-226, of the adhesive used does not exceed 540 grams per liter.

(Adopted January 7, 1998; Amended May 2, 2001)

8-51-126 Limited Exemption, Facilities Using Contact Bond Adhesive Primarily for Special Substrates: Where 80% or more of the annual contact bond adhesive use at a single facility meets the definition in Section 8-51-249 of "Contact Bond Adhesive - Special Substrates," the applicable limit in Section 8-51-301.4 shall apply to all contact bond adhesive usage at the facility. (Adopted January 7, 1998)

8-51-127 Exemption, Large Tire Retreading: The requirements of Section 8-51-301 shall not apply to the use of tire retread adhesive in retreading off-the-road and industrial tires that are rated or used for non-highway service and have a minimum nominal rim diameter of 20 inches. (Adopted January 7, 1998)

8-51-128 Exemption, Self-Curing Adhesives and Sealants With Reactive Diluents: The requirements of this rule shall not apply to self-curing adhesives and sealants with reactive diluents. (Adopted January 7, 1998)

8-51-200 DEFINITIONS

8-51-201 Adhesive: Any material which is applied for the primary purpose of bonding two surfaces together by surface attachment. (Amended June 5, 1996)

8-51-202 Adhesive Primer: Any material which is applied to a substrate prior to the application of an adhesive to provide a bonding surface.

8-51-203 Adhesive Product: For the purposes of this Rule, an adhesive product includes, but is not limited to, the following products: adhesives, glues, cements, mastic, adhesive primers.

8-51-204 Aerosol Adhesive: An adhesive subject to the California Air Resources Board consumer products regulation found in Title 17 of the California Code of Regulations, beginning at Section 94507, that is packaged as an aerosol product in which the spray mechanism is permanently housed in a nonrefillable can designed for hand-held application without the need for ancillary hoses or spray equipment.

(Amended May 2, 2001)

8-51-205 Aerospace Component: For the purposes of this Rule, the fabricated part, assembly of parts or completed unit of any aircraft, helicopter, missile, or space vehicle, including passenger safety equipment.

8-51-206 Approved Emission Control System: A system for reducing emissions of volatile organic compounds to the atmosphere, consisting of a control device and a collection system that meets the requirements of Regulation 2, Rule 1, and achieves the overall abatement efficiency specified in the applicable standards section at all times during operation of the equipment being controlled. (Amended November 16, 1994)

8-51-207 Architectural: Stationary structures and their appurtenances, including mobile homes. Appurtenances to an architectural structure include but are not limited to: hand railings, cabinets, bathroom and kitchen fixtures, fences, rain gutters and down spouts, and windows.

8-51-208 Drywall Installation: The installation of gypsum drywall to studs or solid surfaces.

8-51-209 Indoor Floor Covering Installation: The installation of wood flooring, indoor carpet, resilient tile, vinyl tile, vinyl backed carpet, resilient sheet and roll, or artificial grass.

(Amended November 16, 1994, May 2, 2001)

8-51-210 Deleted May 2, 2001

8-51-211 Medical Equipment Manufacturing: The manufacture of medical devices, such as, but not limited to, catheters, heart valves, blood cardioplegia machines, tracheostomy tubes, blood oxygenators, and cardiatory reservoirs.

8-51-212 Multipurpose Construction: The installation or repair of various construction materials using adhesives, including but not limited to drywall, subfloor, panel, fiberglass reinforced plastic (FRP), ceiling tile, acoustical tile. (Amended November 16, 1994, May 2, 2001)

8-51-213 Panel Installation: The installation of plywood, predecorated hardboard, tileboard, fiberglass reinforced plastic, and similar predecorated or nondecorated panels to studs or solid surfaces.

8-51-214 Plastic: Synthetic materials chemically formed by the polymerization of organic (carbon-based) substances.

8-51-215 Deleted January 7, 1998

8-51-216 Porous Material: A material whose surface is permeable to liquids; such materials include but are not limited to foam, paper, corrugated paperboard, stone and wood. (Amended November 16, 1994)

8-51-217 Roadways: Public streets, highways, and other surfaces, including but not limited to curbs, berms, driveways, and parking lots.

8-51-218 Sealant Products: Any material with adhesive properties that is used primarily to fill, seal, waterproof, or weatherproof gaps or joints between two surfaces. Sealant products include sealant primers and caulk.

8-51-219 Single-Ply Roof Material Installation/Repair: The installation or repair of prefabricated single-ply flexible roofing membrane that is field applied using just one layer of membrane material. The membrane itself may be manufactured from several layers of material. Installation includes the use of adhesives and adhesive primers provided the containers are labeled exclusively for such use.

8-51-220 Solvent: Organic compounds which are used as diluents, thinners, dissolvers, viscosity reducers, cleaning agents, or for similar uses.

8-51-221 Deleted November 16, 1994

8-51-222 Structural Glazing: Use of an adhesive/sealant to adhere glass, ceramic, metal, stone, or composite panels to exterior building frames.

8-51-223 Subfloor Installation: The installation of subflooring material, typically plywood, over flooring joists. Subflooring is covered by a finish surface material.

8-51-224 Tire Repair: The repair of a hole, tear, fissure, or blemish in a tire casing by grinding and gouging, applying adhesive or sealant product and filling the hole or crevice with rubber.

8-51-225 Undersea-based Weapons Systems Components: The fabricated part, assembly of parts, or completed units of any portion of the missile launching system used on undersea ships.

8-51-226 Volatile Organic Compound (VOC) Content: All organic compounds (excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides of carbonates, and ammonium carbonate) which would be emitted during use, application, curing, or drying of an adhesive or sealant product.

226.1 For the purposes of calculating the VOC content of an adhesive, sealant, or primer, water and the following compounds:

acetone
parachlorobenzotrifluoride (PCBTF)
cyclic, branched or linear, fully methylated siloxanes (VMS)
difluoroethane (HFC-152a)

shall not be considered part of the product.

226.2 For the purposes of calculating the VOC content of low solids adhesives, sealants and primers, as defined in Section 8-51-234, any water shall be considered to be part of the product. The following compounds:

acetone
parachlorobenzotrifluoride (PCBTF)
cyclic, branched or linear, fully methylated siloxanes (VMS)
shall not be considered part of the VOC content of the product.

(Amended 6/2/93; 1/19/94; 11/16/94; 12/20/95, 1/7/98, 5/2/01)

8-51-227 Deleted November 16, 1994

8-51-228 Wood Flooring Installation: The installation of a wood floor surface, including but not limited to, parquet tiles, planks, or strip-wood.

8-51-229 ABS Welding: The welding of acrylonitrile styrene (ABS) plastic using a plastic welding adhesive. (Adopted November 16, 1994, amended May 2, 2001)

8-51-230 Automotive Glass Primer: Any adhesive primer that is applied to automotive glass prior to installation with an adhesive/sealant that improves adhesion to the pinch weld and blocks ultraviolet light. (Adopted November 16, 1994)

8-51-231 Computer Diskette Jacket Manufacturing: The manufacture of computer diskettes where the fold-over flaps are glued to the body of a vinyl jacket.
(Adopted November 16, 1994)

8-51-232 CPVC Welding: The welding of chlorinated polyvinyl chloride (CPVC) plastic using a plastic welding adhesive. (Adopted November 16, 1994, amended May 2, 2001)

8-51-233 Key System Operating Parameter: An approved emission control system operating parameter, such as temperature, flow rate or pressure, that ensures operation of the emission control system within manufacturer specifications and compliance with the standard in Sections 8-51-305. (Adopted November 16, 1994)

8-51-234 Low Solids Adhesive, Sealant, and Primer: Any adhesive, sealant, or primer that contains less than 120 grams of solids per liter of material.
(Adopted November 16, 1994)

8-51-235 Marine Deck Sealant: A sealant that is used to seal gaps on wooden decks of marine vessels. (Adopted November 16, 1994)

8-51-236 Nonmembrane Roof Installation/Repair: Any product that is intended for the installation or repair of roofs and that is not intended for the installation of prefabricated single-ply roofing membrane, including but not limited to plastic or asphalt roof cement, asphalt roof coatings, or cold application cement.
(Adopted November 16, 1994)

8-51-237 Outdoor Floor Covering Installation: The installation of floor covering, except ceramic tile, that is not in an

enclosure and is exposed to ambient weather conditions during normal use. (Adopted November 16, 1994)

8-51-238 Rubber: Any natural or man-made rubber substrate, including but not limited to styrene-butadiene (SBR), polychloroprene (neoprene), butyl rubber, nitrile rubber, chlorosulfonated polyethylene (CSM), urethane, and ethylene propylene diene terpolymer (EPDM). (Adopted November 16, 1994, amended May 2, 2001)

8-51-239 Thin Metal Laminating: The process of bonding multiple layers of metal to metal or metal to plastic in the production of electronic or magnetic components in which the thickness of the bond line(s) is less than 0.25 mils. (Adopted November 16, 1994; Amended May 2, 2001)

8-51-240 Tire Retreading: The process of attaching a new tread to a tire through any tire retreading procedure, including but not limited to, mold curing, hot capping, and cold process. (Adopted November 16, 1994, amended May 2, 2001)

8-51-241 Plastic Welding Adhesive: Any adhesive, including ABS, CPVC, and PVC welding adhesive, which is used to dissolve the surface of plastic to form a bond between mating surfaces. (Adopted November 16, 1994; Amended May 2, 2001)

8-51-242 Contact Bond Adhesive: An adhesive that forms an instantaneous, non-repositionable bond when substrates, on which the adhesive was applied and allowed to dry, are brought together using momentary pressure. (Adopted June 5, 1996)

8-51-243 Waterproof Resorcinol Glue: A two-part, resorcinol-resin-based adhesive designed for applications where the bond line must be resistant to conditions of continuous immersion in fresh or salt water. (Adopted June 5, 1996)

8-51-244 Pavement Marking Tape Primer: An adhesive primer designed for application to pavement prior to the application of adhesive-backed pavement marking tape. (Adopted June 5, 1996)

8-51-245 Deleted May 2, 2001

8-51-246 Deleted May 2, 2001

8-51-247 Self-Curing Adhesives and Sealants with Reactive Diluents: A cyanoacrylate or silicone-based adhesive or sealant with a reactive diluent content of at least 95% by weight. (Adopted January 7, 1998)

8-51-248 Reactive Diluent: A liquid reactant that is part of an adhesive or sealant prior to cure and that reacts to become part of the solid adhesive or sealant during cure. (Adopted January 7, 1998)

8-51-249 Contact Bond Adhesive - Special Substrates: A contact bond adhesive that is used for the bonding of nonporous substrates to each other; the bonding of decorative laminate in postforming operations; or the bonding of any substrate to one of the following substrates: metal, rubber, flexible vinyl, rigid plastic, wood veneer not exceeding 1/16" in thickness, or melamine-covered board. (Adopted January 7, 1998; Amended May 2, 2001)

8-51-250 Ceramic Tile Installation: The installation of ceramic tiles. (Adopted May 2, 2001)

8-51-251 Cove Base Installation: The installation of cove base (or wall base), which is generally made of vinyl or rubber, on a wall or vertical surface at floor level. (Adopted May 2, 2001)

8-51-252 PVC Welding: The welding of polyvinyl chloride (PVC) plastic using a plastic welding adhesive. (Adopted May 2, 2001)

8-51-253 Perimeter Bonded Sheet Vinyl Flooring Installation: The installation of sheet flooring with vinyl backing onto a nonporous substrate using an adhesive designed to be applied only to a strip of up to four inches wide around the perimeter of the sheet flooring. (Adopted May 2, 2001)

8-51-254 Top and Trim Installation: The installation of automotive, marine, or aeronautical trim, including, but not limited to, headliners, vinyl tops, vinyl trim, dash covering, door covering, floor covering, panel covering, and upholstery. (Adopted May 2, 2001)

8-51-255 Immersible Product Manufacturing: The manufacture of products intended for immersion in liquids, including wetsuits, rubber fuel bladders, inflatable boats, and life preservers. (Adopted May 2, 2001)

8-51-256 Rubber Vulcanization Bonding: The bonding of rubber to metal, rubber, or polyester or nylon fabrics during one or more of the following vulcanization processes: (1) molded vulcanization - the application of heat and pressure to uncured rubber in a mold; (2) sheet-applied vulcanization - the application of heat after rubber stock sheets have been adhered to the walls of tanks, tankers, elbow joints, protective earthquake building pads, or rail cars; or the application of heat after one or more layers of rubber stock sheets have been built up to form a rubber product; (3) cold vulcanization - the chemical reaction of an adhesive with rubber stock sheets that are adhered to earthmoving equipment, other high impact/abrasion devices, or industrial belting devices, without the application of heat or pressure. Rubber vulcanization bonding does not include tire retreading. (Adopted May 2, 2001)

8-51-257 Pre-formed Rubber Product: Any rubber product that has undergone a vulcanization process and is in its final state for further use and is not intended to be further vulcanized. (Adopted May 2, 2001)

8-51-300 STANDARDS

8-51-301 Adhesive Product, Application Limits: Except as provided in Section 8-51-305, a person shall not use in the following applications any adhesive product with a VOC content, as defined in Section 8-51-226, that exceeds the following VOC limits (expressed as grams of VOC per liter):

301.1	Architectural:		Effective 8/1/01
	Indoor Floor Covering Installation	150	
	Multipurpose Construction	200	
	Nonmembrane Roof Installation/Repair	300	
	Outdoor Floor Covering Installation	250	
	Single-Ply Roof Material Installation/Repair	250	
	Structural Glazing	100	
	Ceramic Tile Installation	200	130
	Cove Base Installation	200	150
	Perimeter Bonded Sheet Vinyl Flooring Installation	660	

301.2	Specialty:	
	Computer Diskette Jacket Manufacturing	850
	ABS Welding	400
	CPVC Welding	490

	PVC Welding	510
	Other Plastic Welding	500
	Thin Metal Laminating	780
	Tire Retread	100
	Rubber Vulcanization Bonding	850
	Waterproof Resorcinol Glue	170
	Immersible Product Manufacturing	650
	Top and Trim Installation	540

301.3	Adhesive Primers:		Effective 8/1/01
	Automotive Glass Primer	700	
	Pavement Marking Tape Primer	550	150
	Plastic Welding Primer	-	650
	Other	250	

301.4	Contact Bond Adhesive:	
	Contact Bond Adhesive:	250
	Contact Bond Adhesive - Special Substrates	400

(Amended November 16, 1994; June 5, 1996, January 7, 1998, May 2, 2001)

8-51-302 Adhesive Product, Substrate Limits: Except as provided in Sections 8-51-301 and 305, a person shall not use with the following substrates or substrate combinations any adhesive product with a VOC content, as defined in Section 8-51-226, that exceeds the following limits (expressed as grams of VOC per liter):

		Effective 8/1/01
Metal	30	
Porous Materials	150	120
Wood	150	120
Pre-formed Rubber Products	650	250
All Other Substrates	250	

If an adhesive product is used to bond two different substrates from the table above, the limit for the substrate with the highest VOC content shall apply.

(Amended November 16, 1994; June 5, 1996, January 7, 1998, May 2, 2001)

8-51-303 Deleted May 2, 2001

8-51-304 Sealant Product Limits: Except as provided in Section 8-51-305, a person shall not use in the following applications any sealant product with a VOC content, as defined in Section 8-51-226, that exceeds the following limits (expressed as grams of VOC per liter):

Sealant:	
Architectural	250
Marine Deck	760
Roadways	250
Single Ply Roof Material Installation/Repair	450
Nonmembrane Roof Installation/Repair	300
Other	420
Sealant Primer:	
Architectural - Nonporous	250
Architectural - Porous	775
Other	750

(Amended November 16, 1994; June 5, 1996, January 7, 1998, May 2, 2001)

8-51-305 Approved Emission Control System: The limits of Section 8-51-301, 302 or 304 shall not apply when emissions to the atmosphere are controlled to an equivalent level by an APCO approved emission control system that has an overall abatement efficiency of at least 85 percent. Where incineration is used to control emissions, at least 90 percent of the organic carbon shall be oxidized to carbon dioxide.

8-51-306 Prohibition of Specification: No person shall require for use or specify the application of an adhesive or sealant product subject to this Rule if such use or application results in a violation of any of the standards of this Rule. The prohibition of specification shall apply to all written or oral contracts under the terms of which any adhesive product is to be applied at any physical location within the District.

8-51-307 Prohibition of Sale: Except as provided in Section 8-51-120, no person shall sell, or offer for sale any adhesive or sealant product that does not meet the VOC limits as specified in Sections 8-51-301 and 304. (Adopted November 16, 1994; Amended January 7, 1998, May 2, 2001)

8-51-308 Limits for Pressurized Containers: Adhesive and sealant products that are not aerosol adhesives as defined in Section 8-51-204 but are supplied in pressurized containers from which adhesive or sealant is expelled by a propellant are subject to the VOC limits in Sections 8-51-301, 302, and 304 of this Rule. (Adopted May 2, 2001)

8-51-320 Solvent Evaporative Loss Minimization: The requirements of this section shall apply to any person using organic solvent for surface preparation and cleanup or to any person mixing, using, or disposing of adhesive or sealant product containing organic solvent.

320.1 A person shall use closed containers for the storage or disposal of cloth or paper used for solvent surface preparation and cleanup.

320.2 A person shall store fresh or spent solvent in closed containers.

320.3 A person shall not use organic compounds for the cleanup of mixing, storage, or spray equipment unless equipment for collecting the cleaning compounds and minimizing their evaporation to the atmosphere is used.

320.4 A person shall not leave containers of adhesive product, sealant product, or thinner open to the

atmosphere when not in use.

8-51-400 ADMINISTRATIVE REQUIREMENTS

8-51-401 Date of Manufacture: Containers for all adhesive and sealant products subject to this Rule shall display the date of manufacture of the contents or a code indicating the date of manufacture. If a code is used, the manufacturers of such products shall file with the APCO an explanation of each code.

8-51-402 Labeling Requirement: Each container of adhesive or sealant product subject to this Rule and manufactured after July 1, 1994, shall display the VOC content, as defined in Section 8-51-226, of the adhesive or sealant product as supplied.

(Amended November 16, 1994, May 2, 2001)

8-51-403 Deleted January 7, 1998

8-51-404 Deleted November 16, 1994

8-51-500 MONITORING AND RECORDS

8-51-501 Stationary Source, Recordkeeping Requirement: Any person operating a source of adhesive or sealant emissions subject to Regulation 2, Rule 1 shall:

501.1 Maintain a current list of adhesive or sealant products in use which provides all of the data necessary to evaluate compliance, including the following, as applicable:

- a. Identification of each product by manufacturer, product name, and manufacturer's product number.
- b. VOC content of each product as supplied.
- c. Mix ratio of components in the product used, and final VOC content as applied.
- d. Identification of specialty limit category and/or exemption that applies to each product.

501.2 Except as provided in Section 8-51-501.3, record facility-wide usage on a monthly basis for each adhesive or sealant product applied.

501.3 For a facility that emits 330 pounds per month or more of total VOC emissions from the use of adhesive and sealant products subject to this Rule, maintain, in addition to the records required by Section 8-51-501.2, daily records of the use, pursuant to Section 8-51-114, of any products that do not comply with the VOC limits in the Rule.

501.4 Retain and have all records available for inspection by the APCO for the previous 24-month period, unless a longer period is specified in an applicable permit.

(Amended November 16, 1994, June 5, 1996, January 7, 1998, May 2, 2001)

8-51-502 Alternative Recordkeeping Requirements: In lieu of meeting the monthly recordkeeping requirements of Sections 8-51-501.2, a person may use an alternative recordkeeping plan under the following circumstances:

502.1 The plan is for a government or university research facility that:

- a. For activities not exempt pursuant to Section 8-51-117, uses only adhesives and sealants that comply with the VOC limits in the Rule;
- b. Uses adhesives or sealants in five or more buildings on the facility site; and
- c. Tracks their distribution and use through a centralized information system.

502.2. The person meets each of the following requirements:

- a. A written petition that includes a description of the facility, a description of the facility's centralized information system, a list of adhesive and sealant products used by the facility, and

an estimate of the monthly usage for each adhesive and sealant product shall be submitted to and approved by the APCO prior to implementing the plan.

b. The monthly total quantity of each adhesive and sealant product purchased or acquired shall be recorded.

c. The annual total usage of each adhesive and sealant product shall be reported at the time the facility's permit to operate is renewed.

502.3. A violation of Sections 8-51-301, 302, or 304 within the annual reporting period allowed by Section 8-51-502.2 shall be presumed to be a violation for each day of the reporting period up to the day the violation is discovered, but a person may rebut this presumption by presenting evidence, such as usage records, purchase orders, work orders, contracts, or other documents which demonstrate that the violation did not occur on each day of the reporting period. (Adopted May 2, 2001)

8-51-503 Approved Emission Control System, Recordkeeping Requirement: Any person that installs an approved emission control system, subject to Sections 8-51-305 shall:

502.1 Record on a daily basis the amount of adhesive or sealant product, and solvent used.

502.2 Record on a daily basis applicable key system operating parameter(s).

502.3 Retain and have such records available for inspection by the APCO for the previous 24-month period. (Amended November 16, 1994; Renumbered May 2, 2001)

8-51-504 Burden of Proof: Any facility claiming the low usage exemption pursuant to Sections 8-51-114 or 125, the low VOC product exemption pursuant to Section 8-51-115, or the substrate exemption pursuant to Section 8-51-126 must have information available, such as purchase orders, material safety data sheets, work orders, or contracts, that would allow the APCO to verify eligibility for the exemption.

(Amended January 7, 1998; Renumbered May 2, 2001)

8-51-600 MANUAL OF PROCEDURES

8-51-601 Analysis of Samples: The VOC content of adhesive and sealant products shall be analyzed for compliance with the limits specified in Sections 8-51-115, 125, 126, 301, 302, and 304 using Manual of Procedures, Volume III, Method 21 or 22. The VOC content of low solids adhesive, sealant products or primers as defined in Section 8-51-234 shall be analyzed using Manual of Procedures, Volume III, Method 31. Samples containing parachlorobenzotrifluoride shall be analyzed using Manual of Procedures, Volume III, Method 41.

(Amended January 19, 1994; June 5, 1996, January 7, 1998, May 2, 2001)

8-51-602 Determination of Control and Collection Efficiency: The control and capture efficiency of an approved emission control system as referenced in Section 8-51-305 shall be measured by any of the following methods: (1) BAAQMD Manual of Procedures, Volume IV, ST-7, (2) EPA Method 25 or 25A. When either EPA Method 25 or 25 A is used, capture efficiency shall be determined as prescribed in EPA's Guidelines for Determining Capture Efficiency, dated January 9, 1995. For the purpose of determining abatement device efficiency, any acetone, PCBTF, or VMS shall be included as volatile organic compounds. A source shall be considered in violation if the VOC emissions measured by any of the referenced test methods exceed the standards of this rule.

(Amended November 16, 1994; June 5, 1996, January 7, 1998)

8-51-603 Analysis of Plastic Welding Adhesives: The VOC content of ABS, CPVC, PVC or other plastic welding adhesives shall be analyzed for compliance with the limits specified in Section 8-51-301 using Manual of Procedures, Volume III, Method 40.

(Adopted June 5, 1996; Amended January 7, 1998, May 2, 2001)

**REGULATION 8
ORGANIC COMPOUNDS
RULE 52
POLYSTYRENE, POLYPROPYLENE AND POLYETHYLENE FOAM
PRODUCT MANUFACTURING OPERATIONS**

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**REGULATION 8
ORGANIC COMPOUNDS
RULE 52
POLYSTYRENE, POLYPROPYLENE, AND POLYETHYLENE FOAM
PRODUCT MANUFACTURING OPERATIONS**

(Adopted July 7, 1999)

8-52-100 GENERAL

8-52-101 Description: The purpose of this Rule is to limit the emissions of volatile organic compounds (VOC) from the manufacture of foam products composed of polystyrene, polyethylene or polypropylene.

8-52-110 Exemption, Polymer or Resin Manufacturing: The requirements of this Rule shall not apply to operations performed to manufacture polymers or resins. Such manufacturing operations are subject to the applicable provisions of District Regulation 2, Regulation 10, and Regulation 8, Rule 36.

8-52-111 Exemption, Use of Non-VOC Blowing Agent: The requirements of this Rule shall not apply to any polystyrene, polyethylene or polypropylene foam product manufacturing operation where a VOC blowing agent is not used, provided the person claiming this exemption satisfies the requirements of Section 8-52-504.

8-52-112 Exemption, Solid Product Manufacturing: The requirements of this Rule shall not apply to operations performed to manufacture non-foam solid polystyrene, polyethylene or polypropylene products, provided the person claiming this exemption satisfies the requirements of Section 8-52-504. Such operations are subject to the applicable provisions of District Regulation 2 and Regulation 8, Rule 2.

8-52-113 Limited Exemption, Recycled Polystyrene Foam Processes: The requirements of Section 8-52-302 shall not apply to equipment or operations performed to process expanded polystyrene foam waste into recycled polystyrene pellets, which are subsequently used to manufacture recycled polystyrene loose fill. Such operations are subject to the applicable provisions of District Regulation 2 and Regulation 8, Rule 2.

8-52-114 Limited Exemption, Loose Fill Research and Development: The requirements of Section 8-52-302 shall not apply to equipment used exclusively to research and/or develop recycled polystyrene loose fill production processes. Such equipment is subject to the applicable provisions of District Regulation 2 and Regulation 8, Rule 2.

8-52-115 Limited Exemption, Shape and Block Molding, Low Throughput: The requirements of subsection 8-52-301.2 shall not apply to expandable polystyrene shape and block molding product manufacturing operations that process less than 1,000,000 pounds of expandable polystyrene beads in any consecutive 12-month period, provided all VOC emissions from expandable bead storage, expansion and intermediate pre-puff storage/aging are controlled by an approved emission control system that satisfies the requirements of Section 8-52-304 and achieves a capture and control efficiency of at least 85 percent by weight.

8-52-200 DEFINITIONS

8-52-201 Approved Emission Control System: A system for reducing emissions of volatile organic compounds to the atmosphere, consisting of an abatement device and a collection system that meets the requirements of Regulation 2, Rule 1, and achieves the control efficiency specified in the applicable standards section at all times for the operation being controlled.

8-52-202 Blowing Agent: Any liquid, gaseous or solid substance that alone or in conjunction with other substances is capable of producing a cellular (foam) structure in a polymeric material.

8-52-203 Expandable Polystyrene Molding: A series of processes where expandable polystyrene beads, which are polystyrene resin particles impregnated with blowing

agent, undergo expansion, aging and then cup, shape or block molding to form a low-density foam product. During expansion, the beads are expanded to the appropriate desired density by exposure to steam or hot air in a pre-expander. During aging, the expanded beads (or pre-puff) are transferred to storage silos or mesh bags to stabilize and dry. During molding, the aged pre-puff is exposed to heat in a closed mold that causes the beads to soften, re-expand, and fuse together to form the shaped product. For the purposes of this Rule, cup molding refers to the molding of cups and containers such as bowls.

- 8-52-204 Extrusion:** The process in which a plastic resin is melted in an extruder and continuously forced through a die opening shaped like the finished product. As it leaves the die opening, the extruded plastic melt partially expands and is then drawn by a puller through forming equipment that sizes, cools, and cuts the product to length or winds it into a roll. With extruded foam products, expandable beads are used as the raw material or blowing agent is injected under pressure directly into the extruder where it mixes with the plastic melt.
- 8-52-205 Foam:** A solid material in a lightweight cellular form (having internal voids or cavities called cells that contain air or a gas) resulting from the introduction or generation of gas bubbles throughout its mass during processing.
- 8-52-206 Foam Board:** A form of expanded thermoplastic foam that is manufactured by an extrusion process that injects blowing agent into the extruder and uses a slit aperture die that forms a slab, or by a block molding process using expandable beads. For the purposes of this Rule, a foam board product includes foam board and those products made from foam board.
- 8-52-207 Foam Sheet:** A form of thermoplastic foam that is manufactured by a tubular extrusion process using expandable beads or by extrusion with blowing agent injected into the extruder. For the purposes of this Rule, a foam sheet product includes foam sheet and those products made from foam sheet.
- 8-52-208 Loose Fill:** A form of expanded polystyrene foam, which is used as a protective packaging material because of its low density (less than 0.5 lbs/ft³), resiliency, and cushioning characteristics. This material is primarily manufactured with a series of steam expansion and aging (or curing) processes using expandable polystyrene beads as the raw material. When recycled polystyrene is used as the raw material, extrusion (with blowing agent injected directly into an extruder) and forming processes partially expand, shape, and cut the plastic material prior to the expansion and aging processes.
- 8-52-209 Polyethylene:** Any grade, class, or type of thermoplastic polymer, copolymer, interpolymer, alloy, or blend, or of cross-linked thermoset polymer, composed primarily of polymerized ethylene.
- 8-52-210 Polymer:** A high molecular weight organic compound that is formed by the polymerization of small molecules or monomers and that has a chemical structure represented by repeating units. When two or more different monomers polymerize, a copolymer is formed.
- 8-52-211 Polypropylene:** Any grade, class, or type of thermoplastic polymer, copolymer, interpolymer, alloy, or blend, or of cross-linked thermoset polymer, composed primarily of polymerized propylene.
- 8-52-212 Polystyrene:** Any grade, class, or type of thermoplastic polymer, copolymer, interpolymer, alloy, or blend composed primarily of polymerized styrene.
- 8-52-213 Product Manufacturing Operation:** A production line or lines consisting of all steps in the processing of a polymer or resin, from the receipt of raw polymeric material by the manufacturing facility through the final step prior to shipment of the finished foam product that results in a change in the form, chemical composition, or any chemical or physical property of the material, and that results in VOC emissions to the atmosphere. Individual steps include, but are not limited to, expandable bead storage, finished product storage/aging, extrusion, expansion, softening or annealing, intermediate (pre-puff) storage/aging, decomposition, molding, grinding, and forming. For the purposes of this rule, polyethylene and polypropylene foam product

manufacturing operations shall include all processes from and including expandable bead storage through and including 24 hours of finished product storage/aging.

8-52-214 Raw Material: All polystyrene, polyethylene and polypropylene, and blowing agent used in the manufacture of foam products, including virgin and recycled polymeric materials.

8-52-215 Resin: Any of a class of solid or semisolid products of natural or synthetic origin, generally of high molecular weight with no definite melting point. Most resins are polymers or copolymers.

8-52-216 Solid: A state of matter that has a crystalline or amorphous structure, a rigidity of form and tendency to maintain a definite shape, and whose uniformly compact interior results from the close proximity of the component atoms, ions, or molecules and the strength of the forces between them.

8-52-217 Volatile Organic Compound (VOC): Any organic compound (excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate) which would be emitted from a foam product manufacturing operation subject to this Rule.

217.1 For the purposes of determining emissions, the following organic compounds:

pentafluoroethane (HFC-125)
1,1,2,2-tetrafluoroethane (HFC-134)
1,1,1,2-tetrafluoroethane (HFC-134a)
1,1-difluoroethane (HFC-152a)
acetone
ethane

shall not be considered a VOC subject to this Rule.

8-52-300 STANDARDS

8-52-301 Polystyrene Foam Product Manufacturing Operations: Effective June 1, 2000, except as provided in Sections 8-52-111, 115 and 302, a person shall not manufacture polystyrene foam products within the District unless, for each 100 pounds of raw material processed, VOC emissions, which include emissions from the product manufacturing operation and residual blowing agent in the finished foam product, do not at any time exceed:

301.1 2.8 pounds for expandable polystyrene cup molding product manufacturing operations; or

301.2 2.7 pounds for expandable polystyrene shape and block molding product manufacturing operations; or

301.3 2.4 pounds for loose fill product manufacturing operations; or

301.4 2.4 pounds for extruded polystyrene foam board and sheet product manufacturing operations.

8-52-302 Recycled Polystyrene Loose Fill Product Manufacturing Operations: Effective June 1, 2000, a person manufacturing loose fill from recycled polystyrene shall capture at least 50% by weight of the total VOCs added to the product manufacturing operation. The captured emissions shall be vented to an abatement device with a control efficiency of at least 98% by weight at all times.

8-52-303 Polyethylene and Polypropylene Foam Product Manufacturing Operations: Effective June 1, 2000, except as provided in Section 8-52-111, a person shall not manufacture polyethylene or polypropylene foam products within the District unless at least 85% by weight of the VOC emissions from the product manufacturing operation are captured and vented to an abatement device with a control efficiency of at least 98% by weight at all times.

8-52-304 Approved Emission Control System: A person subject to the limits in Sections 8-52-301, 302 or 303 may comply by using an approved emission control system. Where incineration is used to control emissions, at least 98 percent by weight of the organic carbon shall be oxidized to carbon dioxide.

8-52-400 ADMINISTRATIVE REQUIREMENTS

8-52-401 Compliance Schedule: A person subject to this Rule shall comply with the following increments of progress:

401.1 By November 15, 1999, submit to the APCO an application for an Authority to Construct and a Permit to Operate new or modified equipment to achieve compliance with this Rule.

401.2 By June 1, 2000, be in full compliance with this Rule.

8-52-500 MONITORING AND RECORDS

8-52-501 Records: Effective June 1, 2000, a person subject to this Rule shall comply with the following requirements, as applicable:

501.1 Maintain current data that provides the following information:

a. The type of resin(s) and blowing agent(s) used in product manufacturing operations; and

b. The amount of polymerized styrene, ethylene, propylene, and blowing agent in each resin formulation used in percent by weight as indicated by the specifications of the foam product manufacturer, and the manufacturer or supplier of the raw polymeric material.

501.2 Maintain monthly records of the amount of each raw polymeric material processed, the amount of each finished foam product manufactured, the amount of each VOC blowing agent used, and the hours of operation.

501.3 Such records shall be retained for the previous 24-month period and shall be made available for inspection by the APCO upon request.

8-52-502 Polyethylene and Polypropylene VOC Loss Data: A person manufacturing polyethylene and polypropylene foam using a VOC blowing agent shall maintain data showing the VOC loss from the product manufacturing operation for each type of resin used, expressed as a weight percent of the initial VOC blowing agent concentration. This VOC loss data shall be established at the time of source testing for a Permit to Operate. All supporting documentation related to this information shall also be maintained.

8-52-503 Approved Emission Control System, Recordkeeping Requirements: A person operating an approved emission control system to comply with Section 8-52-301, 302 or 303 shall record key system operating parameters such as temperature, flow rate, and pressure on a daily basis.

8-52-504 Extruder Blowing Agent Injection Rate, Monitoring: A person operating an extruder into which VOC blowing agent is injected shall install and maintain in good working order a device which continuously records the blowing agent injection rate(s) at all times during extrusion. Such monitoring devices, which include but are not limited to mass flow meters and recorders, shall be calibrated according to the procedures recommended by the instrumentation manufacturer or at least twice in any consecutive 12-month period, and meet manufacturer's specifications for accuracy and precision. Records and calibration dates shall be maintained for the previous 24-month period and shall be made available for inspection by the APCO upon request.

8-52-505 Burden of Proof: A person claiming any exemption in this Rule must have the information available, such as raw material used, laboratory analyses, technical data sheets or source test results, that would allow the APCO to verify eligibility for the exemption.

8-52-600 MANUAL OF PROCEDURES

8-52-601 Analysis of Samples: The VOC content and exempt compound content of raw polymerized materials subject to this Rule shall be analyzed using BAAQMD Manual of Procedures, Volume III, Method 22, and South Coast Air Quality Management District (SCAQMD) Test Method 306-91.

8-52-602 Determination of Emissions: The capture and control efficiency of an approved emission control system as referenced in Sections 8-52-301, 302 and 303 shall be measured by any of the following methods: 1) BAAQMD Manual of Procedures, Volume IV, ST-7, or 2) EPA Method 25 or 25A. When either EPA Method 25 or 25A is used, capture efficiency shall be determined as prescribed in EPA's "Guidelines for Determining Capture Efficiency" dated January 9, 1995, or EPA Methods 204 and 204A through 204F. For the purpose of determining control device efficiency, any compound listed in Section 8-52-217 shall be included as volatile organic compounds. A source shall be in violation if the VOC emissions measured by any of the referenced test methods exceed the standards of this Rule. For polyethylene and polypropylene foam product manufacturing operations, the VOC loss from the operation as established at the time of source testing for a Permit to Operate shall be applicable for subsequent emissions determinations.



BAY AREA AIR QUALITY MANAGEMENT DISTRICT

REGULATION 9

INORGANIC GASEOUS POLLUTANTS

RULE 1

SULFUR DIOXIDE

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INORGANIC GASEOUS POLLUTANTS

RULE 1

SULFUR DIOXIDE

9-1-100 GENERAL

9-1-101 Description: This Rule establishes emission limits for sulfur dioxide from all sources including ships, and limits ground level concentrations of sulfur dioxide.

9-1-110 Conditional Exemption, Area Monitoring: The 300 ppm limitation of Section 9-1-302 shall not apply to a person who meets the requirements of subsections 9-1-110.1 and 110.2, provided such person has complied with those requirements prior to January 1, 1980.

110.1 A person shall be subject to the monitoring, records and reporting requirements contained in Regulation 1, including Sections 1-510, 530, 540, 542, 543, and 544.

110.2 A person shall not emit sulfur dioxide in quantities which result in ground level concentrations of sulfur dioxide in excess of the limits specified in Section 9-1-301. This subsection shall not apply to ground level concentrations occurring on the property from which such emission occurs, provided such property, from the emission point to the point where the excess occurs, is physically secured against public access by the person responsible for the emission. (Amended May 20, 1992)

9-1-200 DEFINITIONS

9-1-201 Deleted May 20, 1992

9-1-202 Deleted May 20, 1992

9-1-203 Deleted May 20, 1992

9-1-204 Start-up: For the purposes of Section 9-1-605, start-up begins at the time the feed stock is introduced into the process and may proceed for a period not to exceed four consecutive hours. (Amended May 20, 1992)

9-1-205 Fresh Fruit Sulfuring Operations: Any operation where freshly cut fruit is placed in a sulfur house in order to come into contact with sulfur dioxide. (Adopted February 16, 1983)

9-1-206 Sulfur Removal and Recovery System: A set of process units which remove H₂S from refinery gas streams and the reduced sulfur compounds and ammonia from process water streams. The sulfurous compounds are recovered as elemental sulfur or as sulfuric acid. The process units consist of a sour water stripper, regenerative gas treatment system, and a sulfur recovery plant or a sulfuric acid plant. (Adopted July 18, 1990)

9-1-207 Sour Water Stripper: A process unit which removes reduced sulfur compounds from process water using a distillation (stripping) process. (Adopted July 18, 1990)

9-1-208 Regenerative Gas Treatment System: A regenerative process system that removes H₂S from refinery gas streams and recovers the H₂S as H₂S or sulfur. (Adopted July 18, 1990)

9-1-209 Sulfur Recovery Plant: A process unit which processes sulfur and ammonia containing material and produces a final product of elemental sulfur. (Adopted July 18, 1990)

9-1-210 Sulfuric Acid Plant: A process unit which processes sulfur containing material and produces a final

product of sulfuric acid or oleum. (Adopted July 18, 1990)

9-1-211 Shutdown: For the purposes of Section 9-1-605, shutdown begins at the time the feed stock is discontinued. (Adopted May 20, 1992)

9-1-300 STANDARDS

9-1-301 Limitations on Ground Level Concentrations: A person shall not emit from sources other than ships, sulfur dioxide in quantities which result in ground level concentrations in excess of 0.5 ppm continuously for 3 consecutive minutes or 0.25 ppm averaged over 60 consecutive minutes, or 0.05 ppm averaged over 24 hours. This section shall not apply to ground level concentrations occurring on the property from which such emission occurs, provided such property, from the emission point to the point where the excess occurs, is physically secured against public access by the person responsible for the emission. (Amended May 20, 1992)

9-1-302 General Emission Limitation: A person shall not emit from any source, other than a ship, a gas stream containing sulfur dioxide in excess of 300 ppm (dry). This section shall not apply to the following sources:

302.1 Any source which is subject to any of the limitations in Sections 9-1-304 through 9-1-312.

302.2 Any source which satisfies the conditions in Sections 9-1-110.(Amended February 16, 1983)

9-1-303 Emissions from Ships: A person shall not emit a gas stream containing sulfur dioxide in excess of 2000 ppm from any ship, except when the ship is entering the port from outside the District. Emissions resulting only from the combustion of liquid fuel with a sulfur content less than or equal to 3.34% by weight shall be considered in compliance with this Section.

9-1-304 Fuel Burning (Liquid and Solid Fuels): A person shall not burn any liquid fuel having a sulfur content in excess of 0.5% by weight, or solid fuel of such sulfur content as would result in the emission of a gas stream containing more than 300 ppm (dry) of sulfur dioxide. This section shall not apply to:

304.1 The burning of sulfur, hydrogen sulfide, acid sludge or other compounds used in the manufacture of sulfur compounds;

304.2 The use of liquid or solid fuels to propel any motor vehicle, aircraft, missile, boat or ship;

304.3 The use of liquid or solid fuels which do not result in the emission of a gas stream containing more than 300 ppm (dry) of sulfur dioxide.

9-1-305 Deleted May 20, 1992

9-1-306 Deleted May 20, 1992

9-1-307 Emission Limitations for Sulfur Recovery Plants: A person shall not emit, from any source in a sulfur recovery plant, effluent process gas containing sulfur dioxide in excess of 250 ppm by volume (dry) calculated at zero percent oxygen. Plants which emit less than 45 kg (100 lbs.) per day of sulfur dioxide shall not be subject to this limitation. (Amended February 16, 1983; May 20, 1992)

9-1-308 Deleted May 20, 1992

9-1-309 Emission Limitations for Sulfuric Acid Plants: A person shall not emit, from any source in a sulfuric acid plant, effluent process gas containing sulfur dioxide in excess of 300 ppm by volume calculated at 12% oxygen. (Amended February 16, 1983; May 20, 1992)

9-1-310 Emission Limitations for Fluid Catalytic Cracking Units, Fluid Cokers, and Coke Calcining Kilns:

310.1 A person shall not emit, from any source in a fluid catalytic cracking unit or fluid coker, effluent process gas containing sulfur dioxide in excess of 1,000 ppm by volume.

310.2 A person shall not emit, from any coke calcining kiln, effluent process gas containing sulfur dioxide in excess of 400 ppm by volume or in excess of 113 kg (250 pounds) per hour, whichever is more restrictive.

310.3 A person subject to subsections 9-1-310.1 or 310.2 shall comply with the requirements in subsections 9-1-110.1 and 110.2.

9-1-311 Emission Limitations for Catalyst Manufacturing Plants:

311.1 Deleted May 20, 1992

311.2 A person shall not emit, from any source in a catalyst manufacturing plant, effluent process gas containing sulfur dioxide in excess of 22 kg (50 pounds) per hour. (Adopted May 21, 1980; Amended May 20, 1992)

9-1-312 Emission Limitations for Fresh Fruit Sulfuring Operations:

312.1 A person shall not operate any fresh apricot sulfuring operation which uses greater than 4.5 kg (10 pounds) of elemental sulfur or 9.0 kg (20 pounds) of gaseous SO₂ per 9.0 metric ton (1 short ton) of fresh apricots.

312.2 A person shall not operate any fresh peach sulfuring operation which uses greater than 5.5 kg (12 pounds) of elemental sulfur or 10.9 kg (24 pounds) of gaseous SO₂ per 9.0 metric ton (1 short ton) of fresh peaches.

312.3 A person shall not operate any fresh pear sulfuring operation which uses greater than 6.8 kg (15 pounds) of elemental sulfur or 13.6 kg (30 pounds) of gaseous SO₂ per 9.0 metric ton (1 short ton) of fresh pears. (Adopted February 16, 1983; Amended May 20, 1992)

9-1-313 Sulfur Removal Operations at Petroleum Refineries: Effective September 1, 1990, a person shall not operate a petroleum refinery processing more than 20,000 barrels per stream day of crude oil unless one of the following is met:

313.1 The sulfur content of the crude oil does not exceed 0.10 percent by weight, or

313.2 There is a sulfur removal and recovery system that removes and recovers, on a refinery wide basis, 95% of the H₂S from the refinery fuel gas, that removes and recovers, on a refinery wide basis, 95% of the H₂S from the process water streams, and removes 95% of the ammonia from the process water streams.

313.3 A binding, legally enforceable agreement or court order exists which mandates the construction of a sulfur removal and recovery system pursuant to a schedule set forth therein; provided, however, that the sulfur removal and recovery system must be constructed by October 1, 1993, unless, in the judgment of the Air Pollution Control Officer, failure to complete construction by that date results from circumstances beyond the reasonable control of the refinery operator in which case the Air Pollution Control Officer may grant a reasonable extension of the October 1, 1993 deadline. The Air Pollution Control Officer may grant such extension, however, only if the refinery operator has made substantial progress in completing construction of its sulfur removal and recovery system by October 1, 1993. (Adopted July 18, 1990)

9-1-400 ADMINISTRATIVE REQUIREMENTS

9-1-401 Deleted May 20, 1992

9-1-402 Deleted May 20, 1992

9-1-403 Deleted May 20, 1992

9-1-404 Deleted May 20, 1992

9-1-500 MONITORING AND RECORDS

9-1-501 Area Monitoring Requirements: Upon request of the APCO, a person subject to Section 9-1-301 shall comply with the monitoring, maintenance, records, and reporting requirements of Regulation 1, including Sections 1-510, 1-530, 1-540, 1-542, 1-543 and 1-544.

9-1-502 Emission Monitoring Requirements: A person subject to Section 9-1-304, 307, 309 or 310 (with the exception of coke calcining kilns), shall comply with the monitoring requirements of 1-520 and 522. (Amended March 17, 1982; May 20, 1992)

9-1-503 Fresh Fruit Sulfuring Recordkeeping Requirements: Any persons subject to Section 9-1-312 of this Rule shall record the daily weight of elemental sulfur burned or gaseous SO₂ used per unit weight of fresh fruit for each sulfuring operation. Records of the weights used shall be kept for the length of the specific fruit season and shall be made available to the APCO upon request. (Adopted February 16, 1983)

9-1-600 MANUAL OF PROCEDURES

9-1-601 Sampling and Analysis of Gas Streams: The method of sampling and analysis of gas streams of sulfur dioxide concentrations is described in the Manual of Procedures, Volume IV, ST-19 A or B. (Amended March 17, 1982)

9-1-602 Sulfur Content of Fuels: The sulfur content of solid and liquid fuels shall be determined as specified in the Manual of Procedures, Volume III, Method 10. (Amended March 17, 1982)

9-1-603 Averaging Times: The averaging times for production determination and emission analysis are specified in the Manual of Procedures, Volume IV. (Amended March 17, 1982)

9-1-604 Ground Level Monitoring: The monitoring requirements for ground level concentrations of sulfur dioxide, including siting procedures and instrument specifications, calibration and maintenance procedures, are described in the Manual of Procedures, Volume VI, Section 1. (Amended March 17, 1982)

9-1-605 Emission Monitoring: The emission monitoring requirements, including instrument placement, specifications, calibration, and maintenance procedures are described in the Manual of Procedures, Volume V. (Amended March 17, 1982).

9-1-606 Analysis of Gas Streams for H₂S: The method for analyzing refinery fuel gas streams for H₂S before and after control shall be as prescribed in the Manual of Procedures, Volume III, LAB 32 or equivalent method approved by the APCO. Adopted July 18, 1990; Amended May 20, 1992)

9-1-607 Analysis of Water Streams for H₂S: The method for analyzing refinery process water streams for H₂S before and after control shall be as prescribed in the Manual of Procedures, Volume III, LAB 32 or equivalent method approved by the APCO. (Adopted July 18, 1990; Amended May 20, 1992)

9-1-608 Analysis of Water Streams for NH₃: The method for analyzing refinery process water streams for NH₃ before and after control shall be as prescribed in the Manual of Procedures, Volume III, LAB 1 or equivalent method approved by the APCO. Adopted July 18, 1990; Amended May 20, 1992)

9-1-609 Analysis of Sulfur Content of Crude Oil: The method for analyzing the sulfur content of the crude oil shall be as prescribed in the Manual of Procedures, Volume III, Method LAB 10 or equivalent method approved by the APCO. (Adopted July 18, 1990; Amended May 20, 1992)

REGULATION 9
INORGANIC GASEOUS POLLUTANTS
RULE 3
NITROGEN OXIDES FROM HEAT TRANSFER OPERATIONS

1/28/81

- 9-3-202 Modified Heat Transfer Operation: Any heat transfer operation which has been changed so as to result in an increase in the emissions of nitrogen oxides. The following shall not be regarded as a change within the meaning of this Section:
- 202.1 Any alterations or changes in the methods of operation which do not require an authority to construct (see Regulation 2);
 - 202.2 The addition or use of any air pollution control equipment.

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

REGULATION 9

INORGANIC GASEOUS POLLUTANTS

RULE 4

NITROGEN OXIDES FROM FAN TYPE RESIDENTIAL CENTRAL FURNACES

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REGULATION 9

INORGANIC GASEOUS POLLUTANTS

RULE 4

NITROGEN OXIDES FROM FAN TYPE RESIDENTIAL CENTRAL FURNACES

9-4-100 GENERAL

9-4-101 Description: This Rule limits emissions of nitrogen oxides from natural gas-fired fan type residential central furnaces. (Amended December 7, 1983)

9-4-200 DEFINITIONS

9-4-201 Fan Type Central Furnace: A self-contained space heater providing for circulation of heated air at pressures other than atmospheric through ducts more than 25 cm (10 in) in length with an input rate of less than 175,000 BTU/hr, excluding heating/cooling units utilizing three phase electric current. (Amended December 7, 1983)

9-4-202 Annual Fuel Utilization Efficiency: The efficiency as defined by Section 4.2.35 of the Code of Federal Regulations, Title 10, Part 430, Subpart B, Appendix N. (Amended December 7, 1983)

9-4-203 Useful Heat Delivered to the Heated Space: The Annual Fuel utilization efficiency (expressed as a fraction) multiplied by the heat input. (Amended December 7, 1983)

9-4-300 STANDARDS

9-4-301 Residential Central Furnaces: A person shall not sell, install or offer for sale within the District any stationary residential natural gas-fired fan type central furnace manufactured after January 1, 1984 that emits more than 40 nanograms of oxides of nitrogen expressed as NO₂ per joule of useful heat delivered to the heated space. (Amended December 7, 1983)

9-4-302 Certified Furnaces: A person shall not sell, install or offer for sale within the District furnaces subject to the requirements of Section 9-4-301 unless such furnaces are certified in accordance with Section 9-4-401, 402, 403, and 404. (Amended and Renumbered December 7, 1983)

9-4-400 ADMINISTRATIVE REQUIREMENTS

9-4-401 Certification: The manufacturer shall have each appliance model tested in accordance with the following:

401.1 Oxides of nitrogen measurements, test equipment, and other required test procedures shall be in accordance with methods and standards or equivalent procedures approved by the APCO.

401.2 Operation of the furnace shall be in accordance with the procedures specified in Section 3.1 of Code of Federal Regulations, Title 10, part 430, Subpart B, Appendix N.

401.3 The following calculation shall be used to determine the nanograms of NO_x per joule of useful heat delivered to heated space:

$$\underline{(3.655 \times 10^{10})P \text{ or } 4.566 \times 10^4 \times P \times U}$$

$$N = (20.9 - Y) Z E \quad N = H \times C \times E$$

Where:

N = Nanograms of NO_x emitted per joule of useful heat delivered to the heated space.

P = Parts per million of NO_x

Y = Percentage of O₂ in flue gas.

Z = Heating value of gas in joules per (meter)³

E = AFUE (percentage).

U = Volume percent CO₂ in water-free flue gas for stoichiometric combustion.

H = Gross heating value of the fuel, BTU/cu. ft. (60°F, 30-in Hg.)

C = Measured volume percent of CO₂ in water-free flue gas, assuming complete combustion and no CO present. (Amended December 7, 1983)

9-4-402 Compliance Statement: The manufacturer shall submit to the APCO a statement that the model is in compliance with this Rule. The statement shall be signed and dated, and shall attest to the accuracy of all information. The statement shall include the brand name, model number as is appears on the furnace rating plate, and be on forms provided by the APCO. (Amended December 7, 1983)

9-4-403 Identification: The manufacturer shall display the model number of the furnace complying with this rule on the shipping carton and rating plate.

9-4-404 Enforcement: The APCO may require the emission test results to be provided when deemed necessary to verify compliance and may periodically conduct such tests as are deemed necessary to insure compliance.

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

REGULATION 9

INORGANIC GASEOUS POLLUTANTS

RULE 7

**NITROGEN OXIDES AND CARBON MONOXIDE FROM INDUSTRIAL, INSTITUTIONAL, AND
COMMERCIAL BOILERS, STEAM GENERATORS, AND PROCESS HEATERS**

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REGULATION 9

INORGANIC GASEOUS POLLUTANTS

RULE 7

NITROGEN OXIDES AND CARBON MONOXIDE FROM INDUSTRIAL, INSTITUTIONAL, AND COMMERCIAL BOILERS, STEAM GENERATORS, AND PROCESS HEATERS

(ADOPTED SEPTEMBER 16, 1992)

9-7-100 GENERAL

9-7-101 Description: This rule limits the emissions of nitrogen oxides and carbon monoxide from industrial, institutional, and commercial boilers, steam generators, and process heaters.

9-7-110 Exemptions: The requirements of this rule shall not apply to the following:

110.1 Boilers, steam generators, and process heaters with a rated heat input less than 10 million BTU/hour, if fired exclusively with natural gas, liquefied petroleum gas, or any combination thereof.

110.2 Boilers, steam generators and process heaters with a rated heat input less than 1 million BTU/hour fired with any fuel.

110.3 Boilers, steam generators, and process heaters that are used in petroleum refineries.

110.4 Boilers used by public electric utilities or qualifying small power production facilities, as defined in Section 228.5 of the Public Utilities Code, to generate electricity;

110.5 Waste heat recovery boilers that are used to recover sensible heat from the exhaust of combustion turbines or reciprocating internal combustion engines;

110.6 Kilns, ovens, and furnaces used for drying, baking, heat treating, cooking, calcining, or vitrifying.

9-7-111 Limited Exemption, Low Fuel Usage: The requirements of Sections 9-7-301, 302, and 303 shall not apply to the use of any boiler, steam generator, or process heater with an annual heat input less than 90,000 therms during each consecutive 12-month period after July 1, 1993, or that accepts a limiting condition in their operating permit to limit the annual heat input to less than 90,000 therms, provided the requirements of Sections 9-7-304 and 504 are satisfied.

9-7-200 DEFINITIONS

9-7-201 Annual Heat Input: The total heat input of fuels burned by a combustion source during any consecutive 12-month period, as determined from the higher heating value and cumulative annual usage of each fuel.

9-7-202 Boiler or Steam Generator: Any combustion equipment used to produce steam or to heat water.

9-7-203 British Thermal Unit (BTU): The amount of heat required to raise the temperature of one pound of water from 59° to 60°F at one atmosphere.

9-7-204 Heat Input: The heat of combustion released due to burning a fuel in a source, using the higher heating value of the fuel. This does not include the sensible heat of incoming combustion air.

9-7-205 Heat-Input Weighted Average: The heat input of the gaseous fuel per unit time divided by the total heat input per unit time and the heat input per unit time of the non-gaseous fuel divided by the total heat input per unit time. The calculated fractions are used to calculate the applicable weighted average ppmv emission limit of Section 9-7-303.

9-7-206 Higher Heating Value (HHV): The total heat liberated per mass of fuel burned (BTU per pound), when fuel and dry air at standard conditions undergo complete combustion and all resultant products are brought to their standard states at standard conditions. The HHV is determined as specified in Section 9-7-605.

9-7-207 Natural Gas: Any mixture of gaseous hydrocarbons containing at least 80 percent methane by volume, as determined according to Standard Method ASTM D1945-64.

9-7-208 Nitrogen Oxide (NO_x) Emissions: The sum of nitric oxide (NO) and nitrogen dioxide (NO₂) in the flue gas, collectively expressed as nitrogen dioxide.

9-7-209 Non-Gaseous Fuel: Any fuel which is not a gas at 68°F and one atmosphere.

9-7-210 Process Heater: Any combustion equipment which transfers heat from combustion gases to water or process streams. A process heater does not include any kiln, furnace, or oven used for drying, baking, heat treating, cooking, calcining, or vitrifying.

9-7-211 Rated Heat Input: The heat input capacity specified on the nameplate of the combustion source. If the combustion source has been physically modified such that its maximum heat input is different than the heat input capacity specified on the nameplate, the modified maximum heat input, per Section 9-7-502, shall be considered as the rated heat input.

9-7-212 Therm: One hundred thousand (100,000) BTU's.

9-7-300 STANDARDS

9-7-301 Emission Limits - Gaseous Fuel: Effective January 1, 1996, a person shall not operate a boiler, steam generator, or process heater with a rated heat input greater than or equal to 10 million BTU per hour, fired on gaseous fuel, unless the following emission limits are met:

301.1 Nitrogen oxides (NO_x) shall not exceed 30 ppmv, dry at 3 percent oxygen;

301.2 Carbon monoxide (CO) shall not exceed 400 ppmv, dry at 3 percent oxygen.

9-7-302 Emission Limits - Non-Gaseous Fuel: Effective January 1, 1996, a person shall not operate a boiler, steam generator, or process heater, with a rated heat input greater than or equal to 10 million BTU per hour, fired on non-gaseous fuel, unless the following emission limits are met:

302.1 Nitrogen oxides (NO_x) shall not exceed 40 ppmv, dry at 3 percent oxygen;

302.2 Carbon monoxide (CO) shall not exceed 400 ppmv, dry at 3 percent oxygen.

9-7-303 Emission Limits - Gaseous and Non-Gaseous Fuel: Effective January 1, 1996, a person shall not operate a boiler, steam generator, or process heater, with a rated heat input greater than or equal to 10 million BTU per hour, fired simultaneously on combinations of gaseous and non-gaseous fuels, unless the heat-input weighted average of the emission limits specified in subsections 9-7-301.1, 301.2, 302.1, and 302.2 are not exceeded.

9-7-304 Low Fuel Usage Requirements: Effective January 1, 1996, a person who operates any boiler, steam generator, or process heater with rated heat input greater than or equal to 10 million BTU per hour and qualifying for the limited exemption in Section 9-7-111, or with rated heat input less than 10 million BTU per hour with the capability of firing any fuel other than natural gas or liquefied petroleum gas, shall meet one of the following conditions:

304.1 Operate in a manner that maintains stack-gas oxygen concentrations at less than or equal to 3 percent by volume on a dry basis; or

304.2 Tune at least once every twelve months by a technician in accordance with the procedure specified in Section 9-7-604; or

304.3 Meet the emission limits specified in Sections 9-7-301, 302, or 303.

9-7-305 Natural Gas Curtailment - Non-Gaseous-Fuel: Effective January 1, 1996, if natural gas is unavailable to use, a person shall not operate a boiler, steam generator, or process heater, fired on non-gaseous fuel, unless the following emission limits are met:

305.1 Nitrogen oxides (NO_x) shall not exceed 150 ppmv, dry at 3 percent oxygen;

305.2 Carbon monoxide (CO) shall not exceed 400 ppmv, dry at 3 percent oxygen.

9-7-306 Equipment Testing - Non-Gaseous Fuel: Effective January 1, 1996, a person shall not operate a boiler, steam generator, or process heater, fired on non-gaseous fuel for equipment testing, unless the following limits are

met:

306.1 Nitrogen oxides (NO_x) shall not exceed 150 ppmv, dry at 3 percent oxygen.

306.2 Carbon monoxide (CO) shall not exceed 400 ppmv, dry at 3 percent oxygen.

306.3 Equipment testing shall not exceed a combined total of 48 hours during any calendar year.

9-7-400 ADMINISTRATIVE REQUIREMENTS

9-7-401 Compliance Schedule - Emissions and Usage Limits: A person who must modify existing sources' or equipment to comply with the requirements of Sections 9-7-301, 302, 303, 305, or 306 shall comply with the following increments of progress:

401.1 By January 1, 1994: Submit an application for any required Authority to Construct to achieve compliance with such requirements.

401.2 By January 1, 1995: Submit a status report to the APCO stating the progress of the modification or installation.

401.3 By January 1, 1996: Be in compliance with all the requirements of this rule.

9-7-402 Compliance Schedule - Low Fuel Usage Requirements: A person who must comply with the requirements of Section 9-7-304 shall comply with the following increments of progress:

402.1 By January 1, 1995: Submit a plan for approval by the APCO containing the following items:

1.1 A list of all sources with the rated heat input capacities and anticipated annual heat inputs; and

1.2 A selection of one of the three options specified in subsections 9-7-304.1, 304.2, and 304.3.

402.2 By January 1, 1996: Be in compliance with all the requirements of this rule.

9-7-403 Initial Demonstration of Compliance: By July 1, 1996, any person subject to this rule shall conduct source tests, as specified in Sections 9-7-601 or 602, for the purpose of demonstrating compliance with Sections 9-7-301, 302, 303, or subsection 9-7-304.1.

9-7-500 MONITORING AND RECORDS

9-7-501 Combinations of Different Fuels: Any person who simultaneously fires combinations of different fuels in a source with a rated heat input greater than or equal to 10 million BTU per hour and is subject to the requirements of Section 9-7-3-03 shall install a non-resettable totalizing fuel meter in each fuel line for each source.

9-7-502 Modified Maximum Heat Input: Any person who operates a boiler, steam generator, or process heater that has been physically modified such that its maximum heat input is different than the heat input specified on the nameplate shall demonstrate to the APCO the maximum heat input by a fuel meter, while operating the source at maximum capacity.

9-7-503 Records: Any person subject to the requirements of this rule shall keep records of the following:

503.1 Documentation verifying annual tune-ups performed in accordance with subsection 9-7-304.2.

503.2 In the event that natural gas is unavailable for use, documentation from the natural gas supplier verifying that natural gas was unavailable due to a natural gas curtailment.

503.3 Documentation verifying the hours of equipment testing during each calendar month to demonstrate compliance with subsection 9-7-306.3.

503.4 The results of any source testing required by Section 9-7-403.

Such records shall be retained for a minimum of 24 months from date of entry and be made available to District staff upon request.

9-7-504 Low Fuel Usage - Monitoring and Records: Any person who operates boilers, steam generators, or process heaters with rated heat inputs greater than or equal to 10 million BTU per hour and qualifying for the limited exemption of Section 9-7-111 shall comply with the following requirements:

504.1 Install by July 1, 1993, a non-resettable totalizing meter for each fuel that demonstrates that the source operated at or below the applicable heat input level, or receive APCO approval for using utility service meters, purchase or tank fill records, or any other acceptable methods for measuring the cumulative annual usage of each fuel; and

504.2 Have available for inspection by the APCO by July 1, 1994, and each year thereafter, annual fuel use data and the Higher Heating Value of each fuel used, for the preceding consecutive 12-month period. Records shall be maintained and made accessible to the APCO for a period of 24 months from the date the record is made.

9-7-600 MANUAL OF PROCEDURES

9-7-601 Determination of Nitrogen Oxides: The methods by which samples of exhaust gases are collected and analyzed to determine concentrations of nitrogen oxides are set forth in the District Manual of Procedures, Volume IV, ST-13 A or B.

9-7-602 Determination of Carbon Monoxide and Stack-Gas Oxygen: Compliance with the carbon monoxide emission requirements of Section 9-7-301 and the stack-gas oxygen concentration requirement of subsection 9-7-302.1 shall be determined as set forth in the District Manual of Procedures, Volume IV, ST-6 (carbon monoxide) and ST-14 (oxygen).

9-7-603 Compliance Determination: All emission determinations shall be made in the as-found operating condition, except that emission determinations shall include at least one source test conducted at the rated heat input of the source, and no compliance determination shall be established within two hours after a continuous period in which fuel flow to the unit is zero or is shut off for 30 minutes or longer.

9-7-604 Tune-Up Procedures: The tuning procedure required by Section 9-7-304.2 shall be performed in accordance with the procedure set forth in the District Manual of Procedures, Volume I, Chapter 5. (Adopted September 15, 1993)

9-7-605 Determination of Higher Heating Value: If certification of the Higher Heating Value is not provided by the third-party fuel supplier, it shall be determined by one of the following test methods: (1) ASTM D2015-85 for solid fuels; (2) ASTM D240-87 or ASTM D2382-88 for liquid hydrocarbon fuels; or (3) ASTM D1826-88, or ASTM D1945-81 in conjunction with ASTM D3588-89, for gaseous fuels.

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

REGULATION 9

INORGANIC GASEOUS POLLUTANTS

RULE 8

NITROGEN OXIDES AND CARBON MONOXIDE

FROM STATIONARY INTERNAL COMBUSTION ENGINES

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REGULATION 9

INORGANIC GASEOUS POLLUTANTS

RULE 8

NITROGEN OXIDES AND CARBON MONOXIDE

FROM STATIONARY INTERNAL COMBUSTION ENGINES

(Adopted January 20, 1993)

9-8-100 GENERAL

9-8-101 Description: This rule limits the emissions of nitrogen oxides and carbon monoxide from stationary internal combustion engines fired on gaseous fuels or any combination of gaseous and liquid fuels. This rule does not apply to emergency standby engines excluded under Regulation 1-110.2.

9-8-110 Exemptions: The requirements of this rule shall not apply to the following:

110.1 Engines rated by the manufacturer at less than 250 brake horsepower output rating.

110.2 Engines fired exclusively by liquid fuels including, but not limited to, diesel fuel, gasoline, and methanol.

110.3 Engines used directly and exclusively for the growing of crops or the raising of fowl or animals.

9-8-111 Limited Exemption for Low Usage: The requirements of Sections 9-8-301 and 302 shall not apply to the following low use operations provided the requirements of Section 9-8-502 are met:

111.1 Engines rated at, or below, 1000 brake horsepower which operate less than 200 hours in any 12-consecutive-month period.

111.2 Engines rated above 1000 brake horsepower which operate less than 100 hours in any 12-consecutive-month period.

9-8-200 DEFINITIONS

9-8-201 Gaseous Fuels: For the purposes of this rule, gaseous fuels include, but are not limited to:

201.1 Fossil derived fuel gas such as natural gas, methane, ethane, propane, refinery fuel gas, and butane, including gases stored as liquids such as liquified petroleum gas (LPG).

201.2 Waste derived fuel gas such as sewage sludge digester gas or landfill gas.

9-8-202 Nitrogen Oxide (NO_x) Emissions: The sum of nitric oxide (NO) and nitrogen dioxide (NO₂) in the engine exhaust, collectively expressed as nitrogen dioxide.

9-8-203 Rated Brake Horsepower: The maximum brake horsepower rating at maximum revolutions per minute (RPM) specified for the engine by the manufacturer or indicated on the engine nameplate.

9-8-204 Stationary Internal Combustion Engine (Engine): Any spark or compression ignited internal combustion engine that is operated, or intended to be operated, at a specific site for more than one year or is

attached to a foundation at that site.

9-8-205 Rich-Burn Engine : Any spark or compression ignited internal combustion engine that is designed to be operated with an exhaust stream oxygen concentration of less than 4 percent, by volume. The exhaust gas oxygen content shall be determined from the uncontrolled exhaust stream.

9-8-206 Lean-Burn Engine : Any spark or compression ignited internal combustion engine that is designed to be operated with an exhaust stream oxygen concentration of 4 percent, by volume, or greater. The exhaust gas oxygen content shall be determined from the uncontrolled exhaust stream.

9-8-300 STANDARDS

9-8-301 Emission Limits - Fossil Derived Fuel Gas: Effective January 1, 1997, a person shall not operate a stationary internal combustion engine fired exclusively on fossil derived fuel gas, unless the following emission limits are met:

301.1 Rich-Burn Engines: Nitrogen oxide (NO_x) emissions shall not exceed 56 ppmv as corrected to 15% oxygen, dry basis.

301.2 Lean-Burn Engines: Nitrogen oxide (NO_x) emissions shall not exceed 140 ppmv as corrected to 15% oxygen, dry basis.

301.3 Carbon monoxide (CO) emissions shall not exceed 2000 ppmv as corrected to 15% oxygen, dry basis.

9-8-302 Emission Limits - Waste Derived Fuel Gas: Effective January 1, 1997, a person shall not operate a stationary internal combustion engine fired on waste derived fuel gas or any combination of gaseous fuels and liquid fuels unless the following emission limits are met:

302.1 Lean-Burn Engines: Nitrogen oxide (NO_x) emissions shall not exceed 140 ppmv as corrected to 15% oxygen, dry basis.

302.2 Rich-Burn Engines: Nitrogen oxide (NO_x) emissions shall not exceed 210 ppmv as corrected to 15% oxygen, dry basis.

302.3 Carbon monoxide (CO) emissions shall not exceed 2000 ppmv as corrected to 15% oxygen, dry basis.

9-8-400 ADMINISTRATIVE REQUIREMENTS

9-8-401 Compliance Schedule: A person subject to the requirements of Section 9-8-301 or 302 shall submit an application for any Authority to Construct, necessary to achieve compliance with such requirements, by January 1, 1996, and be in compliance with all of the requirements of this rule by January 1, 1997.

9-8-500 MONITORING AND RECORDS

9-8-501 Initial Demonstration of Compliance: A person who must modify existing sources or install new control equipment shall conduct a District approved source test, pursuant to Sections 9-8-601 and 602 by March 31, 1997, for the purpose of demonstrating compliance with Section 9-8-301 or 302. Source test results shall be submitted to the District by May 31, 1997.

9-8-502 Recordkeeping: Any person who operates engines which are exempt from the requirements of Section 9-8-301 or 302 by Section 9-8-111 shall keep records of the number of hours the engines are fired on a monthly basis. Such records shall be retained for a minimum of 24 months from the date of entry and made available to District staff upon request.

9-8-600 MANUAL OF PROCEDURES

9-8-601 Determination of Nitrogen Oxides: The methods by which samples of exhaust gases are collected and analyzed to determine concentrations of nitrogen oxides are set forth in the District's Manual of Procedures, Volume IV, ST-13 A or B.

9-8-602 Determination of Carbon Monoxide and Stack Gas Oxygen: The methods by which samples of exhaust gases are collected and analyzed to determine concentrations of carbon monoxide and stack gas oxygen are set forth in the District's Manual of Procedures, Volume IV, ST-6 (carbon monoxide) and ST-14 (oxygen).

**REGULATION 9
INORGANIC GASEOUS POLLUTANTS
RULE 9
NITROGEN OXIDES FROM STATIONARY
GAS TURBINES
(Adopted May 5, 1993)**

9-9-100 GENERAL

- 9-9-101 Description:** The purpose of this Rule is to limit emissions of nitrogen oxides (NO_x) from stationary gas turbines.
- 9-9-110 Exemption, Small Gas Turbines:** This Rule shall not apply to stationary gas turbines with a power rating less than 0.3 megawatts (MW).
- 9-9-111 Exemption, General:** The requirements of this Rule shall not apply to:
- 111.1 Testing of aircraft gas turbine engines for flight certification.
- 111.2 Gas turbines used solely for firefighting and/or flood control.
- 111.3 Emergency standby gas turbines excluded under Regulation 1-110.2
- 9-9-112 Limited Exemption, Low Usage:** The requirements of this Rule shall not apply to the operation of gas turbines rated less than 4.0 MW which operate less than 877 hours per year, provided the requirements of Section 9-9-502 are satisfied.
- 9-9-113 Exemption, Inspection and Maintenance Periods:** The emission limits of Sections 9-9-301, 303, and 304 shall not apply during inspection and maintenance periods, with the following limitations:
- 113.1 Inspection and maintenance periods shall be limited to a total of 48 hours between May 1 and October 31 in a calendar year.
- 113.2 For a calendar year in which a boiler inspection required by California Labor Code Section 7682 is not performed, inspection and maintenance periods shall be limited to a total of 144 hours.
- 113.3 For a calendar year in which a boiler inspection required by California Labor Code Section 7682 is performed, inspection and maintenance periods shall be limited to 144 hours plus additional time required for the boiler inspection, provided, however, that the additional time shall not cause the calendar-year total of all inspection and maintenance periods to exceed 312 hours.
(Adopted September 21, 1994)
- 9-9-114 Exemption, Start-up and Shutdown Periods:** The emission limits of Sections 9-9-301, 302, 303, 304, and 305 shall not apply during start-up or shutdown periods.
(Adopted September 21, 1994)

9-9-200 DEFINITIONS

- 9-9-201 EFF:** Thermal efficiency.
- 9-9-202 Essential Gas Turbine:** A gas turbine which cannot be taken out of service without shutting down the process unit which it serves. (Adopted September 21, 1994)
- 9-9-203 HHV:** The higher heating value of fuel. (Renumbered September 21, 1994)
- 9-9-204 LHV:** The lower heating value of fuel. (Renumbered September 21, 1994)
- 9-9-205 Inspection and Maintenance Period:** A period of time during which the boiler associated with an essential gas turbine is taken out of service for inspection or maintenance and during which gas turbine emissions are vented to a bypass stack rather than through the boiler to the SCR unit. (Adopted September 21, 1994)
- 9-9-206 Natural Gas:** Any mixture of gaseous hydrocarbons containing at least 80 percent methane by volume, as determined according to Standard Method ASTM D1945-64.
(Adopted September 21, 1994)

- 9-9-207 Nitrogen Oxide (NO_x) Emissions:** The sum of nitric oxide and nitrogen dioxide (NO₂) in the flue gas, collectively expressed as nitrogen dioxide.
(Adopted September 21, 1994)
- 9-9-208 Non-Gaseous Fuel:** Any fuel which is not a gas at 68° F and one atmosphere.
(Adopted September 21, 1994)
- 9-9-209 Power Augmentation:** An increase in the gas turbine shaft output or the decrease in turbine fuel consumption by the addition of energy recovered from exhaust heat.
(Renumbered September 21, 1994)
- 9-9-210 Rating:** The continuous megawatt (MW) rating or mechanical equivalent by a manufacturer for gas turbine(s) without power augmentation.
(Renumbered September 21, 1994)
- 9-9-211 Refinery Fuel Gas:** A mixture of hydrogen and gaseous hydrocarbons generated by petroleum refinery processes and used by the refinery for on-site combustion in boilers, process heaters, turbines, and other combustion equipment.
(Adopted September 21, 1994)
- 9-9-212 SCR: Selective Catalytic Reduction.** (Renumbered September 21, 1994)
- 9-9-213 Shutdown Period:** A period of time, not to exceed one hour, during which a gas turbine is brought from normal operating power output to inactive status.
(Adopted September 21, 1994)
- 9-9-214 Start-up Period:** A period of time, not to exceed three hours, during which a gas turbine is brought from inactive status to normal operating power output.
(Amended September 21, 1994)
- 9-9-215 Stationary Gas Turbine:** Any gas turbine system which is attached to a foundation and is gas and/or liquid fueled with or without power augmentation. Two or more gas turbines powering one shaft shall be treated as one unit.
(Renumbered September 21, 1994)
- 9-9-300 STANDARDS**
- 9-9-301 Emission Limits, General:** Except as provided by Sections 9-9-302, 9-9-303, 9-9-305, or 9-9-401, effective January 1, 1997, a person shall not operate a stationary gas turbine unless nitrogen oxides (NO_x) emission concentrations, corrected to 15 percent O₂ (dry basis), do not exceed the compliance limit listed below:
- 301.1 Gas turbines rated at 0.3 MW to less than 10.0 MW shall not exceed 42 ppmv, except that, for refinery fuel gas firing, the limit shall be 55 ppmv, and for non-gaseous fuel firing during natural gas curtailment or short testing periods, the limit shall be 65 ppmv.
- 301.2 Gas turbines rated at 10.0 MW and over, without SCR, shall not exceed 15 ppmv, except that, for non-gaseous fuel firing during natural gas curtailment or short testing periods, the limit shall be 42 ppmv.
- 301.3 Gas Turbines rated at 10.0 MW and over, with SCR, shall not exceed 9 ppmv, except that, for non-gaseous fuel firing during natural gas curtailment or short testing periods, the limit shall be 25 ppmv.
(Amended September 21, 1994)
- 9-9-302 Emission Limits, Low Usage:** Effective January 1, 1997, a person shall not operate a stationary gas turbine rated at 4.0 MW or greater and operating less than 877 hours per year unless nitrogen oxides (NO_x) emission concentrations, corrected to 15 percent O₂ (dry basis), do not exceed 42 ppmv when firing with natural gas and 65 ppmv when firing with non-gaseous fuel, and provided the requirements of Section 9-9-502 are satisfied.
(Amended September 21, 1994)
- 9-9-303 Emission Limits, Alternative Schedule:** A person operating a stationary gas turbine rated at 10 MW to less than 30MW, without SCR, which is otherwise subject to Section 9-9-301.2, may comply with both of the following emission limitations instead of complying with Section 9-9-301.2:

303.1 Effective January 1, 1996, a person shall not operate such a stationary gas turbine unless nitrogen oxides (NOx) emission concentrations, corrected to 15 percent O₂ (dry basis), do not exceed 25 ppmv, except that, for non-gaseous fuel firing during natural gas curtailment or short testing periods, the limit shall be 42 ppmv.

303.2 Effective January 1, 2000, a person shall not operate such a stationary gas turbine unless nitrogen oxides (NOx) emission concentrations, corrected to 15 percent O₂ (dry basis), do not exceed 15 ppmv, except that, for non-gaseous fuel firing during natural gas curtailment or short testing periods, the limit shall be 42 ppmv. (Adopted September 21, 1994)

9-9-304 Emission Limits, Interim RACT: Effective May 31, 1995, a person shall not operate a stationary gas turbine rated at 30 MW or greater and operating 877 hours per year or more unless nitrogen oxides (NOx) emission concentrations, corrected to 15 percent O₂ (dry basis), do not exceed 42 ppmv when firing with natural gas or 65 ppmv when firing with non-gaseous fuels. (Adopted September 21, 1994)

9-9-305 Emission Limits, Existing Low-NOx Turbines: Effective January 1, 1997, a person shall not operate a stationary gas turbine which 1) received a permit to operate prior to May 5, 1993, 2) was required to comply with Best Available Control Technology provisions limiting NOx emissions to 25 ppm or below, and 3) used a technology other than SCR to comply with that limit unless nitrogen oxides (NOx) emissions, corrected to 15 percent O₂ (dry basis), do not exceed 18 ppmv, except that, for non-gaseous fuel firing during natural gas curtailment or short testing periods, the limit shall be 42 ppmv. (Adopted September 21, 1994)

9-9-400 ADMINISTRATIVE REQUIREMENTS

9-9-401 Certification, Efficiency: If a person who operates a gas turbine subject to the limits of subsections 9-9-301.2, 301.3, 9-9-303, or 9-9-305 can demonstrate a thermal efficiency (EFF) greater than 25 percent in accordance with subsections 401.2.1 or 401.2.2, the emissions limit may be adjusted in accordance with Section 9-9-401.1.

$$401.1 \text{ Adjusted Emission Limit} = \frac{\text{Emission Limit} \times \text{EFF}}{25}$$

401.2 EFF (percent efficiency) is the higher of 2.1 or 2.2. An EFF that is less than 25% shall be assigned a value of 25%.

$$2.1 \text{ EFF} = \frac{3412 \times 100\%}{\text{Actual Heat Rate at HHV of Fuel (BTU/KW-HR)}}$$

which is the demonstrated percent efficiency of the gas turbine only as calculated without consideration of any downstream energy recovery (not used for power augmentation) from the actual heat rate, (BTU/KW-HR) or 1.34 (BTU/HP-HR); corrected to the HHV (higher heating value) of the fuel and standard conditions, as measured at peak load for that facility.

or

$$2.2 \text{ EFF} = \text{Manufacturer's Rated Efficiency}^* \times \frac{\text{LHV}}{\text{HHV}}$$

*With Air Pollution Equipment at LHV

which is the manufacturer's continuous rated percent efficiency of the gas turbine with air pollution equipment after correction from LHV to HHV of the fuel.

(Amended September 21, 1994)

- 9-9-402 Compliance Schedule:** A person who must modify existing sources or install new control equipment to meet the requirements of Section 9-9-301 or 302 shall comply with the following increments of progress:
- 402.1 By January 1, 1995: Submit an application for any Authority to Construct to achieve compliance with such requirements.
 - 402.2 By January 1, 1996: Submit a status report to the APCO stating the progress of the modification or installation.
 - 402.3 By January 1, 1997: Be in compliance with all requirements of this Rule.
- 9-9-403 Alternative Compliance Schedule:** A person who must modify existing sources or install new control equipment to meet the requirements of Section 9-9-303 shall comply with the following increments of progress:
- 403.1 By January 1, 1995: Submit an application for any Authority to Construct to achieve compliance with Section 9-9-303.1.
 - 403.2 By July 1, 1995: Submit a status report to the APCO stating the progress of the modification or installation to achieve compliance with Section 9-9-303.1.
 - 403.3 By January 1, 1996: Be in compliance with the requirements of Section 9-9-303.1 and all other applicable requirements of this Rule.
 - 403.4 By January 1, 1998: Submit an application for any Authority to Construct to achieve compliance with Section 9-9-303.2.
 - 403.5 By January 1, 1999: Submit a status report to the APCO stating the progress of the modification or installation to achieve compliance with Section 9-9-303.2.
 - 403.6 By January 1, 2000: Be in compliance with the requirements of Section 9-9-303.2 and all other applicable requirements of this Rule
- (Adopted September 21, 1994)

9-9-500 MONITORING AND RECORDS

- 9-9-501 Monitoring and Recordkeeping Requirements:** A person who operates any stationary gas turbine rated equal to or greater than 10.0 MW and operated an average of more than 4000 hours per year over the last three years before April 21, 1993, shall install, operate and maintain in calibration a continuous emissions monitor (CEM), or alternative monitoring system, capable of determining exhaust gas NO_x concentrations. A CEM must meet the requirements of the District Manual of Procedures, Volume V. Any alternative monitoring system must be approved by the APCO. Such approval will only be granted upon a determination, pursuant to the criteria of 40 CFR Part 75, Subpart E, that the alternative monitoring system provides information with the same precision, reliability, accessibility, and timeliness as that provided by a CEM for the source. (Amended September 21, 1994)
- 9-9-502 Records, Low Usage:** A person subject to the requirements of Section 9-9-302 or seeking exemption per Section 9-9-112 of this Rule shall maintain a daily gas turbine operating record that includes, the actual start-up and stop time, total hours of operation, type and quantity of fuel used (liquid/gas). This information shall be available to District staff upon request for at least two years from the date of entry.
- 9-9-503 Initial Demonstration of Compliance:** A person who must modify existing sources or install new control equipment shall conduct a District approved source test by the following dates and submit the results to the District within two months after the following dates:

- 503.1 March 31, 1996, for the purpose of demonstrating compliance with Section 9-9-303.1.
- 503.2 March 31, 1997, for the purpose of demonstrating compliance with Section 9-9-301, 302, or 305.
- 503.3 March 31, 2000, for the purpose of demonstrating compliance with Section 9-9-303.2.
(Amended September 21, 1994)

9-9-600 MANUAL OF PROCEDURES

- 9-9-601 Determination of Emissions:** Emissions of oxides of nitrogen, as specified in Sections 9-9-301, 302, 303, 304, and 305 shall be measured as prescribed in the District Manual of Procedures, Volume IV, ST-13A or B.
(Amended September 21, 1994)
- 9-9-602 Determination of Stack Gas Oxygen:** Oxygen content of the exhaust gas shall be determined by using District Manual of Procedures, Volume IV, ST-14.
- 9-9-603 Continuous Emission Monitoring:** Continuous Emissions Monitoring (CEM) procedures shall be determined using District Manual of Procedures, Volume V.
- 9-9-604 Determination of HHV and LHV:** The HHV and LHV shall be determined using 1) ASTM D240-87 or ASTM D2382-88 for liquid hydrocarbon fuel; or 2) ASTM 1826-88 or ASTM 1945-81 in conjunction with ASTM D3588-89 for gaseous fuels.

**REGULATION 9
INORGANIC GASEOUS POLLUTANTS
RULE 10
NITROGEN OXIDES AND CARBON MONOXIDE FROM BOILERS, STEAM
GENERATORS AND PROCESS HEATERS IN PETROLEUM REFINERIES**

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**REGULATION 9
INORGANIC GASEOUS POLLUTANTS
RULE 10**

**NITROGEN OXIDES AND CARBON MONOXIDE FROM BOILERS, STEAM
GENERATORS, AND PROCESS HEATERS IN PETROLEUM REFINERIES**

(Adopted January 5, 1994)

9-10-100 GENERAL

9-10-101 Description: This Rule limits the emissions of nitrogen oxides and carbon monoxide from boilers, steam generators, and process heaters in petroleum refineries.

9-10-110 Exemptions: The requirements of this Rule shall not apply to the following:

110.1 Boilers, steam generators, and process heaters with a rated heat input less than 10 million BTU/hour, if fired exclusively with natural gas, liquefied petroleum gas, or any combination thereof;

110.2 Boilers, steam generators, and process heaters with a rated heat input less than 1 million BTU/hour fired with any fuel;

110.3 Waste heat recovery boilers that are used to recover sensible heat from the exhaust of combustion turbines or reciprocating internal combustion engines;

110.4 Boilers, steam generators, and process heaters processing hydrogen sulfide process flue gas in sulfur recovery plants and their tail-gas treating units, or sulfuric acid manufacturing plants.

110.5 Boilers, steam generators, and process heaters fired on non-gaseous fuel when natural gas is unavailable for use.

9-10-111 Limited Exemption, Small Units: The requirements of Section 9-10-303 shall not apply to the use of any small units, provided the requirements of Section 9-10-306 are satisfied.

9-10-112 Limited Exemption, Low Fuel Usage: The requirements of Sections 9-10-303 and 306 shall not apply to the use of any boiler, steam generator, or process heater that has an annual heat input less than 90,000 therms during each consecutive 12-month period or that accepts a condition in their operating permit limiting the annual heat input to less than 90,000 therms, provided the requirements of Sections 9-10-306 and 502.2 are satisfied.

9-10-200 DEFINITIONS

9-10-201 Affected Unit: Any refinery boiler, steam generator, and process heater not exempted under Sections 9-10-110, 111, and 112.

9-10-202 Boiler or Steam Generator: Any combustion equipment used to produce steam or heat water.

9-10-203 British Thermal Unit (BTU): The amount of heat required to raise the temperature of one pound of water from 59° F to 60° F at one atmosphere.

9-10-204 CO Boiler: Any boiler or furnace which processes the off-gases from a catalytic cracking unit regenerator or a coker burner.

9-10-205 Combustion Modification: Any modification of the burner, combustion air flow (including flue-gas recirculation), or fuel-flow system which reduces nitrogen oxide emissions.

9-10-206 Heat-Input: The heat of combustion released due to burning a fuel in a source, using higher heating value of the fuel. This does not include the sensible heat of incoming combustion air. In the case of carbon monoxide boilers, the heat input includes the sensible heat of regenerator off-gases and the heat of combustion of the incoming carbon monoxide and of the auxiliary fuel.

9-10-207 Higher Heating Value (HHV): The total heat liberated per mass of fuel burned (BTU per pound) when fuel and dry air at standard conditions undergo complete combustion

and all resultant products are brought to their standard states at standard conditions per Section 9-10-604.

- 9-10-208 Natural Gas:** Any mixture of gaseous hydrocarbons containing at least 80 percent methane by volume, as determined according to Standard Method ASTM D1945-64.
- 9-10-209 Nitrogen Oxides (NO_x):** The sum of nitric oxide (NO) and nitrogen dioxide (NO₂) in the flue gas, collectively expressed as nitrogen dioxide.
- 9-10-210 Non-Gaseous Fuel:** Any fuel which is not a gas at 68° F and one atmosphere.
- 9-10-211 Operating Day:** 24 hours from midnight to midnight.
- 9-10-212 Out of Service:** The period of time during which a unit is in an inactive state following shutdown.
- 9-10-213 Petroleum Refinery:** Any facility engaged in producing gasoline, kerosene, distillate fuel oils, residual fuel oils, lubricants, or other products through distillation of petroleum or through redistillation, cracking, or reforming of unfinished petroleum derivatives.
- 9-10-214 Process Heater:** Any combustion equipment that transfers heat from combustion gases to water or process streams.
- 9-10-215 Rated Heat Input:** The heat input capacity specified on the nameplate of the combustion source. If the combustion source has been physically modified and/or operated in such a manner that its maximum heat input is different from the heat input capacity specified on the nameplate, then the modified maximum heat input per Section 9-10-503 shall be considered as the rated heat input.
- 9-10-216 Refinery-wide Emission Rate:** The ratio of the total mass of discharge into the atmosphere of nitrogen oxides, in pounds, from affected units, excluding CO boilers, to the sum of the actual heat input to those units in million BTU, calculated over a twenty-four (24) hour operating day.
- 9-10-217 Small Unit:** Any refinery boiler, steam generator, or process heater with a rated heat input less than 10 million BTU/hour but greater than or equal to 1 million BTU/hour that has the capability of firing any fuel other than natural gas or liquefied petroleum gas.
- 9-10-218 Start-up or Shutdown:** Start-up is that period of time, not to exceed twelve (12) hours unless specifically extended by a permit condition, during which a unit is brought up to its normal operating temperature from a cold start, initially at zero fuel flow, by following a prescribed series of separate steps or operations. Shutdown is that period of time, not to exceed nine (9) hours unless specifically extended by a permit condition, during which a unit is taken out of service from a normal operating mode to an inactive status following a prescribed series of separate steps or operations.
- 9-10-219 Therm:** One hundred thousand (100,000) BTUs.
- 9-10-220 Unit:** Any petroleum refinery boiler, steam generator, or process heater, as defined in Sections 9-10-202 and 214 of this Section, having an Authority to Construct or a Permit to Operate prior to January 5, 1994.

9-10-300 STANDARDS

- 9-10-303 Interim Emission Limit For Facility (Federal Requirements):** Effective May 31, 1995, a person shall not exceed a refinery-wide emission rate from affected units, excluding CO boilers, of 0.20 pounds NO_x per million BTU of heat input, based on an operating-day average.
- 303.1 Effective May 31, 1995, except during start-up and shutdown, a person shall not shall not operate a CO boiler unless the emissions of nitrogen oxides (NO_x) do not exceed 300 ppm, dry at 3% oxygen, based on an operating-day average.
- 9-10-306 Small Unit Requirements:** Except as provided in Section 9-10-403, effective July 1, 1997, a person shall not operate a small unit unless at least one of the following is met:
- 306.1 Operate in a manner that maintains stack-gas oxygen concentrations at less than or equal to 3 percent by volume on a dry basis; or
- 306.2 Tune at least once every twelve (12) months, or within two weeks of unit start-up if not operated in the last twelve (12) months, by a technician in accordance with the procedure specified in Section 9-10-605.

9-10-400 ADMINISTRATIVE REQUIREMENTS

9-10-402 Control Plan Submittal, Small Units: A person subject to Section 9-10-306 of this Rule shall comply with the following increments of progress:

402.1 No later than twelve (12) months prior to the compliance date of Section 306, submit to the APCO a plan to comply with the requirements of Section 9-10-306. The plan shall contain, at a minimum:

- 1.1 A list of all sources with the rated heat input capacities; and
- 1.2 A selection on one of the options specified in Section 306.

9-10-403 Compliance Date, Clean-Fuel Extension Allowance: Notwithstanding the effective date specified in Section 9-10-306, affected facilities that are in the process of, or have completed, making modifications to comply with the State Phase II Reformulated Gasoline Requirement (California Code of Regulations, Section 2260 et seq.) and the Federal Reformulated Gasoline Requirement (1990 Clean Air Act, 42 U.S.C.A., Section 7545) shall meet a compliance date of July 1, 2002. Effective July 1, 1997, any affected facility not producing the state and federal clean fuels shall comply with the effective dates in Section 9-10-306.

403.1 Commencing six (6) months after January 5, 1994, and every six months thereafter until clean-fuels project completion, facilities shall submit a status report verifying progress toward compliance with state and federal clean-fuel requirements.

9-10-500 MONITORING AND RECORDS

9-10-502 Monitoring: A person subject to Section 9-10-303 shall submit to the APCO a monitoring plan to provide, properly install, maintain in good working order, and operate the following equipment:

502.1 An in-stack nitrogen oxide (NO_x), carbon monoxide (CO), and oxygen (O₂) continuous emission monitoring system (CEMS), or equivalent verification system. The CEMS must meet the requirements of the District Manual of Procedures, Volume V, Continuous Emission Monitoring, Policy and Procedures.

502.2 A fuel-flow meter in each fuel line for each affected unit.

(Amended July 17, 2002)

9-10-503 Modified Maximum Heat Input: Any unit that has been physically modified such that its maximum heat input is different than the heat input specified on the nameplate shall demonstrate to the APCO the maximum heat input while operating the source at maximum capacity.

9-10-504 Records: The owner/operator of a source subject to this rule shall keep the following records, in a form suitable for inspection for a period of at least five (5) years. Such records shall be retained for a minimum of sixty (60) months from date of entry and made available to the APCO upon request. These records shall include, but are not limited to the following:

504.1 For all sources subject to the requirements of, effective July 17, 2002, Section 9-10-303:

- 1.1 The continuous emission monitoring measurements or equivalent system parameters for NO_x, CO, and O₂ in ppmv; and hourly (lb/hour) and daily (lb/day) NO_x emissions for each source;
- 1.2 The type, heat input (BTU/hr and BTU/day), and higher heating value of each fuel burned, and the injection rate for any reactant chemicals used by the emission control system(s) on a daily basis.
- 1.3 The date, time, and duration of any start-up, shutdown or malfunction in the operation of any unit, emission control equipment, or emission monitoring equipment; and
- 1.4 The results of performance testing, evaluations, calibrations, checks, adjustments, and maintenance of any continuous emission monitors that have been installed pursuant to Section 9-10-502 of this Rule.

- 1.5 A list of all sources subject to the NO_x refinery-wide emission rate limits in Sections 9-10-303.
- 1.6 Total NO_x emissions and total heat input for all sources listed in subsection 504.1.5, on a daily basis; and
- 1.7 The date, time and duration of all startups and shutdowns for affected sources.

504.2 For all sources subject to subsection 9-10-306.2, records of annual tune-ups.

(Amended July 17, 2002)

9-10-505 Reporting Requirements: A person subject to the requirements of Sections 9-10-303 and/or 306 shall meet the following reporting requirements:

- 505.1 Report to the APCO any violation of Section 9-10-303 and/or 306, in writing within ninety-six (96) hours after such occurrence.
- 505.2 Submit a written report for each calendar quarter to the APCO. The report shall be due on the 30th day following the end of the calendar quarter and shall include:
 - 2.1 A summary of the data obtained from the CEMS and the fuel meters installed pursuant to Section 9-10-502; and
 - 2.2 The date, time, duration, and magnitude of emissions in excess of the appropriate standards; the nature and cause of the excess (if known); the corrective actions taken; and the preventive measure adopted.

(Amended July 17, 2002)

9-10-600 MANUAL OF PROCEDURES

9-10-601 Determination of Nitrogen Oxides: Compliance with the nitrogen oxide emission requirements of Section 9-10-303 shall be determined by continuous emission monitors that have been installed, or by equivalent verification system pursuant to Section 9-10-502, and meet the requirements of Volume V of the District Manual of Procedures. CEMS shall be verified by source test as set forth in the District Manual of Procedures, Volume IV, ST-13A (nitrogen oxides) and ST-14 (oxygen).

(Amended July 17, 2002)

9-10-603 Compliance Determination: All emission determinations shall be made in the as-found operating condition, except during periods of start-up or shutdown as specified by Section 9-10-218. In addition to any continuous monitoring system (CEMS) required by Sections 9-10-502, 601, and 602, emission determinations shall include at least one source test, as specified in Section 9-10-501.

9-10-604 Determination of Higher Heating Value: If certification of the higher heating value is not provided by the third-party fuel supplier, it shall be determined by one of the following test methods: (1) ASTM D2015-85 for solid fuels; (2) ASTM D240-87 or ASTM D2382-88 for liquid hydrocarbon fuels; or (3) ASTM D1826-88 or ASTM D1945-81 in conjunction with ASTM D3588-89 for gaseous fuels.

9-10-605 Tune-Up Procedures: The tuning procedure required by Section 9-10-306.2 shall be performed in accordance with the procedure set forth in the District Manual of Procedures, Volume I, Chapter 5.

**REGULATION 9
INORGANIC GASEOUS POLLUTANTS
RULE 11
NITROGEN OXIDES AND CARBON MONOXIDE FROM
ELECTRIC POWER GENERATING STEAM BOILERS**

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**REGULATION 9
INORGANIC GASEOUS POLLUTANTS
RULE 11
NITROGEN OXIDES AND CARBON MONOXIDE FROM
ELECTRIC POWER GENERATING STEAM BOILERS**

(Adopted February 16, 1994)

9-11-100 GENERAL

9-11-101 Description: This Rule limits the emissions of nitrogen oxides and carbon monoxide from electric power generating steam boilers. (Amended May 17, 2000)

9-11-110 Exemption, Limited Heat Input Capacity: The requirements of this Rule shall not apply to any boiler with a rated heat input capacity less than 250 million BTU/hour. (Amended November 15, 1995)

9-11-111 Exemption, Startup or Shutdown: The emission limits of Sections 9-11-302, 304, 306, 308, 310, and 311 shall not apply during the startup or shutdown period of any applicable boiler, with the following limitations:

111.1 Startup: For boilers with a rated heat input capacity greater than or equal to 5.0 billion BTU/hour, the duration of each startup procedure shall not exceed twenty (20) hours unless catalytic reaction temperature has not been reached, if applicable. For boilers with a rated heat input capacity of less than 5.0 billion BTU/hour, the duration of each startup procedure shall not exceed twelve (12) hours unless catalytic reaction temperature has not been reached, if applicable;

111.2 Shutdown: The duration of each shutdown procedure shall not exceed eight (8) hours. (Amended November 15, 1995)

9-11-112 Exemption, Oil Testing: The non-gaseous fuel firing limitations of subsections 9-11-302.1.4, 304.2, and 306.4 shall not apply to oil-burn readiness testing or state or federal agency required performance testing not to exceed a total of twenty-four (24) hours per boiler between May 1 and October 31 in any one year and a total of ninety-six (96) hours per boiler in any calendar year, or oil-burn emission testing required by the APCO. (Amended 11/15/95; 5/17/00)

9-11-114 Exemption, Heat Recovery Steam Generators: The requirements of this Rule shall not apply to duct burners and heat recovery steam generators that are used to recover sensible heat from the exhaust of combustion turbines. (Adopted May 17, 2000)

9-11-200 DEFINITIONS

9-11-201 Annual Heat Input: The total heat input of fuels burned by a boiler during the consecutive 12-month period of any calendar year, as determined from the higher heating value and cumulative annual usage of each fuel.

9-11-202 Boiler: Any combustion equipment used to produce steam or to heat water.

9-11-203 British Thermal Unit (BTU): The amount of heat required to raise the temperature of one pound of water from 59°F to 60°F at one atmosphere.

9-11-204 Capacity Factor: The ratio of the actual heat input burned by a boiler divided by the heat input that would have been burned by the boiler if it had operated at full rated heat input capacity, calculated over a specified period of time and expressed as a percentage (e.g., an annual capacity factor would be calculated over a calendar year).

9-11-205 Catalytic Reaction Temperature: The minimum temperature required by a catalytic emission abatement system to achieve the design emission reduction efficiency.

9-11-206 Electric Power Generating System: The combined total of all affected steam boilers used for electric power generation in the Bay Area Air Quality Management District that are owned and/or operated by a person or persons under common ownership or contractual obligation. (Amended May 17, 2000)

- 9-11-207 Electric System Emergency:** When an electric power generating system is required to request or provide emergency electrical support, as defined in Item 6 of the Coordinated Bulk Power Supply Program, Western Systems Coordinating Council (April 1, 1992). For the purposes of this Rule, this definition is limited to those situations in which the specified procedures for requesting emergency relief have been followed, including a determination that normal arrangements for capacity and energy are not sufficient to avoid area brownouts or blackouts.
(Amended May 17, 2000)
- 9-11-208 Force Majeure Natural Gas Curtailment:** An interruption in natural gas service, such that the daily fuel needs of a boiler cannot be met with natural gas available, due to one of the following reasons:
- 208.1 An unforeseeable failure or malfunction, not resulting from an intentional act or omission that the governing state, federal, or local agency finds to be due to an act of gross negligence on the part of the owner or operator of the boiler; or
 - 208.2 A natural disaster; or
 - 208.3 The natural gas is curtailed pursuant to governing state, federal, or local agency rules or orders; or
 - 208.4 The serving natural gas supplier provides notice to the District that, with forecasted natural gas supplies and demands, natural gas service is expected to be curtailed pursuant to governing state, federal, or local agency rules or orders.
(Amended May 17, 2000)
- 9-11-209 Heat Input:** The heat of combustion released due to burning a fuel in a boiler, using the higher heating value of the fuel. This does not include the sensible heat of incoming combustion air.
- 9-11-210 Heat Input Weighted Average:** The heat input of the gaseous fuel per unit time divided by the total heat input per unit time and the heat input per unit time of the non-gaseous fuel divided by the total heat input per unit time. The calculated fractions are used to calculate the applicable weighted average ppmv emission limit of subsections 9-11-302.1.3, 304.1.3, and 306.3.
- 9-11-211 Higher Heating Value (HHV):** The total heat liberated per mass or volume of fuel burned (BTU per pound or BTU per cubic feet), when fuel and dry air at standard conditions undergo complete combustion and all resultant products are brought to their standard states at standard conditions. The HHV is determined as specified in Section 9-11-605.
- 9-11-212 Natural Gas:** Any mixture of gaseous hydrocarbons containing at least 80 percent methane by volume, as determined according to Standard Method ASTM D1945-64 or equivalent method approved by the APCO.
(Amended November 15, 1995)
- 9-11-213 Nitrogen Oxide (NO_x) Emissions:** The sum of nitric oxide (NO) and nitrogen dioxide (NO₂) in the flue gas, collectively expressed as nitrogen dioxide.
- 9-11-214 Non-Gaseous Fuel:** Any fuel which is not a gas at 68°F and one atmosphere.
- 9-11-215 Operating Day:** Twenty-four (24) hours from midnight to midnight.
- 9-11-216 Rated Heat Input Capacity:** The heat input capacity specified on the nameplate of the boiler. If the boiler has been physically modified and/or operated in such a manner that its maximum heat input capacity is different from that specified on the nameplate, then the modified maximum heat input capacity per Section 9-11-502 shall be considered as the rated heat input capacity.
(Amended November 15, 1995)
- 9-11-217 Refractory Lined Furnace Hopper:** The bottom of a boiler firebox (the compartment of a boiler in which the fuel burns), when this bottom is lined with a refractory material.
(Amended November 15, 1995)
- 9-11-218 Startup or Shutdown:** Startup is that period of time during which a boiler is brought up to its normal operating temperature and pressure from an inactive status, initially at zero fuel flow, by following a prescribed series of separate steps or operations. Shutdown is that period of time during which a boiler is taken out of service from a normal operating mode to an inactive status of no fires by following a prescribed series of separate steps or operations.
- 9-11-219 Systemwide NO_x Emission Rate:** The ratio of the total mass of discharge into the atmosphere of nitrogen oxides in pounds from all affected steam boilers of an electric

power generating system to the sum of the actual heat input to those boilers in million BTU, calculated over a specified period of time. (Amended 11/15/95; 5/17/00)

9-11-220 Electric Power Generating Steam Boiler: A boiler that produces steam used to make electricity. (Adopted May 17, 2000)

9-11-300 STANDARDS

9-11-302 Interim Compliance NO_x Emission Limits for Boilers with a Rated Heat Input Capacity Greater Than or Equal to 1.75 billion BTU/hour: For any single electric power generating system as defined in Section 9-11-206, a person shall not operate an electric power generating steam boiler with a rated heat input greater than or equal to 1.75 billion BTU per hour unless the following conditions and emission limits are met:

- 302.1 Effective May 31, 1995, nitrogen oxides (NO_x) shall not exceed the following:
- 1.1 Gaseous Fuel: For gaseous fuel firing, NO_x emissions shall not exceed 175 ppmv, dry at 3 percent oxygen;
 - 1.2 Non-Gaseous Fuel: For non-gaseous fuel firing, NO_x emissions shall not exceed 300 ppmv, dry at 3 percent oxygen;
 - 1.3 Gaseous and Non-Gaseous Fuel: For simultaneous gaseous and non-gaseous fuel firing, the heat input weighted average of the NO_x emission limits specified in subsections 9-11-302.1.1 and 302.1.2 shall not be exceeded; and
 - 1.4 Limitation on Non-Gaseous Fuel Firing: From May 1 to October 31 in any calendar year, a person shall not fire an electric power generating steam boiler with a non-gaseous fuel unless gaseous fuel is not available because of a force majeure natural gas curtailment as defined by Section 9-11-208. (Amended May 17, 2000)

9-11-304 Interim Compliance NO_x Emission Limits for Boilers with a Rated Heat Input Capacity Less Than 1.75 billion BTU/hour and Greater Than or Equal to 1.5 billion BTU/hour: For any single electric power generating system as defined in Section 9-11-206, a person shall not operate an electric power generating steam boiler with a rated heat input less than 1.75 billion BTU/hour and greater than or equal to 1.5 billion BTU/hour unless the following conditions and emission limits are met:

- 304.1 Effective May 31, 1995, nitrogen oxides (NO_x) shall not exceed the following:
- 1.1 Gaseous Fuel: For gaseous fuel firing, NO_x emissions shall not exceed 175 ppmv, dry at 3 percent oxygen;
 - 1.2 Non-Gaseous Fuel: For non-gaseous fuel firing, NO_x emissions shall not exceed 700 ppmv, dry at 3 percent oxygen; and
 - 1.3 Gaseous and Non-Gaseous Fuel: For simultaneous gaseous and non-gaseous fuel firing, the heat input weighted average of the NO_x emission limits specified in subsections 9-11-304.1.1 and 304.1.2 shall not be exceeded.
- 304.2 Limitation on Non-Gaseous Fuel Firing: Effective May 31, 1995, a person shall not fire an electric power generating steam boiler with a non-gaseous fuel unless gaseous fuel is not available because of a force majeure natural gas curtailment as defined by Section 9-11-208. (Amended May 17, 2000)

9-11-306 Interim Compliance NO_x Emission Limits for Boilers with a Rated Heat Input Capacity Less Than 1.5 billion BTU/hour: Effective May 31, 1995, a person shall not operate an electric power generating steam boiler with a rated heat input less than 1.5 billion BTU/hour unless the following conditions and emission limits are met:

- 306.1 Gaseous Fuel: For gaseous fuel firing in boilers with refractory lined furnace hoppers, nitrogen oxides (NO_x) shall not exceed 175 ppmv, dry at 3 percent oxygen. For gaseous fuel firing in all other boilers, nitrogen oxides (NO_x) shall not exceed 120 ppmv, dry at 3 percent oxygen;
- 306.2 Non-Gaseous Fuel: For non-gaseous fuel firing, nitrogen oxides (NO_x) shall not exceed 500 ppmv, dry at 3 percent oxygen;

- 306.3 Gaseous and Non-Gaseous Fuel: For simultaneous gaseous and non-gaseous fuel firing, the heat input weighted average of the emission limits specified in subsections 9-11-306.1 and 306.2 shall not be exceeded; and
- 306.4 Limitation on Non-Gaseous Fuel Firing: A person shall not fire an electric power generating steam boiler with a non-gaseous fuel unless gaseous fuel is not available because of a force majeure natural gas curtailment as defined by Section 9-11-208 and there exists an electric system emergency as defined in Section 9-11-207.
- 9-11-308 Systemwide NO_x Emission Rate Limit:** Effective May 31, 1995, the systemwide average nitrogen oxides (NO_x) emission rate from an electric power generating system, as defined in Sections 9-11-206 and 219, shall not exceed 0.28 lb/MMBTU of heat input, calculated each operating day as the average of all hourly data for the preceding 30 operating days, excluding periods of force majeure natural gas curtailment as defined in Section 9-11-208. (Amended May 17, 2000)
- 9-11-310 CO Emission Limits for Boilers with a Rated Heat Input Capacity Greater Than or Equal to 250 million BTU/hour:** Effective May 31, 1995, a person shall not operate an electric power generating steam boiler with a rated heat input greater than or equal to 250 million BTU per hour unless the following emission limits are met:
- 310.1 During steady state compliance source tests, carbon monoxide (CO) shall not exceed 400 ppmv, dry at 3 percent oxygen, based on the test methods referenced in Section 9-11-602;
- 310.2 During normal operation (CEMS compliance monitoring), carbon monoxide (CO) shall not exceed 1000 ppmv, dry at 3 percent oxygen, based on a clock hour average. (Amended November 15, 1995)
- 9-11-311 Ammonia Emission Limit for Boilers with a Rated Heat Input Capacity Greater Than or Equal to 250 million BTU/hour:** No person shall allow the discharge from any electric power generating steam boiler with a rated heat input greater than or equal to 250 million BTU per hour, ammonia (NH₃) emissions in excess of 10 ppmv, dry at 3 percent oxygen, based on a rolling 60-minute average, resulting from the operation of any emission control device installed pursuant to the requirements of Sections 9-11-302, 304, 306, or 308. (Amended November 15, 1995)
- 9-11-400 ADMINISTRATIVE REQUIREMENTS**
- 9-11-401 Compliance Schedule - Emissions Limits:** A person who must modify existing sources or equipment to comply with any of the requirements of Sections 9-11-302, 304, 306, 308, 310, or 311 shall comply with the following increments of progress:
- 401.1 By December 31, 1994, submit to the APCO a plan for compliance for each affected boiler. The plan shall include at a minimum:
- 1.1 A list of all boilers subject to this Rule, including the manufacturer, model number, and maximum rated heat input capacity for each boiler;
 - 1.2 A description of the boiler design and the NO_x control system being considered for each boiler, as well as a description of any ancillary equipment related to the control of emissions. Data on the expected performance of the NO_x control system shall also be included;
 - 1.3 A compliance schedule for each boiler, including, but not limited to, specific dates for the following events: final engineering, contract award, begin construction, boiler outage, complete construction, and final compliance.
- 401.2 No later than 12 months prior to each applicable compliance date for each boiler, submit to the APCO applications for all Authorities to Construct required to install or modify any equipment necessary to comply with the respective sections of this Rule.
- 401.3 By the applicable compliance date for each boiler, be in compliance with all the applicable requirements of this Rule. (Amended November 15, 1995)
- 9-11-402 Initial and Annual Demonstration of Compliance:** Within 90 boiler operating days of the applicable compliance schedule specified in Sections 9-11-302, 304, 306, or

310 for each type of fuel, any person subject to this Rule shall conduct source tests, as specified in Sections 9-11-601, 602, or 603, for the purpose of demonstrating compliance with the appropriate Sections 9-11-302, 304, 306, 310, or 311. Compliance determination by source test with the respective emission limits shall be based on the methods referenced in Sections 9-11-601, 602, and 603. These source tests shall be conducted for each boiler at least once in any calendar year or within 12 months following the actual operation of each boiler during any calendar year. Source testing for compliance with the ammonia emission limit of Section 9-11-311 shall be conducted at least once quarterly, for each boiler that operated during the calendar quarter and was equipped with an ammonia-based NO_x control device. In no event shall this Section be interpreted to require non-gaseous fuel burning, solely to perform emissions testing or compliance demonstrations. Initial and annual source testing for NO_x and CO shall not be required to demonstrate compliance with Sections 9-11-302, 304, 306, 308, or 310, provided CEMS are in place pursuant to Section 9-11-503.

(Amended 11/15/95; 5/17/00)

9-11-500 MONITORING AND RECORDS

9-11-501 Fuels Monitoring: Any person who operates an electric power generating steam boiler subject to Sections 9-11-302, 304, 306, 308, or 310 shall install a non-resettable, totalizing and continuous recording fuel meter in each fuel line of each such boiler.
(Amended 11/15/95; 5/17/00)

9-11-502 Modified Maximum Heat Input Capacity: Any person who operates an electric power generating steam boiler that has been physically modified and/or operated in such a manner that its maximum heat input capacity is different from that specified on the nameplate shall demonstrate to the APCO the maximum heat input capacity, as measured by a fuel meter, while operating the source at maximum capacity.
(Amended 11/15/95; 5/17/00)

9-11-503 Emissions Monitoring: Any person who operates an electric power generating steam boiler subject to Sections 9-11-302, 304, 306, 308, or 310 shall provide, properly install, maintain in good working order, and operate an in-stack continuous emission monitoring system (CEMS) for each such boiler, approved by the APCO to demonstrate compliance with the provisions of this Rule by measuring the pollutants nitrogen oxides (NO_x) and carbon monoxide (CO) and diluents oxygen (O₂) or carbon dioxide (CO₂), following the procedures of subsection 9-11-503.1. The operator of a boiler with a rated heat input capacity less than 1.5 billion BTU/hour may petition the APCO to certify the alternative monitoring methods for nitrogen oxides (NO_x) and carbon monoxide (CO) referenced in subsection 9-11-503.2.

503.1 The CEMS must meet the requirements of the District Manual of Procedures, Volume V, Continuous Emission Monitoring, Policy and Procedures, and the federal requirements referenced in Sections 9-11-601 and 602. Each CEMS shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive six (6) minute period for boilers with a rated heat input capacity greater than or equal to 1.5 billion BTU/hour, and for each successive fifteen (15) minute period for boilers with a rated heat input capacity less than 1.5 billion BTU/hour.

503.2 For any boiler that has (1) a heat input capacity less than 1.5 billion BTU/hr, (2) an average capacity factor of 10 percent or less during the previous three calendar years, (3) a capacity factor of 20 percent or less in each of those three calendar years, and (4) no ammonia-based NO_x control device installed, the owner and/or operator may, as an alternative to the CEMS:

2.1 Measure and record NO_x emissions by the source test correlation of emissions with boiler operating load, excess oxygen levels, fuels, and any other specified parameters, following the procedures specified in 40 CFR Pt. 75, Appendix E;

2.2 Measure and record CO emissions by following the analogous procedure (for NO_x emissions) specified in 40 CFR Pt. 75, Appendix

E, except that CO emissions (instead of NO_x emissions) will be determined by using 40 CFR Pt. 60, Appendix A, Method 10.

(Amended 11/15/95; 5/17/00)

9-11-504 Records: Any person who operates an electric power generating steam boiler subject to Sections 9-11-302, 304, 306, 308, or 310 shall maintain permanent hourly continuous emission monitoring records for each such boiler, in a form suitable for inspection and approved by the APCO, for a period of at least five (5) years. Such records shall be made available to the APCO upon request. These records shall include, but are not limited to:

504.1 The type of fuel burned and its sulfur content, quantity of fuel burned (BTU/hour), gross energy production in megawatt hours (MW-hour), and the injection rate for any reactant chemicals used by the emission control system(s);

504.2 The continuous emission monitoring measurements for NO_x and CO, each expressed in ppmv and lb/hour, and also in lb/MMBTU for NO_x, and for O₂ or CO₂, expressed in volume percent;

504.3 The date, time, and duration of any startup, shutdown or malfunction in the operation of any boiler, emission control equipment, or emission monitoring equipment;

504.4 The results of performance testing, evaluations, calibrations, checks, adjustments, and maintenance of any continuous emission monitors that have been installed pursuant to Section 9-11-503 of this Rule;

504.5 The results of any source testing required by Section 9-11-402; and

504.6 The capacity factors of any boiler affected by Sections 9-11-503.

504.7 The systemwide NO_x emission rate as specified in Sections 9-11-308, as applicable. (Amended 11/15/95; 5/17/00)

9-11-505 Reporting Requirements: Any person who operates an electric power generating steam boiler subject to Sections 9-11-302, 304, 306, 308, 310, or 311 shall meet the following reporting requirements:

505.1 Report to the APCO any violation of any emission standard with which the boiler is required to comply, in writing within 96 hours after such occurrence;

505.2 Submit a written report for each calendar month to the APCO. The report shall be submitted within 30 days of the close of the month reported on and shall include:

2.1 A summary of the data obtained from the continuous emission monitoring systems that have been installed pursuant to Section 9-11-503. The format of the summary shall be approved in writing by the APCO; and

2.2 The date, time, duration, and magnitude of emissions in excess of the appropriate standards required by Sections 9-11-302, 304, 306, 308, 310, or 311; the nature and cause of the excess (if known); the corrective actions taken; and the preventive measures adopted.

(Amended 11/15/95; 5/17/00)

9-11-600 MANUAL OF PROCEDURES

9-11-601 Determination of Nitrogen Oxides: The methods by which samples of exhaust gases are collected and analyzed to determine concentrations of nitrogen oxides are set forth in the District Manual of Procedures, Volume IV, ST-13A. Compliance with the nitrogen oxides emission limits of Sections 9-11-302, 304, and 306 shall be determined by the source tests specified in Section 9-11-402 using ST-13A (nitrogen oxides) and ST-14 (oxygen) or ST-5 (carbon dioxide), and by the continuous emission monitors that have been installed pursuant to Section 9-11-503 and meet the requirements of Volume V of the District Manual of Procedures and the federal requirements specified in 40 CFR Pt. 75 and Appendices. Compliance with the nitrogen oxides emission limits of Sections 9-11-308 shall also be determined by these continuous emission monitors. (Amended November 15, 1995)

9-11-602 Determination of Carbon Monoxide and Stack Gas Oxygen or Carbon Dioxide: Compliance with the carbon monoxide emission limits of Section 9-11-310 shall be

determined by the source tests specified in Section 402 using the methods set forth in the District Manual of Procedures, Volume IV, ST-6 (carbon monoxide) and ST-14 (oxygen) or ST-5 (carbon dioxide), and by the continuous emission monitors that have been installed pursuant to Section 503 and meet the requirements of Volume V of the District Manual of Procedures and the federal requirements specified in 40 CFR Pt. 60, App. B, Spec. 4 (CO), and 40 CFR Pt. 75 and Appendices (O₂ and CO₂).

(Amended November 15, 1995)

9-11-603 Determination of Ammonia: Compliance with the ammonia emission limit of Section 9-11-311 shall be determined by the source tests specified in Section 9-11-402 using the methods set forth in the District Manual of Procedures, Volume IV, ST-1B, and EPA Method 350.3, or an alternate method approved by the APCO.

(Amended November 15, 1995)

9-11-604 Compliance Determination: All emission determinations shall be made in the as-found operating condition, except that no compliance determination be established during periods of startup or shutdown, as specified by Section 9-11-111. In addition to the continuous emission monitoring system (CEMS) required by Sections 9-11-503, 601 and 602, emission determinations shall include at least one source test for each boiler, conducted at its rated or attainable heat input capacity, in any calendar year or within twelve (12) months following the actual operation of each boiler during any calendar year, as specified in Section 9-11-402. Source testing for compliance with the ammonia emission limit of Section 9-11-311 shall be conducted at least once quarterly for each boiler that operated during the calendar quarter. Compliance determination by source test with the respective emission limits of Sections 9-11-302, 304, 306, 310 and 311 shall be in accordance with the methods specified in Sections 9-11-601, 602 and 603. Initial and annual source testing for NO_x and CO shall not be required to demonstrate compliance with Sections 9-11-302, 304, 306, 308, or 310, provided CEMS are in place pursuant to Section 9-11-503. Compliance determination by CEMS shall be based on a clock hour average.

(Amended November 15, 1995)

9-11-605 Determination of Higher Heating Value: If certification of the Higher Heating Value is not provided by the third party fuel supplier, it shall be determined by one of the following test methods: (1) ASTM D2015-85 for solid fuels; (2) ASTM D240-87 or ASTM D2382-88 for liquid hydrocarbon fuels; or (3) ASTM D1826-88 or ASTM D1945-81 in conjunction with ASTM D3588-89 for gaseous fuels.

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

REGULATION 9

INORGANIC GASEOUS POLLUTANTS

RULE 12

NITROGEN OXIDES FROM GLASS MELTING FURNACES

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REGULATION 9

INORGANIC GASEOUS POLLUTANTS

RULE 12

NITROGEN OXIDES FROM GLASS MELTING FURNACES

(Adopted January 19, 1994)

9-12-100 GENERAL

9-12-101 Description: This Rule limits the emission of nitrogen oxides (NO_x) from glass melting furnaces.

9-12-110 Exemptions: The requirements of this Rule shall not apply to the following:

110.1 Furnaces in which all the heat required for melting is provided by electric current from electrodes submerged in the molten glass, except that heat may be supplied by fossil fuels for start-up when the furnace contains no molten glass.

110.2 Furnaces with a production capacity of 4550 kilograms (5 short tons) of glass per day or less.

9-12-200 DEFINITIONS

9-12-201 Glass Melting Furnace: Any unit in which heat is used to produce molten glass.

9-12-202 Idling: Operation at less than 25 percent of the production capacity stated on the Permit to Operate.

9-12-203 Nitrogen Oxide Emissions (NO_x): The sum of nitric oxide (NO) and nitrogen dioxide (NO_2) in the flue gas, collectively expressed as nitrogen dioxide.

9-12-204 Pull: To remove glass from the furnace.

9-12-205 Shutdown: The period of time during which a furnace is allowed to cool from operating temperature to a cooler temperature.

9-12-206 Start-up: The period of time during which a furnace is heated to operating temperature from a lower temperature.

9-12-300 STANDARDS

9-12-301 Emission Limit: A person subject to this Rule shall reduce nitrogen oxides emissions (NO_x) from any glass melting furnace pursuant to the following increments of progress until emissions do not exceed the emission limit of 2.75 grams of NO_x per kilogram (5.5 lbs of NO_x per short ton) of glass pulled, averaged over any consecutive 3-hour period excluding start-up, shutdown, and idling periods.

301.1 Effective January 1, 1997, a person shall not emit NO_x from any glass melting furnace at a rate in

excess of 90 percent of the baseline emission rate established pursuant to Section 9-12-403.

301.2 Effective January 1, 1999, a person shall not emit NO_x from any glass melting furnace at a rate in excess of 75 percent of the baseline emission rate established pursuant to Section 9-12-403.

301.3 Effective January 1, 2001, a person shall not emit NO_x from any glass melting furnace at a rate in excess of 55 percent of the baseline emission rate established pursuant to Section 9-12-403, and this percentage shall be reduced by 10 percent effective each January 1 thereafter until NO_x emissions do not exceed the emission limit set forth in Section 9-12-301.

9-12-400 ADMINISTRATIVE REQUIREMENTS

9-12-401 Compliance Schedule: A person subject to this Rule shall follow the compliance schedule below:

401.1 By February 1, 1995, submit a list of the quantity of glass produced, average cullet content, and average electric boost rate for each furnace on each day for calendar year 1994.

401.2 By March 1, 1995, submit for District approval proposed furnace operating parameters for source tests, as required by Section 9-12-402.

401.3 By August 1, 1995, conduct District-approved source tests for determining the baseline emission rate pursuant to Section 9-12-403.

401.4 By September 1, 1995, submit the results of each source test conducted pursuant to Section 9-12-401.3 accompanied by the supporting data required by Section 9-12-402.3.

401.5 By 12 months prior to the effective date of an increment of progress pursuant to Section 9-12-301, submit a complete application for any Authority to Construct necessary to achieve compliance with that increment of progress.

9-12-402 Furnace Operating Parameters for Source Tests: Source tests pursuant to Sections 9-12-403 and 9-12-404 shall be conducted while furnaces are operating within District-approved parameters established as follows:

402.1 A person subject to this Rule shall submit proposed ranges of operating parameters for APCO approval. These ranges shall be representative of operation at or near maximum sustained production capacity as determined from data submitted pursuant to Section 9-12-401.1. Proposed ranges shall include, at a minimum, ranges for excess oxygen as measured at the top of the regenerators, bridgewall temperature, firing rate, electric boost rate, cullet content, and pull rate.

402.2 The APCO shall review the proposed ranges of parameters. Ranges representative of operation at or near maximum sustained production capacity will be approved by the APCO in writing.

402.3 For each source test conducted pursuant to Sections 9-12-403 and 9-12-404, sufficient data to confirm that the furnace was operated within the approved parameters shall be submitted with the source test results. At a minimum this data shall include average excess oxygen as measured at the top of the regenerators, average bridgewall temperature, average firing rate, average electric boost rate, average cullet content, and average pull rate.

9-12-403 Baseline Emission Rate Determinations: A person subject to this Rule shall establish the baseline emission rate for each glass melting furnace as follows:

403.1 One or more District-approved source tests shall be conducted for each furnace in accordance with the requirements of Sections 9-12-601 through 9-12-604.

403.2 Each source test shall be conducted while the furnace is operating within parameters approved by the APCO pursuant to Section 9-12-402.

403.3 Where one source test is conducted for a furnace, the baseline emission rate for that furnace shall be the emission rate per ton of glass pulled as determined by the source test.

403.4 Where more than one source test is conducted for a furnace, the baseline emission rate for that furnace shall be the sum of the mass emissions per hour as determined by each source test divided by the sum of the glass production per hour as determined for each source test.

9-12-404 Compliance Determinations: A person subject to this Rule shall demonstrate compliance with Section 9-12-301 for each glass melting furnace as follows:

404.1 By April 1, 1997, and by each April 1 thereafter, one or more District-approved source tests shall be conducted for each furnace in accordance with the provisions of Sections 9-12-601 through 9-12-604.

404.2 Each source test shall be conducted while the furnace is operating within parameters approved by the APCO pursuant to Section 9-12-402.

404.3 Where one source test is conducted for a furnace, the emission rate for that furnace shall be the emission rate per ton of glass as determined by the source test.

404.4 Where more than one source test is conducted for a furnace, the emission rate for that furnace shall be the sum of the mass emissions per hour as determined by each source test divided by the sum of the glass production per hour as determined for each source test.

404.5 Source test results shall be submitted to the APCO (Attn: Source Test Section) by May 1 of each year.

9-12-500 MONITORING AND RECORDS

9-12-501 Production Monitoring: Any person who operates a glass melting furnace subject to this Rule shall maintain a means of determining the quantity of glass pulled during a source test administered pursuant to Sections 9-12-601 through 9-12-604.

9-12-502 Fuel Monitoring: Any person who operates a glass melting furnace subject to this Rule shall maintain a non-resettable totalizing fuel meter which monitors fuel usage for each glass melting furnace.

9-12-600 MANUAL OF PROCEDURES

9-12-601 Determination of Nitrogen Oxides: Emissions of nitrogen oxides shall be determined using the source test procedure set forth in the District Manual of Procedures, Volume IV, ST-13A or B, as modified by Section 9-12-603.

9-12-602 Determination of Oxygen: Emissions of oxygen shall be determined using the source test procedure set forth in the District Manual of Procedures, Volume IV, ST-14, as modified by Section 9-12-603.

9-12-603 Sampling and Averaging Period: Sampling shall be conducted for three hours of continuous furnace operation as specified in Section 9-12-301. Concentrations of nitrogen oxides and oxygen shall be averaged over three hours.

9-12-604 Calculation of Mass Emission Rate Per Ton of Glass Pulled: For purposes of determining compliance with Section 9-12-301, concentration of nitrogen oxides shall be converted to a mass emission rate pursuant to EPA Method 19, 40 CFR Part 60 Appendix A, and this result shall be converted to a mass emission rate per ton of glass pulled.



6/2/80

REGULATION 11
HAZARDOUS POLLUTANTS
RULE 1
LEAD

11-1-100 GENERAL

- 11-1-101 Description:** The purpose of this Rule is to control the emission of lead to the atmosphere.
- 11-1-102 Optional Standards:** A person responsible for the emission of lead may elect, by written notification to the APCO, to be regulated by the requirements of Section 11-1-303 rather than Section 11-1-302.

11-1-300 STANDARDS

- 11-1-301 Daily Limitation:** A person shall not discharge any emission of lead, or compound of lead calculated as lead, from any emission point in excess of 6.75 kg (15 lbs) per day.
- 11-1-302 Ground Level Concentration Limit Without Background:** A person shall not discharge any emission of lead, or compound of lead calculated as lead, that will result in ground level concentrations in excess of 1.0 ug/m³ averaged over 24 hours.
- 11-1-303 Ground Level Concentration Limit With Background:** A person electing to be regulated by this Section shall not discharge any emission of lead, or compound of lead, which results in ground level concentrations of lead in excess of 1.0 ug/m³ above the background concentrations of lead averaged over 30 days. This Section shall not apply to the ground level concentrations occurring on the property from which such emission occurs, provided such property from the emission point to the point of such concentration is controlled by the person responsible for the emissions.

11-1-500 MONITORING AND RECORDS

- 11-1-501 Monitoring:** A person electing to be regulated by Section 11-1-303 shall provide, install and maintain monitoring equipment.

11-1-600 MANUAL OF PROCEDURES

- 11-1-601 Determination of Emission Limits:** Emissions limited by Section 11-1-302 shall be determined by use of dispersion calculations described in the Manual of Procedures.
- 11-1-602 Determination of Background Concentrations:** Background concentrations of lead shall be determined in accordance with procedures described in the Manual of Procedures.
- 11-1-603 Monitoring Equipment:** Monitoring equipment required by Section 11-1-501, and procedures for siting, use and maintenance, shall be as specified in the Manual of Procedures.

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

REGULATION 12

MISCELLANEOUS STANDARDS OF PERFORMANCE

RULE 2

RENDERING PLANTS

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REGULATION 12

MISCELLANEOUS STANDARDS OF PERFORMANCE

RULE 2

RENDERING PLANTS

12-2-100 GENERAL

12-2-101 Description: This Rule applies to plants whose purpose is the reduction of animal matter, commonly referred to as rendering plants.

12-2-200 DEFINITIONS

12-2-201 Reduction: Any heated process including rendering, cooking, drying, dehydrating, digesting, evaporating and protein concentrations.

12-2-300 STANDARDS

12-2-301 Processing of Gases: A person shall not reduce animal matter unless all gases, vapors and gasentrained effluents are incinerated at a temperature of not less than 650°C (1202°F) for a period of not less than 0.3 seconds; or processed in a manner which is equally or more effective for the purpose of air pollution odor control, as determined by the APCO.

12-2-500 MONITORING AND RECORDS

12-2-501 Monitoring: A person incinerating or processing gases, vapors or gasentrained effluents pursuant to this Rule shall provide, install, calibrate and maintain in good working order, devices for indicating temperature, pressure or other operating conditions, as specified by the APCO.

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

REGULATION 12

MISCELLANEOUS STANDARDS OF PERFORMANCE

RULE 3

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12-3-600 MANUAL OF PROCEDURES (Not Included)

REGULATION 12

MISCELLANEOUS STANDARDS OF PERFORMANCE

RULE 3

ASPHALT AIR BLOWING

12-3-100 GENERAL

12-3-101 Description: This Rule applies to operations involving the air blowing of asphalt.

12-3-300 STANDARDS

12-3-301 Processing of Gases: A person shall not engage in the air blowing of asphalt unless all gases, vapors and gasentrained effluents are incinerated at temperatures of not less than 650°C (1202°F) for a period of not less than 0.3 seconds; or processed in a manner which is equally or more effective for the purpose of air pollution odor control as determined by the APCO.

12-3-500 MONITORING AND RECORDS

12-3-501 Monitoring: A person incinerating or processing gases, vapors or gasentrained effluents pursuant to this Rule shall provide, install, calibrate and maintain in good working order devices for indicating temperature, pressure or other operating conditions, as specified by the APCO.

REGULATION 12
MISCELLANEOUS STANDARDS OF PERFORMANCE
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REGULATION 12
MISCELLANEOUS STANDARDS OF PERFORMANCE
RULE 4
SANDBLASTING

12-4-100 GENERAL

12-4-101 Description: The standards in this Rule are uniform throughout the State and apply to sandblasting operations other than permanent abrasive blasting operations or equipment. Visible emissions from permanent operations or equipment are controlled by Regulation 6.

12-4-102 Multiple Nozzles: Emissions from unconfined blasting employing multiple nozzles shall be judged as a single source unless it can be demonstrated by the owner or operator that each nozzle, evaluated separately, meets the emission and performance standards provided for in this Rule.

12-4-200 DEFINITIONS

12-4-201 Abrasives: Any material used in abrasive blasting operations including but not limited to sand, slag, steel shot, garnet or walnut shells.

12-4-202 Abrasive Blasting: The operations of cleaning or preparing a surface by forcibly propelling a stream of abrasive material against the surface.

12-4-203 Abrasive Blasting Equipment: Any equipment utilized in abrasive blasting operations.

12-4-204 Confined Blasting: Any abrasive blasting conducted in an enclosure which significantly restricts air contaminants from being emitted to the ambient atmosphere, including but not limited to shrouding, tanks, drydocks, buildings and structures.

12-4-205 Hydroblasting: Any abrasive blasting using high pressure liquid as the propelling force.

12-4-206 Multiple Nozzles: More than one nozzle being used to abrasive blast the same surface in such close proximity that their separate plumes are indistinguishable.

12-4-207 Permanent Abrasive Blasting Operations or Equipment: Abrasive blasting operations conducted, or abrasive blasting equipment located in a building which is used in whole or in part for abrasive blasting operations.

12-4-208 Sandblasting: Abrasive blasting.

12-4-209 Source: The impact surface from any single abrasive blasting nozzle.

12-4-210 Unconfined Blasting: Any abrasive blasting which does not conform with Sections 12-4-204 and 207.

12-4-211 Vacuum Blasting: Any abrasive blasting in which the spent abrasive and surface material is immediately collected by a vacuum device.

12-4-212 Wet Abrasive Blasting: Any abrasive blasting using compressed air as the propelling force, which in the judgement of the APCO uses an amount of water adequate to minimize the plume.

12-4-300 STANDARDS

12-4-301 Ringelmann 1 Limitations: Except as provided in Section 12-4-302 a person shall not discharge from any abrasive blasting, any air contaminant for a period or periods aggregating more than three minutes in any one hour which is as dark or darker than No. 1 on the Ringelmann Chart.

12-4-302 Ringelmann 2 Limitations: A person shall not discharge from any abrasive blasting, if he complies with applicable standards in Section 12-4-303 and Sections 12-4-305 through 307, any air contaminant for a period or periods aggregating more than three minutes in any one hour which is as dark or darker than No. 2 on the Ringelmann Chart.

12-4-303 Performance Standards For Abrasive Blasting For Traffic Markers: Surface preparation for raised traffic delineating markers and pavement marking removal

using abrasive blasting shall comply with at least one of the following performance standards:

303.1 Wet abrasive blasting, hydroblasting or vacuum blasting shall be used.

303.2 Dry unconfined abrasive blasting for removal or surface preparation for immediate application of pavement markings of less than 93 m² (1,000 ft.²), or for surface preparation for raised traffic delineating markers shall use abrasives as defined in Sections 12-4-305 through 307.

12-4-304 Performance Standards For Other Abrasive Blasting: Any abrasive blasting operation except as provided for in Section 12-4-303 shall comply with at least one of the following performance standards.

304.1 Confined blasting shall be used.

304.2 Wet abrasive blasting shall be used.

304.3 Hydroblasting shall be used.

304.4 Dry unconfined blasting shall use abrasives as defined in Sections 12-4-305 through 307. (Amended July 11, 1990)

12-4-305 Performance Standards For Abrasives: All abrasives used for dry unconfined blasting shall comply with the following performance standards:

305.1 Before blasting, the abrasive shall not contain more than 1% by weight material passing a #70 U.S. Standard sieve when tested in accordance with "Method of Test for Abrasive Media Evaluation," Test Method No. California 371-A. Certified abrasives re-used for dry unconfined blasting must conform with Section 12-4-305.1.

305.2 After blasting, the abrasive shall not contain more than 1.8% by weight material five micron or smaller when tested in accordance with "Method of Test for Abrasive Media Evaluation", Test Method No. California 371-A. Certified abrasives re-used for dry unconfined blasting are exempt from Section 12-4-305.2

12-4-306 Certification of Abrasives: A person shall not conduct dry unconfined blasting unless the abrasive(s) used in such operation have been certified by the ARB, on at least an annual basis, to comply with the performance standards set forth in Section 12-4-305. Any person who desires certification of an abrasive shall furnish to the ARB an adequate test sample, together with fees to defray the cost of testing. The ARB maintains an up-to-date list of certified abrasives.

12-4-307 Abrasive Labeling by Suppliers: All manufacturers and suppliers of abrasives certified for dry unconfined abrasive blasting shall legibly and permanently label the invoice, bill of lading and abrasive packaging or container with the following statement: "ARB certified for dry unconfined blasting."

BAY AREA CONFORMITY APPROVALS

Conformity Submittal / EPA Publication Date	BAAQMD Board of Directors Approval (BAAQMD also delegates authority for MTC to hold Public Hearing)	MTC Approval (MTC takes item to Work Program Committee, then to full Commission)	ABAG Executive Board Approval (ABAG also delegates authority for MTC to hold Public Hearing)	ARB Approval	EPA Approval
Clean Air Act Section 176(c) Conformity Language		1982 SIP Conformity Assessment Section (page H-1) – support TCMs, determine impact of TIP and RTP amendments, individual project envr. assessment			
MTC Commission Resolution 2107 (Criteria for highway project delay pursuant to 1982 SIP Contingency Plan)		October 25, 1989 (amended December 20, 1989)			
MTC Commission Resolution 2270 (pursuant to 1990 Federal Court Order, <i>Sierra Club vs. MTC</i> (Reso. 2270 no longer in force, Nov. 20, 1997))		April 24, 1991			
Original Transportation and General Conformity Regulations, Bay Area Transportation Conformity Procedures (Nov. 24, 1993)	September 7, 1994	July 29, 1994 (Joint Air Quality Policy Committee Public Hearing); October 5, 1994 (Commission Adoption)	August 24, 1994	November 15, 1994 (included emission budgets for transportation conformity, clarified Feb. 10, 1995)	November 20, 1997 for transportation (concurrence on emission budgets March 2, 1995); General not approved
1 st (Aug. 7, 1995) and 2 nd (Nov. 14, 1995) Sets of Amendments to the Transportation Conformity Regulation	November 6, 1996	October 11, 1996 (Work Program Comm. Public Hearing); October 30, 1996 (Commission Adoption)	October 17, 1996	December 16, 1996	October 21, 1997 <i>Federal Register</i> , effective November 20, 1997
3 rd Set of Amendments to the Transportation Conformity Regulation (August 15, 1997)	May 11, 1998 (Mobile Source Committee); July 1, 1998 (Board of Directors Adoption)	June 12, 1998 (Work Program Comm. Public Hearing); June 25, 1998 (Commission Adoption)	July 16, 1998	August 6, 1998	Not approved
Statewide Project-Level CO Hotspot Protocol (UC Davis, December 17, 1997) – not part of SIP		June 12, 1998 (Work Program Comm. Public Hearing); June 25, 1998 (Commission Adoption)		August 6, 1998	September 1, 1998 (by letter from David Howekamp)

12-28-94

FEDERAL GENERAL CONFORMITY REGULATION

The Code of Federal Regulations, title 40, chapter I, subchapter C, parts 6 and 51 are amended and part 93 is added as follows:

PART 6--[AMENDED]

1. The authority citation for part 51 continues to read as follows:

Authority: 42 U.S.C. 7401-7671q.

2. Section 6.303 is amended by reserving paragraphs (c) through (g) and revising paragraphs (a) and (b) to read as follows:

(a) The Clean Air Act, as amended in 1990, 42 U.S.C. 7476(c), requires Federal actions to conform to any State implementation plan approved or promulgated under section 110 of the Act. For EPA actions, the applicable conformity requirements specified in 40 CFR part 51, subpart W, 40 CFR part 93, subpart B, and the applicable State implementation plan must be met.

(b) In addition, with regard to wastewater treatment works subject to review under Subpart E of this part, the responsible official shall consider the air pollution control requirements specified in section 316(b) of the Clean Air Act, 42 U.S.C. 7616, and Agency implementation procedures.

PART 51--[AMENDED]

1. The authority citation for part 51 continues to read as follows:

Authority: 42 U.S.C. 7401-7671q.

2. Part 51 is amended by adding a new subpart W to read as follows:

W -- DETERMINING CONFORMITY OF GENERAL FEDERAL ACTIONS TO STATE OR FEDERAL IMPLEMENTATION PLANS

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W – DETERMINING CONFORMITY OF GENERAL FEDERAL ACTIONS TO STATE OR FEDERAL IMPLEMENTATION PLANS

§51.850 Prohibition.

- (a) No department, agency or instrumentality of the Federal Government shall engage in, support in any way or provide financial assistance for, license or permit, or approve any activity which does not conform to an applicable implementation plan.
- (b) A Federal agency must make a determination that a Federal action conforms to the applicable implementation plan in accordance with the requirements of this rule before the action is taken.
- (c) The preceding sentence does not include Federal actions where either:
 - (1) A National Environmental Policy Act (NEPA) analysis was completed as evidenced by a final environmental assessment (EA), environmental impact statement (EIS), or finding of no significant impact (FONSI) that was prepared prior to the effective date of this rule, or
 - (2) (i) Prior to the effective date of this rule, an EA was commenced or a contract was awarded to develop the specific environmental analysis,
 - (ii) Sufficient environmental analysis is completed by March 15, 1994 so that the Federal agency may determine that the Federal action is in conformity with the specific requirements and the purposes of the applicable SIP pursuant to the agency's affirmative obligation under section 176(c) of the Clean Air Act (Act), and
 - (iii) A written determination of conformity under section 176(c) of the Act has been made by the Federal agency responsible for the Federal action by March 15, 1994.
- (d) Notwithstanding any provision of this subpart, a determination that an action is in conformance with the applicable implementation plan does not exempt the action from any other requirements of the applicable implementation plan, the NEPA, or the Act.

§51.852 Definitions.

Terms used but not defined in this part shall have the meaning given them by the Act and EPA's regulations, in that order of priority.

Affected Federal land manager means the Federal agency or the Federal official charged with direct responsibility for management of an area designated as Class I under 42 U.S.C. 7472 of the Act that is located within 100 km of the proposed Federal action.

Applicable implementation plan or applicable SIP means the portion (or portions) of the SIP or most recent revision thereof, which has been approved under section 110 of the Act, or promulgated under section 110(c) of the Act (Federal implementation plan), or promulgated or approved pursuant to regulations promulgated under section 301(d) of the Act and which implements the relevant requirements of the Act.

Areawide air quality modeling analysis means an assessment on a scale that includes the entire nonattainment or maintenance area which uses an air quality dispersion model to determine the effects of emissions on air quality.

Cause or contribute to a new violation means a Federal action that:

- (1) Causes a new violation of a national ambient air quality standard (NAAQS) at a location in a nonattainment or maintenance area which would otherwise not be in violation of the standard during the future period in question if the Federal action were not taken, or
- (2) Contributes, in conjunction with other reasonably foreseeable actions, to a new violation of a NAAQS at a location in a nonattainment or maintenance area in a manner that would increase the frequency or severity of the new violation.

Caused by, as used in the terms "direct emissions" and "indirect emissions," means emissions that would not otherwise occur in the absence of the Federal action.

Criteria pollutant or standard means any pollutant for which there is established a NAAQS at 40 CFR part 50.

Direct emissions means those emissions of a criteria pollutant or its precursors that are caused or initiated by the Federal action and occur at the same time and place as the action.

Emergency means a situation where extremely quick action on the part of the Federal agencies involved is needed and where the timing of such Federal activities makes it impractical to meet the requirements of this rule, such as natural disasters like hurricanes or earthquakes, civil disturbances such as terrorist acts, and military mobilizations.

Emissions budgets are those portions of the applicable SIP's projected emissions inventories that describe the levels of emissions (mobile, stationary, area, etc.) that provide for meeting reasonable further progress milestones, attainment, and/or maintenance for any criteria pollutant or its precursors.

Emission offsets, for purposes of section 51.858, are emissions reductions which are quantifiable, consistent with the applicable SIP attainment and reasonable further progress demonstrations, surplus to reductions required by, and credited to, other applicable SIP provisions, enforceable at both the State and Federal levels, and permanent within the timeframe specified by the program.

Emissions that a Federal agency has a continuing program responsibility for means emissions that are specifically caused by an agency carrying out its authorities, and does not include emissions that occur due to subsequent activities, unless such activities are required by the Federal agency. Where an agency, in performing its normal program responsibilities, takes actions itself or imposes conditions that result in air pollutant emissions by a non-Federal entity taking subsequent actions, such emissions are covered by the meaning of a continuing program responsibility.

EPA means the United States Environmental Protection Agency.

Federal action means any activity engaged in by a department, agency, or instrumentality of the Federal government, or any activity that a department, agency or instrumentality of the Federal government supports in any way, provides financial assistance for, licenses, permits, or approves, other than activities related to transportation plans, programs, and projects developed, funded, or approved under title 23 U.S.C. or the Federal Transit Act (49 U.S.C. 1601 *et seq.*). Where the Federal action is a permit, license, or other approval for some aspect of a non-Federal undertaking, the relevant activity is the part, portion, or phase or the non-Federal undertaking that requires the Federal permit, license, or approval.

Federal agency means, for purposes of this rule, a Federal department, agency, or instrumentality of the Federal government.

Increase the frequency or severity of any existing violation of any standard in any area means to cause a nonattainment area to exceed a standard more often or to cause a violation at a greater concentration than previously existed and/or would

otherwise exist during the future period in question, if the project were not implemented.

Indirect emissions means those emissions of a criteria pollutant or its precursors that:

- (1) Are caused by the Federal action, but may occur later in time and/or may be farther removed in distance from the action itself but are still reasonably foreseeable, and
- (2) The Federal agency can practicably control and will maintain control over due to a continuing program responsibility of the Federal agency.

Local air quality modeling analysis means an assessment of localized impacts on a scale smaller than the entire nonattainment or maintenance area, including, for example, congested roadway intersections and highways or transit terminals, which uses an air quality dispersion model to determine the effects of emissions on air quality.

Maintenance area means an area with a maintenance plan approved under section 175A of the Act.

Maintenance plan means a revision to the applicable SIP, meeting the requirements of section 175A of the Act.

Metropolitan Planning Organization (MPO) is that organization designated as being responsible, together with the State, for conducting the continuing, cooperative, and comprehensive planning process under 23 U.S.C. 134 and 49 U.S.C. 1607.

Milestone has the meaning given in sections 182(g)(1) and 189(c)(1) of the Act.

National ambient air quality standards (NAAQS) are those standards established pursuant to section 109 of the Act and include standards for carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO₂), ozone, particulate matter (PM-10), and sulfur dioxide (SO₂).

NEPA is the National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321 *et seq.*).

Nonattainment Area (NAA) means an area designated as nonattainment under section 107 of the Act and described in 40 CFR part 81.

Precursors of a criteria pollutant are:

- (1) For ozone, nitrogen oxides (NO_x), unless an area is exempted from NO_x requirements under section 182(f) of the Act, and volatile organic compounds (VOC) and
- (2) For PM-10, those pollutants described in the PM-10 nonattainment area applicable SIP as significant contributors to the PM-10 levels.

Reasonably foreseeable emissions are projected future indirect emissions that are identified at the time the conformity determination is made; the location of such emissions is known and the emissions are quantifiable, as described and documented by the Federal agency based on its own information and after reviewing any information presented to the Federal agency.

Regionally significant action means a Federal action for which the direct and indirect emissions of any pollutant represent 10 percent or more of a nonattainment or maintenance area's emissions inventory for that pollutant.

Regional water and/or wastewater projects include construction, operation, and maintenance of water or wastewater conveyances, water or wastewater treatment facilities, and water storage reservoirs which affect a large portion of a nonattainment or maintenance area.

Total of direct and indirect emissions means the sum of direct and indirect emissions increases and decreases caused by the Federal action; i.e., the "net" emissions considering all direct and indirect emissions. The portion of emissions which are exempt or presumed to conform under section 51.853, paragraph (c), (d), (e), or (f) are not included in the "total of direct and indirect emissions." The "total of direct and indirect emissions" includes emissions of criteria pollutants and emissions of precursors of criteria pollutants.

§51.853 Applicability.

(a) Conformity determinations for Federal actions related to transportation plans, programs, and projects developed, funded, or approved under title 23 U.S.C. or the Federal Transit Act (49 U.S.C. 1601 et seq.) must meet the procedures and criteria of 40 CFR part 51, subpart T, in lieu of the procedures set forth in this subpart.

(b) For Federal actions not covered by paragraph (a) of this section, a conformity determination is required for each pollutant where the total of direct and indirect

emissions in a nonattainment or maintenance area caused by a Federal action would equal or exceed any of the rates in paragraphs (b)(1) or (2) of this section.

(1) For purposes of paragraph (b) of this section, the following rates apply in nonattainment areas (NAAs):

	<u>Tons/Year</u>
Ozone (VOC's or NO_x)	
Serious NAA's	50
Severe NAA's	25
Extreme NAA's	10
Other ozone NAA's outside an ozone transport region	100
Marginal and moderate NAA's inside an ozone transport region	
VOC	50
NO _x	100
Carbon monoxide	
All NAA's	100
SO₂ or NO₂	
All NAA's	100
PM-10	
Moderate NAA's	100
Serious NAA's	70
Pb	
All NAA's	25

(2) For purposes of paragraph (b) of this section, the following rates apply in maintenance areas:

	<u>Tons/Year</u>
Ozone (NO_x), SO₂ or NO₂	
All Maintenance Areas	100
Ozone (VOC's)	
Maintenance areas inside an ozone transport region	50
Maintenance areas outside an ozone transport region	100
Carbon monoxide	
All maintenance areas	100
PM-10	
All maintenance areas	100
Pb	
All maintenance areas	25

(c) The requirements of this subpart shall not apply to:

(1) Actions where the total of direct and indirect emissions are below the emissions levels specified in paragraph (b) of this section.

(2) The following actions which would result in no emissions increase or an increase in emissions that is clearly de minimis:

(i) Judicial and legislative proceedings.

(ii) Continuing and recurring activities such as permit renewals where activities conducted will be similar in scope and operation to activities currently being conducted.

(iii) Rulemaking and policy development and issuance.

(iv) Routine maintenance and repair activities, including repair and maintenance of administrative sites, roads, trails, and facilities.

(v) Civil and criminal enforcement activities, such as investigations, audits, inspections, examinations, prosecutions, and the training of law enforcement personnel.

(vi) Administrative actions such as personnel actions, organizational changes, debt management or collection, cash management, internal agency audits, program budget proposals, and matters relating to the administration and collection of taxes, duties and fees.

(vii) The routine, recurring transportation of materiel and personnel.

(viii) Routine movement of mobile assets, such as ships and aircraft, in home port reassignments and stations (when no new support facilities or personnel are required) to perform as operational groups and/or for repair or overhaul.

(ix) Maintenance dredging and debris disposal where no new depths are required, applicable permits are secured, and disposal will be at an approved disposal site.

(x) Actions, such as the following, with respect to existing structures, properties, facilities and lands where future activities conducted will be similar in scope and operation to activities currently being conducted at the existing structures, properties,

facilities, and lands; for example, relocation of personnel, disposition of federally-owned existing structures, properties, facilities, and lands, rent subsidies, operation and maintenance cost subsidies, the exercise of receivership or conservatorship authority, assistance in purchasing structures, and the production of coins and currency.

(xi) The granting of leases, licenses such as for exports and trade, permits, and easements where activities conducted will be similar in scope and operation to activities currently being conducted.

(xii) Planning, studies, and provision of technical assistance.

(xiii) Routine operation of facilities, mobile assets and equipment.

(xiv) Transfers of ownership, interests, and titles in land, facilities, and real and personal properties, regardless of the form or method of the transfer.

(xv) The designation of empowerment zones, enterprise communities, or viticultural areas.

(xvi) Actions by any of the Federal banking agencies or the Federal Reserve Banks, including actions regarding charters, applications, notices, licenses, the supervision or examination of depository institutions or depository institution holding companies, access to the discount window, or the provision of financial services to banking organizations or to any department, agency or instrumentality of the United States.

(xvii) Actions by the Board of Governors of the Federal Reserve System or any Federal Reserve Bank to effect monetary or exchange rate policy.

(xviii) Actions that implement a foreign affairs function of the United States.

(xix) Actions (or portions thereof) associated with transfers of land, facilities, title, and real properties through an enforceable contract or lease agreement where the delivery of the deed is required to occur promptly after a specific, reasonable condition is met, such as promptly after the land is certified as meeting the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and where the Federal agency does not retain continuing authority to control

emissions associated with the lands, facilities, title, or real properties.

(xx) Transfers of real property, including land, facilities, and related personal property from a Federal entity to another Federal entity and assignments of real property, including land, facilities, and related personal property from a Federal entity to another Federal entity for subsequent deeding to eligible applicants.

(xxi) Actions by the Department of the Treasury to effect fiscal policy and to exercise the borrowing authority of the United States.

(3) Actions where the emissions are not reasonably foreseeable, such as the following:

(i) Initial Outer Continental Shelf lease sales which are made on a broad scale and are followed by exploration and development plans on a project level.

(ii) Electric power marketing activities that involve the acquisition, sale and transmission of electric energy.

(4) Actions which implement a decision to conduct or carry out a conforming program such as prescribed burning actions which are consistent with a conforming land management plan.

(d) Notwithstanding the other requirements of this subpart, a conformity determination is not required for the following Federal actions (or portion thereof):

(1) The portion of an action that includes major new or modified stationary sources that require a permit under the new source review (NSR) program (section 173 of the Act) or the prevention of significant deterioration (PSD) program (title I, part C of the Act).

(2) Actions in response to emergencies or natural disasters such as hurricanes, earthquakes, etc., which are commenced on the order of hours or days after the emergency or disaster and, if applicable, which meet the requirements of paragraph (e) of this section;

(3) Research, investigations, studies, demonstrations, or training [other than those exempted under section 51.853(c)(2)], where no environmental detriment is incurred and/or, the particular action furthers air quality research, as determined by the State agency primarily responsible for the applicable SIP;

(4) Alteration and additions of existing structures as specifically required by new or existing applicable environmental legislation or environmental regulations (e.g., hush houses for aircraft engines and scrubbers for air emissions).

(5) Direct emissions from remedial and removal actions carried out under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and associated regulations to the extent such emissions either comply with the substantive requirements of the PSD/NSR permitting program or are exempted from other environmental regulation under the provisions of CERCLA and applicable regulations issued under CERCLA.

(e) Federal actions which are part of a continuing response to an emergency or disaster under section 51.853(d)(2) and which are to be taken more than 6 months after the commencement of the response to the emergency or disaster under section 51.853(d)(2) are exempt from the requirements of this subpart only if:

(1) The Federal agency taking the actions makes a written determination that, for a specified period not to exceed an additional 6 months, it is impractical to prepare the conformity analyses which would otherwise be required and the actions cannot be delayed due to overriding concerns for public health and welfare, national security interests and foreign policy commitments; or

(2) For actions which are to be taken after those actions covered by paragraph (e)(1) of this section, the Federal agency makes a new determination as provided in paragraph (e)(1) of this section.

(f) Notwithstanding other requirements of this subpart, actions specified by individual Federal agencies that have met the criteria set forth in either paragraph (g)(1) or (g)(2) and the procedures set forth in paragraph (h) of this section are presumed to conform, except as provided in paragraph (j) of this section.

(g) The Federal agency must meet the criteria for establishing activities that are presumed to conform by fulfilling the requirements set forth in either paragraph (g)(1) or (g)(2) of this section:

(1) The Federal agency must clearly demonstrate using methods consistent with this rule that the total of direct and indirect emissions from the type of activities which would be presumed to conform would not:

(i) Cause or contribute to any new violation of any standard in any area;

(ii) Interfere with provisions in the applicable SIP for maintenance of any standard;

(iii) Increase the frequency or severity of any existing violation of any standard in any area; or

(iv) Delay timely attainment of any standard or any required interim emission reductions or other milestones in any area including, where applicable, emission levels specified in the applicable SIP for purposes of:

(A) A demonstration of reasonable further progress;

(B) A demonstration of attainment; or

(C) A maintenance plan; or

(2) The Federal agency must provide documentation that the total of direct and indirect emissions from such future actions would be below the emission rates for a conformity determination that are established in paragraph (b) of this section, based, for example, on similar actions taken over recent years.

(h) In addition to meeting the criteria for establishing exemptions set forth in paragraphs (g)(1) or (g)(2) of this section, the following procedures must also be complied with to presume that activities will conform:

(1) The Federal agency must identify through publication in the Federal Register its list of proposed activities that are presumed to conform and the basis for the presumptions;

(2) The Federal agency must notify the appropriate EPA Regional Office(s), State and local air quality agencies and, where applicable, the agency designated under section 174 of the Act and the MPO and provide at least 30 days for the public to comment on the list of proposed activities presumed to conform;

(3) the Federal agency must document its response to all the comments received and make the comments, response, and final list of activities available to the public upon request; and

(4) the Federal agency must publish the final list of such activities in the Federal Register.

(i) Notwithstanding the other requirements of this subpart, when the total of direct and indirect emissions of any pollutant from a Federal action does not equal or exceed the rates specified in paragraph (b) of this section, but represents 10 percent or more of a nonattainment or maintenance area's total emissions of that pollutant, the action is defined as a regionally significant action and the requirements of section 51.850 and sections 51.855-860 shall apply for the Federal action.

(j) Where an action otherwise presumed to conform under paragraph (f) of this section is a regionally significant action or does not in fact meet one of the criteria in paragraph (g)(1) of this section, that action shall not be presumed to conform and the requirements of section 51.850 and sections 51.855-860 shall apply for the Federal action.

(k) The provisions of this subpart shall apply in all nonattainment and maintenance areas.

§51.854 Conformity analysis.

Any Federal department, agency, or instrumentality of the Federal government taking an action subject to this subpart must make its own conformity determination consistent with the requirements of this subpart. In making its conformity determination, a Federal agency must consider comments from any interested parties. Where multiple Federal agencies have jurisdiction for various aspects of a project, a Federal agency may choose to adopt the analysis of another Federal agency or develop its own analysis in order to make its conformity determination.

§51.855 Reporting requirements.

(a) A Federal agency making a conformity determination under section 51.858 must provide to the appropriate EPA Regional Office(s), State and local air quality agencies and, where applicable, affected Federal land managers, the agency designated under section 174 of the Act and the MPO a 30 day notice which describes the proposed action and the Federal agency's draft conformity determination on the action.

(b) A Federal agency must notify the appropriate EPA Regional Office(s), State and local air quality agencies and, where applicable, affected Federal land managers, the agency designated under section 174 of the Clean Air Act and the MPO within 30 days after making a final conformity determination under section 51.858.

§51.856 Public participation.

(a) Upon request by any person regarding a specific Federal action, a Federal agency must make available for review its draft conformity determination under section 51.858 with supporting materials which describe the analytical methods and conclusions relied upon in making the applicability analysis and draft conformity determination.

(b) A Federal agency must make public its draft conformity determination under section 51.858 by placing a notice by prominent advertisement in a daily newspaper of general circulation in the area affected by the action and by providing 30 days for written public comment prior to taking any formal action on the draft determination. This comment period may be concurrent with any other public involvement, such as occurs in the NEPA process.

(c) A Federal agency must document its response to all the comments received on its draft conformity determination under section 51.858 and make the comments and responses available, upon request by any person regarding a specific Federal action, within 30 days of the final conformity determination.

(d) A Federal agency must make public its final conformity determination under section 51.858 for a Federal action by placing a notice by prominent advertisement in a daily newspaper of general circulation in the area affected by the action within 30 days of the final conformity determination.

§51.857 Frequency of conformity determinations.

(a) The conformity status of a Federal action automatically lapses 5 years from the date a final conformity determination is reported under section 51.855, unless the Federal action has been completed or a continuous program has been commenced to implement that Federal action within a reasonable time.

(b) Ongoing Federal activities at a given site showing continuous progress are not new actions and do not require periodic redeterminations so long as such activities are within the scope of the final conformity determination reported under section 51.855.

(c) If, after the conformity determination is made, the Federal action is changed so that there is an increase in the total of direct and indirect emissions above the levels in section 51.853(b), a new conformity determination is required.

§51.858

Criteria for determining conformity of general Federal actions.

(a) An action required under section 51.853 to have a conformity determination for a specific pollutant, will be determined to conform to the applicable SIP if, for each pollutant that exceeds the rates in section 51.853, paragraph (b), or otherwise requires a conformity determination due to the total of direct and indirect emissions from the action, the action meets the requirements of paragraph (c) of this section, and meets any of the following requirements:

(1) For any criteria pollutant, the total of direct and indirect emissions from the action are specifically identified and accounted for in the applicable SIP's attainment or maintenance demonstration;

(2) For ozone or nitrogen dioxide, the total of direct and indirect emissions from the action are fully offset within the same nonattainment or maintenance area through a revision to the applicable SIP or a similarly enforceable measure that effects emission reductions so that there is no net increase in emissions of that pollutant;

(3) For any criteria pollutant, except ozone and nitrogen dioxide, the total of direct and indirect emissions from the action meet the requirements:

(i) specified in paragraph (b) of this section, based on areawide air quality modeling analysis and local air quality modeling analysis, or

(ii) meet the requirements of paragraph (a)(5) and, for local air quality modeling analysis, the requirement of paragraph (b) of this section;

(4) For CO or PM-10,

(i) Where the State agency primarily responsible for the applicable SIP determines that an areawide air quality modeling analysis is not needed, the total of direct and indirect emissions from the action meet the requirements specified in paragraph (b) of this section, based on local air quality modeling analysis or

(ii) Where the State agency primarily responsible for the applicable SIP determines that an areawide air quality modeling analysis is appropriate and that a local air quality modeling analysis is not needed, the total of direct and indirect emissions from the action meet the requirements specified in paragraph (b) of this section, based on areawide modeling, or meet the requirements of paragraph (a)(5) of this section; or

(5) For ozone or nitrogen dioxide, and for purposes of paragraphs (a)(3)(ii) and (a)(4)(ii) of this section, each portion of the action or the action as a whole meets any of the following requirements:

(i) Where EPA has approved a revision to an area's attainment or maintenance demonstration after 1990 and the State makes a determination as provided in paragraph (A) or where the State makes a commitment as provided in paragraph (B):

(A) The total of direct and indirect emissions from the action (or portion thereof) is determined and documented by the State agency primarily responsible for the applicable SIP to result in a level of emissions which, together with all other emissions in the nonattainment (or maintenance) area, would not exceed the emissions budgets specified in the applicable SIP.

(B) The total of direct and indirect emissions from the action (or portion thereof) is determined by the State agency responsible for the applicable SIP to result in a level of emissions which, together with all other emissions in the nonattainment (or maintenance) area, would exceed an emissions budget specified in the applicable SIP and the State Governor or the Governor's designee for SIP actions makes a written commitment to EPA which includes the following:

(1) A specific schedule for adoption and submittal of a revision to the SIP which would achieve the needed emission reductions prior to the time emissions from the Federal action would occur;

(2) Identification of specific measures for incorporation into the SIP which would result in a level of emissions which, together with all other emissions in the nonattainment or maintenance area, would not exceed any emissions budget specified in the applicable SIP;

(3) A demonstration that all existing applicable SIP requirements are being implemented in the area for the pollutants affected by the Federal action, and that local authority to implement additional requirements has been fully pursued;

(4) A determination that the responsible Federal agencies have required all reasonable mitigation measures associated with their action; and

(5) Written documentation including all air quality analyses supporting the conformity determination.

(C) Where a Federal agency made a conformity determination based on a State commitment under subparagraph (a)(5)(i)(B) of this paragraph, such a State commitment is automatically deemed a call for a SIP revision by EPA under section 110(k)(5) of the Act, effective on the date of the Federal conformity determination and requiring response within 18 months or any shorter time within which the State commits to revise the applicable SIP;

(ii) The action (or portion thereof), as determined by the MPO, is specifically included in a current transportation plan and transportation improvement program which have been found to conform to the applicable SIP under 40 CFR part 51, subpart T, or 40 CFR part 93, subpart A;

(iii) The action (or portion thereof) fully offsets its emissions within the same nonattainment or maintenance area through a revision to the applicable SIP or an equally enforceable measure that effects emission reductions equal to or greater than the total of direct and indirect emissions from the action so that there is no net increase in emissions of that pollutant;

(iv) Where EPA has not approved a revision to the relevant SIP attainment or maintenance demonstration since 1990, the total of direct and indirect emissions from the action for the future years [described in paragraph (d) of section 51.859] do not increase emissions with respect to the baseline emissions;

(A) The baseline emissions reflect the historical activity levels that occurred in the geographic area affected by the proposed Federal action during:

(1) Calendar year 1990,

(2) The calendar year that is the basis for the classification (or, where the classification is based on multiple years, the most representative year), if a classification is promulgated in 40 CFR part 81, or

(3) The year of the baseline inventory in the PM-10 applicable SIP;

(B) The baseline emissions are the total of direct and indirect emissions calculated for the future years [described in paragraph (d) of section 51.859] using the historic activity levels [described in subparagraph (a)(5)(iv)(A) of this paragraph] and appropriate emission factors for the future years; or

(v) Where the action involves regional water and/or wastewater projects, such projects are sized to meet only the needs of population projections that are in the applicable SIP.

(b) The areawide and/or local air quality modeling analyses must:

(1) Meet the requirements in section 51.859 and

(2) Show that the action does not:

(i) Cause or contribute to any new violation of any standard in any area; or

(ii) Increase the frequency or severity of any existing violation of any standard in any area.

(c) Notwithstanding any other requirements of this section, an action subject to this subpart may not be determined to conform to the applicable SIP unless the total of direct and indirect emissions from the action is in compliance or consistent with all relevant requirements and milestones contained in the applicable SIP, such as elements identified as part of the reasonable further progress schedules, assumptions specified in the attainment or maintenance demonstration, prohibitions, numerical emission limits, and work practice requirements.

(d) Any analyses required under this section must be completed, and any mitigation requirements necessary for a finding of conformity must be identified before the determination of conformity is made.

§51.859 Procedures for conformity determinations of general Federal actions.

(a) The analyses required under this subpart must be based on the latest planning assumptions.

(1) All planning assumptions must be derived from the estimates of population, employment, travel, and congestion most recently approved by the MPO, or other agency authorized to make such estimates, where available.

(2) Any revisions to these estimates used as part of the conformity determination, including projected shifts in geographic location or level of population, employment, travel, and congestion, must be approved by the MPO or other agency authorized to make such estimates for the urban area.

(b) The analyses required under this subpart must be based on the latest and most accurate emission estimation techniques available as described below, unless such techniques are inappropriate. If such techniques are inappropriate and written approval of the EPA Regional Administrator is obtained for any modification or substitution, they may be modified or another technique substituted on a case-by-case basis or, where appropriate, on a generic basis for a specific Federal agency program.

(1) For motor vehicle emissions, the most current version of the motor vehicle emissions model specified by EPA and available for use in the preparation or revision of SIPs in that State must be used for the conformity analysis as specified below:

(i) The EPA must publish in the Federal Register a notice of availability of any new motor vehicle emissions model; and

(ii) A grace period of three months shall apply during which the motor vehicle emissions model previously specified by EPA as the most current version may be used. Conformity analyses for which the analysis was begun during the grace period or no more than 3 years before the Federal Register notice of availability of the latest emission model may continue to use the previous version of the model specified by EPA.

(2) For non-motor vehicle sources, including stationary and area source emissions, the latest emission factors specified by EPA in the "Compilation of Air Pollutant Emission Factors (AP-42)" must be used for the conformity analysis unless more accurate emission data are available, such as actual stack test data from stationary sources which are part of the conformity analysis.

(c) The air quality modeling analyses required under this Subpart must be based on the applicable air quality models, data bases, and other requirements specified in the most recent version of the "Guideline on Air Quality Models (Revised)" (1986), including supplements (EPA publication no. 450/2-78-027R), unless:

(1) The guideline techniques are inappropriate, in which case the model may be modified or another model substituted on a case-by-case basis or, where appropriate, on a generic basis for a specific Federal agency program; and

(2) Written approval of the EPA Regional Administrator is obtained for any modification or substitution.

(d) The analyses required under this subpart, except section 51.858, paragraph (a)(1), must be based on the total of direct and indirect emissions from the action and must reflect emission scenarios that are expected to occur under each of the following cases:

(1) The Act mandated attainment year or, if applicable, the farthest year for which emissions are projected in the maintenance plan;

(2) The year during which the total of direct and indirect emissions from the action is expected to be the greatest on an annual basis; and

(3) any year for which the applicable SIP specifies an emissions budget.

§51.860 **Mitigation of air quality impacts.**

(a) Any measures that are intended to mitigate air quality impacts must be identified and the process for implementation and enforcement of such measures must be described, including an implementation schedule containing explicit timelines for implementation.

(b) Prior to determining that a Federal action is in conformity, the Federal agency making the conformity determination must obtain written commitments from the appropriate persons or agencies to implement any mitigation measures which are identified as conditions for making conformity determinations.

c) Persons or agencies voluntarily committing to mitigation measures to facilitate positive conformity determinations must comply with the obligations of such commitments.

(d) In instances where the Federal agency is licensing, permitting or otherwise approving the action of another governmental or private entity, approval by the Federal agency must be conditioned on the other entity meeting the mitigation measures set forth in the conformity determination.

(e) When necessary because of changed circumstances, mitigation measures may be modified so long as the new mitigation measures continue to support the conformity determination. Any proposed change in the mitigation measures is subject to the reporting requirements of section 51.856 and the public participation requirements of section 51.857.

(f) Written commitments to mitigation measures must be obtained prior to a positive conformity determination and such commitments must be fulfilled.

(g) After this SIP revision is approved by EPA, any agreements, including mitigation measures, necessary for a conformity determination will be both State and federally enforceable. Enforceability through the applicable SIP will apply to all persons who agree to mitigate direct and indirect emissions associated with a Federal action for a conformity determination.

Attachment 1

12-16-96

The San Francisco Bay Area Transportation Air Quality Conformity Procedures*

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* Except as otherwise noted with strikeouts and underlines, these procedures incorporate EPA regulations verbatim.

§93.100 Purpose.

The purpose of this subpart is to implement §176(c) of the Clean Air Act (CAA), as amended (42 U.S.C. 7401 et seq.), and the related requirements of 23 U.S.C. 109(j), with respect to the conformity of transportation plans, programs, and projects which are developed, funded, or approved by the United States Department of Transportation (DOT), and by metropolitan planning organizations (MPOs) or other recipients of funds under title 23 U.S.C. or the Federal Transit Act (49 U.S.C. 1601 et seq.). This subpart sets forth policy, criteria, and procedures for demonstrating and assuring conformity of such activities to an applicable implementation plan developed pursuant to §110 and Part D of the CAA.

§93.101 Definitions.

Terms used but not defined in this subpart shall have the meaning given them by the CAA, titles 23 and 49 U.S.C., other Environmental Protection Agency (EPA) regulations, or other DOT regulations, in that order of priority.

Applicable implementation plan is defined in §302(q) of the CAA and means the portion (or portions) of the implementation plan, or most recent revision thereof, which has been approved under §110, or promulgated under §110(c), or promulgated or approved pursuant to regulations promulgated under §301(d) and which implements the relevant requirements of the CAA.

CAA means the Clean Air Act, as amended.

Cause or contribute to a new violation for a project means:

(1) To cause or contribute to a new violation of a standard in the area substantially affected by the project or over a region which would otherwise not be in violation of the standard during the future period in question, if the project were not implemented, or

(2) To contribute to a new violation in a manner that would increase the frequency or severity of a new violation of a standard in such area.

Control strategy implementation plan revision is the applicable implementation plan which contains specific strategies for controlling the emissions of and reducing ambient levels of pollutants in order to satisfy CAA requirements for demonstrations of reasonable further progress and attainment (CAA §§182(b)(1), 182(c)(2)(A), 182(c)(2)(B), 187(a)(7), 189(a)(1)(B), and 189(b)(1)(A); and §§192(a) and 192(b), for nitrogen dioxide).

Control strategy period with respect to particulate matter less than 10 microns in diameter (PM₁₀), carbon monoxide (CO), nitrogen dioxide (NO₂), and/or ozone precursors (volatile organic compounds and oxides of nitrogen), means that period of time after EPA approves control strategy implementation plan revisions containing strategies for controlling PM₁₀, NO₂, CO, and/or ozone, as appropriate. This period ends when a State submits and EPA approves a request under §107(d) of the CAA for redesignation to an attainment area.

Design concept means the type of facility identified by the project, e.g., freeway, expressway, arterial highway, grade-separated highway, reserved right-of-way rail transit, mixed-traffic rail transit, exclusive busway, etc.

Design scope means the design aspects which will affect the proposed facility's impact on regional emissions, usually as they relate to vehicle or person carrying capacity and control, e.g., number of lanes or tracks to be constructed or added, length of project, signalization, access control including approximate number and location of interchanges, preferential treatment for high-occupancy vehicles, etc.

DOT means the United States Department of Transportation.

EPA means the Environmental Protection Agency.

FHWA means the Federal Highway Administration of DOT.

FHWA/FTA project, for the purpose of this subpart, is any highway or transit project which is proposed to receive funding assistance and approval through the Federal-Aid Highway program or the Federal mass transit program, or requires Federal Highway Administration (FHWA) or Federal Transit Administration (FTA) approval for some aspect of the project, such as connection to an interstate highway or deviation from applicable design standards on the interstate system.

FTA means the Federal Transit Administration of DOT.

Forecast period with respect to a transportation plan is the period covered by the transportation plan pursuant to 23 CFR part 450.

Highway project is an undertaking to implement or modify a highway facility or highway-related program. Such an undertaking consists of all required phases necessary for implementation. For analytical purposes, it must be defined sufficiently to: (1) connect logical termini and be of sufficient length to address environmental matters on a broad scope; (2) have independent utility or significance, i.e., be usable and be a reasonable expenditure even if no additional transportation improvements in the area are made; and (3) not restrict consideration of alternatives for other reasonably foreseeable transportation improvements.

Horizon year is a year for which the transportation plan describes the envisioned transportation system according to §93.106 of this subpart.

Hot-spot analysis is an estimation of likely future localized CO and PM₁₀ pollutant concentrations and a comparison of those concentrations to the national ambient air quality standards. Pollutant concentrations to be estimated should be based on the total emissions burden which may result from the implementation of a single, specific project, summed together with future background concentrations (which can be estimated using the ratio of future to current traffic multiplied by the ratio of future to current emission factors) expected in the area. The total concentration must be estimated and analyzed at appropriate receptor locations in the area substantially affected by the project. Hot-spot analysis assesses impacts on a scale smaller than the entire nonattainment or maintenance area, including, for example, congested roadway intersections and highways or transit terminals, and uses an air quality dispersion model to determine the effects of emissions on air quality.

Incomplete data area means any ozone nonattainment area which EPA has classified, in 40 CFR part 81, as an incomplete data area.

Increase the frequency or severity means to cause a location or region to exceed a standard more often or to cause a violation at a greater concentration than previously existed and/or would otherwise exist during the future period in question, if the project were not implemented.

ISTEA means the Intermodal Surface Transportation Efficiency Act of 1991.

Maintenance area means any geographic region of the United States previously designated nonattainment pursuant to the CAA Amendments of 1990 and subsequently redesignated to attainment subject to the requirement to develop a maintenance plan under §175A of the CAA, as amended.

Maintenance period with respect to a pollutant or pollutant precursor means that period of time beginning when a State submits and EPA approves a request under §107(d) of the CAA for redesignation to an attainment area, and lasting for 20 years, unless the applicable implementation plan specifies that the maintenance period shall last for more than 20 years.

Metropolitan planning organization (MPO) is that organization designated as being responsible, together with the State, for conducting the continuing, cooperative, and comprehensive planning process under 23 U.S.C. 134 and 49 U.S.C. 1607. It is the forum for cooperative transportation decision-making.

Milestone has the meaning given in §182(g)(1) and §189(c) of the CAA. A milestone consists of an emissions level and the date on which it is required to be achieved.

Motor vehicle emissions budget is that portion of the total allowable emissions defined in a revision to the applicable implementation plan (or in an implementation plan revision which was endorsed by the Governor or his or her designee, subject to a public hearing, and submitted to EPA, but not yet approved by EPA) for a certain date for the purpose of meeting reasonable further progress milestones or attainment or maintenance demonstrations, for any criteria pollutant or its precursors, allocated by the applicable implementation plan to highway and transit vehicles. The applicable implementation plan for an ozone nonattainment area may also designate a motor vehicle emissions budget for oxides of nitrogen (NO_x) for a reasonable further progress milestone year if the applicable implementation plan demonstrates that this NO_x budget will be achieved with measures in the implementation plan (as an implementation plan must do for VOC milestone requirements). The applicable implementation plan for an ozone nonattainment area includes a NO_x budget if NO_x reductions are being substituted for reductions in volatile organic compounds in milestone years required for reasonable further progress.

National ambient air quality standards (NAAQS) are those standards established pursuant to §109 of the CAA.

NEPA means the National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321 et seq).

NEPA process completion, for the purposes of this subpart, with respect to FHWA or FTA, means the point at which there is a specific action to make a determination that a project is categorically excluded, to make a Finding of No Significant Impact, or to issue a record of decision on a Final Environmental Impact Statement under NEPA.

Nonattainment area means any geographic region of the United States which has been designated as nonattainment under §107 of the CAA for any pollutant for which a national ambient air quality standard exists.

Not classified area means any carbon monoxide nonattainment area which EPA has not classified as either moderate or serious.

Phase II of the interim period with respect to a pollutant or pollutant precursor means that period of time after the effective date of this rule, lasting until the earlier of the following: (1) submission to EPA of the relevant control strategy implementation plan revisions which have been endorsed by the Governor (or his or her designee) and have been subject to a public hearing, or (2) the date that the Clean Air Act requires relevant control strategy implementation plans to be submitted to EPA, provided EPA has notified the State, MPO, and DOT of the State's failure to submit any such plans. The precise end of Phase II of the interim period is defined in §93.128 of this subpart.

Project means a highway project or transit project.

Protective finding means a determination by EPA that the control strategy contained in a submitted control strategy implementation plan revision would have been considered approvable with respect to requirements for emissions reductions if all committed measures had been submitted in enforceable form as required by Clean Air Act section 110(a)(2)(A).

Recipient of funds designated under title 23 U.S.C. or the Federal Transit Act means any agency at any level of State, county, city, or regional government that routinely receives title 23 U.S.C. or Federal Transit Act funds to construct FHWA/FTA projects, operate FHWA/FTA projects or equipment, purchase equipment, or undertake other services or operations via contracts or agreements. This definition does not include private landowners or developers, or contractors or entities that are only paid for services or products created by their own employees.

Regionally significant project means a transportation project (other than an exempt project) that is on a facility which serves regional transportation needs (such as access to and from the area outside of the region, major activity centers in the region, major planned developments such as new retail malls, sports complexes, etc., or transportation terminals as well as most terminals themselves) and would normally be included in the modeling of a metropolitan area's transportation network, including at a minimum all principal arterial highways and all fixed guideway transit facilities that offer an alternative to regional highway travel.

Rural transport ozone nonattainment area means an ozone nonattainment area that does not include, and is not adjacent to, any part of a Metropolitan Statistical Area or, where one exists, a Consolidated Metropolitan Statistical Area (as defined by the United States Bureau of the Census) and is classified under Clean Air Act §182(h) as a rural transport area.

Standard means a national ambient air quality standard.

Submarginal area means any ozone nonattainment area which EPA has classified as submarginal in 40 CFR part 81.

Transit is mass transportation by bus, rail, or other conveyance which provides general or special service to the public on a regular and continuing basis. It does not include school buses or charter or sightseeing services.

Transit project is an undertaking to implement or modify a transit facility or transit-related program; purchase transit vehicles or equipment; or provide financial assistance for transit operations. It does not include actions that are solely within the jurisdiction of local transit agencies, such as changes in routes, schedules, or fares. It may consist of several phases. For analytical purposes, it must be defined inclusively enough to: (1) connect logical termini and be of sufficient length to address environmental matters on a broad scope; (2) have independent utility or independent significance, i.e., be a reasonable expenditure even if no additional transportation improvements in the area are made; and (3) not restrict consideration of alternatives for other reasonably foreseeable transportation improvements.

Transitional area means any ozone nonattainment area which EPA has classified as transitional in 40 CFR part 81.

Transitional period with respect to a pollutant or pollutant precursor means that period of time which begins after submission to EPA of the relevant control strategy implementation plan which has been endorsed by the Governor (or his or her designee) and has been subject to a public hearing. The transitional period lasts until EPA takes final approval or disapproval action on the control strategy implementation plan submission or finds it to be incomplete. The precise beginning and end of the transitional period is defined in §93.128 of this subpart.

Transportation control measure (TCM) is any measure that is specifically identified and committed to in the applicable implementation plan that is either one of the types listed in §108 of the CAA, or any other measure for the purpose of reducing emissions or concentrations of air pollutants from transportation sources by reducing vehicle use or changing traffic flow or congestion conditions. Notwithstanding the above, vehicle technology-

based, fuel-based, and maintenance-based measures which control the emissions from vehicles under fixed traffic conditions are not TCMs for the purposes of this subpart.

Transportation improvement program (TIP) means a staged, multiyear, intermodal program of transportation projects covering a metropolitan planning area which is consistent with the metropolitan transportation plan, and developed pursuant to 23 CFR part 450.

Transportation plan means the official intermodal metropolitan transportation plan that is developed through the metropolitan planning process for the metropolitan planning area, developed pursuant to 23 CFR part 450.

Transportation project is a highway project or a transit project.

§93.102 Applicability.

(a) Action applicability.

(1) Except as provided for in paragraph (c) of this section or §93.134, conformity determinations are required for:

(i) The adoption, acceptance, approval or support of transportation plans developed pursuant to 23 CFR part 450 or 49 CFR part 613 by an MPO or DOT;

(ii) The adoption, acceptance, approval or support of TIPs developed pursuant to 23 CFR part 450 or 49 CFR part 613 by an MPO or DOT; and

(iii) The approval, funding, or implementation of FHWA/FTA projects.

(2) Conformity determinations are not required under this rule for individual projects which are not FHWA/FTA projects. However, §93.129 applies to such projects if they are regionally significant.

(b) Geographic Applicability. (1) The provisions of this subpart shall apply in all nonattainment and maintenance areas for transportation-related criteria pollutants for which the area is designated nonattainment or has a maintenance plan.

(2) The provisions of this subpart apply with respect to emissions of the following criteria pollutants: ozone, carbon monoxide, nitrogen dioxide, and particles with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM₁₀).

(3) The provisions of this subpart apply with respect to emissions of the following precursor pollutants:

(i) Volatile organic compounds and nitrogen oxides in ozone areas;

(ii) Nitrogen oxides in nitrogen dioxide areas; and

(iii) Volatile organic compounds, nitrogen oxides, and PM₁₀ in PM₁₀ areas if:

(A) During the interim period, the EPA Regional Administrator or the director of the State air agency has made a finding that transportation-related precursor emissions within the nonattainment area are a significant contributor to the PM₁₀ nonattainment problem and has so notified the MPO and DOT; or

(B) During the transitional, control strategy, and maintenance periods, the applicable implementation plan (or implementation plan submission) establishes a budget for such emissions as part of the reasonable further progress, attainment or maintenance strategy.

(c) Limitations. (1) Projects subject to this regulation for which the NEPA process and a conformity determination have been completed by FHWA or FTA may proceed toward implementation without further conformity determinations if one of the following major steps has occurred within the past three years: NEPA process completion; start of final design; acquisition of a significant portion of the right-of-way; or approval of the plans, specifications and estimates. All phases of such projects which were considered in the conformity determination are also included, if those phases were for the purpose of funding, final design, right-of-way acquisition, construction, or any combination of these phases.

(2) A new conformity determination for the project will be required if there is a significant change in project design concept and scope, if a supplemental environmental document for air quality purposes is initiated, or if no major steps to advance the project have occurred within the past three years.

(d) Grace period for new nonattainment areas. For areas which have been in attainment for either ozone, CO, PM₁₀, or NO₂ since 1990 and are subsequently redesignated to nonattainment for any of these pollutants, the provisions of this subpart shall not apply for such pollutant for 12 months following the date of final designation to nonattainment.

§93.103 Priority.

When assisting or approving any action with air quality-related consequences, FHWA and FTA shall give priority to the implementation of those transportation portions of an applicable implementation plan prepared to attain and maintain the NAAQS. This priority shall be consistent with statutory requirements for allocation of funds among States or other jurisdictions.

§93.104 Frequency of conformity determinations.

(a) Conformity determinations and conformity redeterminations for transportation plans, TIPs, and FHWA/FTA projects must be made according to the requirements of this section and the applicable implementation plan.

(b) Transportation plans.

(1) Each new transportation plan must be found to conform before the transportation plan is approved by the MPO or accepted by DOT.

(2) All transportation plan revisions must be found to conform before the transportation plan revisions are approved by MPO or accepted by DOT, unless the revision merely adds or deletes exempt projects listed in §93.134. The conformity determination must be based on the transportation plan and the revision taken as a whole.

(3) Conformity of existing transportation plans must be redetermined within 18 months of the following, or the existing conformity determination will lapse:

(i) November 24, 1993

(ii) EPA approval of an implementation plan revision which:

(A) Establishes or revises a transportation-related emissions budget (as required by CAA §§175A(a), 182(b)(1), 182(c)(2)(A), 182(c)(2)(B), 187(a)(7), 189(a)(1)(B), and 189(b)(1)(A); and §§192(a) and 192(b) for nitrogen dioxide); or

(B) Adds, deletes, or changes TCMs; and

(iii) EPA promulgation of an implementation plan which establishes or revises a transportation-related emissions budget or adds, deletes, or changes TCMs.

(4) In any case, conformity determinations must be made no less frequently than every three years, or the existing conformity determination will lapse.

(c) Transportation improvement programs.

(1) A new TIP must be found to conform before the TIP is approved by the MPO or accepted by DOT.

(2) A TIP amendment requires a new conformity determination for the entire TIP before the amendment is approved by the MPO or accepted by DOT, unless the amendment merely adds or deletes exempt projects listed in §93.134.

(3) After an MPO adopts a new or revised transportation plan, conformity must be redetermined by the MPO and DOT within six months from the date of adoption of the plan, unless the new or revised plan merely adds or deletes exempt projects listed in §93.134. Otherwise, the existing conformity determination for the TIP will lapse.

(4) In any case, conformity determinations must be made no less frequently than every three years or the existing conformity determination will lapse.

(d) Projects. FHWA/FTA projects must be found to conform before they are adopted, accepted, approved, or funded. Conformity must be redetermined for any FHWA/FTA project if none of the following major steps has occurred within the past three years: NEPA process completion; start of final design; acquisition of a significant portion of the right-of-way; or approval of the plans, specifications and estimates.

§93.106 Content of transportation plans.

(a) Transportation plans adopted after January 1, 1995 in serious, severe, or extreme ozone nonattainment areas and in serious carbon monoxide nonattainment areas. The transportation plan must specifically describe the transportation system envisioned for certain future years which shall be called horizon years.

(1) The agency or organization developing the transportation plan may choose any years to be horizon years, subject to the following restrictions:

(i) Horizon years may be no more than 10 years apart.

(ii) The first horizon year may be no more than 10 years from the base year used to validate the transportation demand planning model.

(iii) If the attainment year is in the time span of the transportation plan, the attainment year must be a horizon year.

(iv) The last horizon year must be the last year of the transportation plan's forecast period.

(2) For these horizon years:

(i) The transportation plan shall quantify and document the demographic and employment factors influencing expected transportation demand, including land use forecasts, in accordance with implementation plan provisions and §93.105;

(ii) The highway and transit system shall be described in terms of the regionally significant additions or modifications to the existing transportation network which the transportation plan envisions to be operational in the horizon years. Additions and modifications to the highway network shall be sufficiently identified to indicate intersections with existing regionally significant facilities, and to determine their effect on route options between transportation analysis zones. Each added or modified highway segment shall also be sufficiently identified in terms of its design concept and design scope to allow modeling of travel times under various traffic volumes, consistent with the modeling methods for area-wide transportation analysis in use by the MPO. Transit facilities, equipment, and services envisioned for the future shall be identified in terms of design concept, design scope, and operating policies sufficiently to allow modeling of their transit ridership. The description of additions and modifications to the transportation network shall also be sufficiently specific to show that there is a reasonable relationship between expected land use and the envisioned transportation system; and

(iii) Other future transportation policies, requirements, services, and activities, including intermodal activities, shall be described.

(b) Moderate areas reclassified to serious. Ozone or CO nonattainment areas which are reclassified from moderate to serious must meet the requirements of paragraph (a) of this section within two years from the date of reclassification.

(c) Transportation plans for other areas. Transportation plans for other areas must meet the requirements of paragraph (a) of this section at least to the extent it has been the previous practice of the MPO to prepare plans which meet those requirements. Otherwise, transportation plans must describe the transportation system envisioned for the future specifically enough to allow determination of conformity according to the criteria and procedures of §§93.109 - 93.127.

(d) Savings. The requirements of this section supplement other requirements of applicable law or regulation governing the format or content of transportation plans.

§93.107 Relationship of transportation plan and TIP conformity with the NEPA process.

The degree of specificity required in the transportation plan and the specific travel network assumed for air quality modeling do not preclude the consideration of alternatives in the NEPA process or other project development studies. Should the NEPA process result in a project with design concept and scope significantly different from that in the transportation plan or TIP, the project must meet the criteria in §§93.109 - 93.127 for projects not from a TIP before NEPA process completion.

§93.108 Fiscal constraints for transportation plans and TIPs.

Transportation plans and TIPs must be fiscally constrained consistent with DOT's metropolitan planning regulations at 23 CFR part 450 in order to be found in conformity.

§93.109 Criteria and procedures for determining conformity of transportation plans, programs, and projects: General.

(a) In order to be found to conform, each transportation plan, program, and FHWA/FTA project must satisfy the applicable criteria and procedures in §§93.110 - 93.127 as listed in Table 1 in paragraph (b) of this section, and must comply with all applicable conformity requirements of implementation plans and of court orders for the area which pertain specifically to conformity determination requirements. The criteria for making conformity determinations differ based on the action under review (transportation plans, TIPs, and FHWA/FTA projects), the time period in which the conformity determination is made, and the relevant pollutant.

(b) The following table indicates the criteria and procedures in §§93.110 - 93.127 which apply for each action in each time period.

Table 1. Conformity Criteria

ALL PERIODS

Action	Criteria
Transportation Plan	§§93.110, 93.111, 93.112, 93.113(b)
TIP	§§93.110, 93.111, 93.112, 93.113(c)
Project (From a conforming plan and TIP)	§§93.110, 93.111, 93.112, 93.114, 93.115, 93.116, 93.117
Project (Not from a conforming plan and TIP)	§§93.110, 93.111, 93.112, 93.113(d), 93.114, 93.116, 93.117

PHASE II OF THE INTERIM PERIOD

Action	Criteria
Transportation Plan	§§93.122, 93.125
TIP	§§93.123, 93.126
Project (From a conforming plan and TIP)	§93.121
Project (Not from a conforming plan and TIP)	§93.121, 93.124, 93.127

TRANSITIONAL PERIOD

Action	Criteria
Transportation Plan	§§93.118, 93.122, 93.125
TIP	§§93.119, 93.123, 93.126
Project (From a conforming plan and TIP)	§93.121
Project (Not from a conforming plan and TIP)	§§93.120, 93.121, 93.124, 93.127

CONTROL STRATEGY AND MAINTENANCE PERIODS

Action	Criteria
Transportation Plan	§93.118
TIP	§93.119
Project (From a conforming plan and TIP)	No additional criteria
Project (Not from a conforming plan and TIP)	§93.120

- 93.110 The conformity determination must be based on the latest planning assumptions.
- 93.111 The conformity determination must be based on the latest emission estimation model available.
- 93.112 The MPO must make the conformity determination according to the consultation procedures of this rule and the implementation plan revision required by §51.396 of this chapter.
- 93.113 The transportation plan, TIP, or FHWA/FTA project which is not from a conforming plan and TIP must provide for the timely implementation of TCMs from the applicable implementation plan.
- 93.114 There must be a currently conforming transportation plan and currently conforming TIP at the time of project approval.
- 93.115 The project must come from a conforming transportation plan and program.
- 93.116 The FHWA/FTA project must not cause or contribute to any new localized CO or PM₁₀ violations or increase the frequency or severity of any existing CO or PM₁₀ violations in CO and PM₁₀ nonattainment and maintenance areas.
- 93.117 The FHWA/FTA project must comply with PM₁₀ control measures in the applicable implementation plan.
- 93.118 The transportation plan must be consistent with the motor vehicle emissions budget(s) in the applicable implementation plan or implementation plan submission.
- 93.119 The TIP must be consistent with the motor vehicle emissions budget(s) in the applicable implementation plan or implementation plan submission.
- 93.120 The project which is not from a conforming transportation plan and conforming TIP must be consistent with the motor vehicle emissions budget(s) in the applicable implementation plan or implementation plan submission.
- 93.121 The FHWA/FTA project must eliminate or reduce the severity and number of localized CO violations in the area substantially affected by the project (in CO nonattainment areas).
- 93.122 The transportation plan must contribute to emissions reductions in ozone and CO nonattainment areas.
- 93.123 The TIP must contribute to emissions reductions in ozone and CO nonattainment areas.
- 93.124 The project which is not from a conforming transportation plan and TIP must contribute to emissions reductions in ozone and CO nonattainment areas.
- 93.125 The transportation plan must contribute to emission reductions or must not increase emissions in PM₁₀ and NO₂ nonattainment areas.
- 93.126 The TIP must contribute to emission reductions or must not increase emissions in PM₁₀ and NO₂ nonattainment areas.

§93.110 Criteria and procedures: Latest planning assumptions.

- (a) The conformity determination, with respect to all other applicable criteria in §§93.111 -93.127, must be based upon the most recent planning assumptions in force at the time of the conformity determination. This criterion applies during all periods. The conformity determination must satisfy the requirements of paragraphs (b) through (f) of this section.
- (b) Assumptions must be derived from the estimates of current and future population, employment, travel, and congestion most recently developed by the MPO or other agency authorized to make such estimates and

approved by the MPO. The conformity determination must also be based on the latest assumptions about current and future background concentrations.

(c) The conformity determination for each transportation plan and TIP must discuss how transit operating policies (including fares and service levels) and assumed transit ridership have changed since the previous conformity determination.

(d) The conformity determination must include reasonable assumptions about transit service and increases in transit fares and road and bridge tolls over time.

(e) The conformity determination must use the latest existing information regarding the effectiveness of the TCMs which have already been implemented.

(f) Key assumptions shall be specified and included in the draft documents and supporting materials used for the interagency and public consultation required by §93.105.

§93.111 Criteria and procedures: Latest emissions model.

(a) The conformity determination must be based on the latest emission estimation model available. This criterion applies during all periods. It is satisfied if the most current version of the motor vehicle emissions model specified by EPA for use in the preparation or revision of implementation plans in that State or area is used for the conformity analysis. Where EMFAC is the motor vehicle emissions model used in preparing or revising the applicable implementation plan, new versions must be approved by EPA before they are used in the conformity analysis.

(b) EPA will consult with DOT to establish a grace period following the specification of any new model.

(1) The grace period will be no less than three months and no more than 24 months after notice of availability is published in the Federal Register.

(2) The length of the grace period will depend on the degree of change in the model and the scope of re-planning likely to be necessary by MPOs in order to assure conformity. If the grace period will be longer than three months, EPA will announce the appropriate grace period in the Federal Register.

(c) Conformity analyses for which the emissions analysis was begun during the grace period or before the Federal Register notice of availability of the latest emission model may continue to use the previous version of the model for transportation plans and TIPs. The previous model may also be used for projects if the analysis was begun during the grace period or before the Federal Register notice of availability, provided no more than three years have passed since the draft environmental document was issued.

§93.112 Criteria and procedures: Consultation.

(a) The MPO must make the conformity determination according to the consultation procedures in this rule and in the implementation plan revision required by §51.396 of this chapter, and according to the public involvement procedures established by the MPO in compliance with 23 CFR part 450. This criterion applies during all periods. Until the implementation plan revision required by §51.396 of this chapter is approved by EPA, the conformity determination must be made according to the procedures in §93.105(a)(2) and §93.105(e). Once the implementation plan revision has been approved by EPA, this criterion is satisfied if the conformity determination is made consistent with the implementation plan's consultation requirements.

§93.113 Criteria and procedures: Timely implementation of TCMs.

(a) The transportation plan, TIP, or FHWA/FTA project which is not from a conforming plan and TIP must provide for the timely implementation of TCMs from the applicable implementation plan. This criterion applies during all periods.

(b) For transportation plans, this criterion is satisfied if the following two conditions are met:

(1) The transportation plan, in describing the envisioned future transportation system, provides for the timely completion or implementation of all TCMs in the applicable implementation plan which are eligible for funding under title 23 U.S.C. or the Federal Transit Act, consistent with schedules included in the applicable implementation plan.

(2) Nothing in the transportation plan interferes with the implementation of any TCM in the applicable implementation plan.

(c) For TIPs, this criterion is satisfied if the following conditions are met:

(1) An examination of the specific steps and funding source(s) needed to fully implement each TCM indicates that TCMs which are eligible for funding under title 23 U.S.C. or the Federal Transit Act are on or ahead of the schedule established in the applicable implementation plan, or, if such TCMs are behind the schedule established in the applicable implementation plan, the MPO and DOT have determined that past obstacles to implementation of the TCMs have been identified and have been or are being overcome, and that all State and local agencies with influence over approvals or funding for TCMs are giving maximum priority to approval or funding of TCMs over other projects within their control, including projects in locations outside the nonattainment or maintenance area.

(2) If TCMs in the applicable implementation plan have previously been programmed for Federal funding but the funds have not been obligated and the TCMs are behind the schedule in the implementation plan, then the TIP cannot be found to conform if the funds intended for those TCMs are reallocated to projects in the TIP other than TCMs, or if there are no other TCMs in the TIP, if the funds are reallocated to projects in the TIP other than projects which are eligible for Federal funding under ISTEA's Congestion Mitigation and Air Quality Improvement Program.

(3) Nothing in the TIP may interfere with the implementation of any TCM in the applicable implementation plan.

(d) For FHWA/FTA projects which are not from a conforming transportation plan and TIP, this criterion is satisfied if the project does not interfere with the implementation of any TCM in the applicable implementation plan.

§93.114 Criteria and procedures: Currently conforming transportation plan and TIP.

There must be a currently conforming transportation plan and currently conforming TIP at the time of project approval. This criterion applies during all periods. It is satisfied if the current transportation plan and TIP have been found to conform to the applicable implementation plan by the MPO and DOT according to the procedures of this subpart.

(a) Only one conforming transportation plan or TIP may exist in an area at any time; conformity determinations of a previous transportation plan or TIP expire once the current plan or TIP is found to conform by DOT. The conformity determination on a transportation plan or TIP will also lapse if conformity is not determined according to the frequency requirements of §93.104.

(b) This criterion is not required to be satisfied at the time of project approval for a TCM specifically included in the applicable implementation plan, provided that all other relevant criteria of this subpart are satisfied.

§93.115 Criteria and procedures: Projects from a plan and TIP.

(a) The project must come from a conforming plan and program. This criterion applies during all periods. If this criterion is not satisfied, the project must satisfy all criteria in Table 1 for a project not from a conforming transportation plan and TIP. A project is considered to be from a conforming transportation plan if it meets the requirements of paragraph (b) of this section and from a conforming program if it meets the requirements of paragraph (c) of this section. Special provisions for TCMs in an applicable implementation plan are provided in paragraph (d) of this section.

(b) A project is considered to be from a conforming transportation plan if one of the following conditions applies:

(1) For projects which are required to be identified in the transportation plan in order to satisfy §93.106, the project is specifically included in the conforming transportation plan and the project's design concept and scope have not changed significantly from those which were described in the transportation plan, or in a manner which would significantly impact use of the facility; or

(2) For projects which are not required to be specifically identified in the transportation plan, the project is identified in the conforming transportation plan, or is consistent with the policies and purpose of the transportation plan and will not interfere with other projects specifically included in the transportation plan.

(c) A project is considered to be from a conforming program if the following conditions are met:

(1) The project is included in the conforming TIP and the design concept and scope of the project were adequate at the time of the TIP conformity determination to determine its contribution to the TIP's regional emissions and have not changed significantly from those which were described in the TIP, or in a manner which would significantly impact use of the facility; and

(2) If the TIP describes a project design concept and scope which includes project-level emissions mitigation or control measures, written commitments to implement such measures must be obtained from the project sponsor and/or operator as required by §93.133(a) in order for the project to be considered from a conforming program. Any change in these mitigation or control measures that would significantly reduce their effectiveness constitutes a change in the design concept and scope of the project.

(d) TCMs. This criterion is not required to be satisfied for TCMs specifically included in an applicable implementation plan.

§93.116 Criteria and procedures: Localized CO and PM₁₀ violations (hot spots).

(a) The FHWA/FTA project must not cause or contribute to any new localized CO or PM₁₀ violations or increase the frequency or severity of any existing CO or PM₁₀ violations in CO and PM₁₀ nonattainment and maintenance areas. This criterion applies during all periods. This criterion is satisfied if it is demonstrated that no new local violations will be created and the severity or number of existing violations will not be increased as a result of the project.

(b) The demonstration must be performed according to the requirements of §93.105(c)(1)(i) and §93.131.

(c) For projects which are not of the type identified by §93.131(a) or §93.131(d), this criterion may be satisfied if consideration of local factors clearly demonstrates that no local violations presently exist and no new local violations will be created as a result of the project. Otherwise, in CO nonattainment and maintenance areas, a quantitative demonstration must be performed according to the requirements of §93.131(b).

§93.117 Criteria and procedures: Compliance with PM₁₀ control measures.

The FHWA/FTA project must comply with PM₁₀ control measures in the applicable implementation plan. This criterion applies during all periods. It is satisfied if control measures (for the purpose of limiting PM₁₀ emissions from the construction activities and/or normal use and operation associated with the project) contained in the applicable implementation plan are included in the final plans, specifications, and estimates for the project.

§93.118 Criteria and procedures: Motor vehicle emissions budget (transportation plan).

(a) The transportation plan must be consistent with the motor vehicle emissions budget(s) in the applicable implementation plan (or implementation plan submission). This criterion applies during the transitional period and the control strategy and maintenance periods, except as provided in §93.136. This criterion may be satisfied if the requirements in paragraphs (b) and (c) of this section are met:

(b) A regional emissions analysis shall be performed as follows:

(1) The regional analysis shall estimate emissions of any of the following pollutants and pollutant precursors for which the area is in nonattainment or maintenance and for which the applicable implementation plan (or implementation plan submission) establishes an emissions budget:

(i) VOC as an ozone precursor;

(ii) NO_x as an ozone precursor;

(iii) CO;

(iv) PM₁₀ (and its precursors VOC and/or NO_x if the applicable implementation plan or implementation plan submission identifies transportation-related precursor emissions within the nonattainment area as a significant contributor to the PM₁₀ nonattainment problem or establishes a budget for such emissions); or

(v) NO_x (in NO₂ nonattainment or maintenance areas);

(2) The regional emissions analysis shall estimate emissions from the entire transportation system, including all regionally significant projects contained in the transportation plan and all other regionally significant highway and transit projects expected in the nonattainment or maintenance area in the timeframe of the transportation plan;

(3) The emissions analysis methodology shall meet the requirements of §93.130;

(4) For areas with a transportation plan that meets the content requirements of §93.106(a), the emissions analysis shall be performed for each horizon year. Emissions in milestone years which are between the horizon years may be determined by interpolation; and

(5) For areas with a transportation plan that does not meet the content requirements of §93.106(a), the emissions analysis shall be performed for any years in the time span of the transportation plan provided they are not more than ten years apart and provided the analysis is performed for the last year of the plan's forecast period. If the

attainment year is in the time span of the transportation plan, the emissions analysis must also be performed for the attainment year. Emissions in milestone years which are between these analysis years may be determined by interpolation.

(c) The regional emissions analysis shall demonstrate that for each of the applicable pollutants or pollutant precursors in paragraph (b)(1) of this section the emissions are less than or equal to the motor vehicle emissions budget as established in the applicable implementation plan or implementation plan submission as follows:

(1) If the applicable implementation plan or implementation plan submission establishes emissions budgets for milestone years, emissions in each milestone year are less than or equal to the motor vehicle emissions budget established for that year;

(2) For nonattainment areas, emissions in the attainment year are less than or equal to the motor vehicle emissions budget established in the applicable implementation plan or implementation plan submission for that year;

(3) For nonattainment areas, emissions in each analysis or horizon year after the attainment year are less than or equal to the motor vehicle emissions budget established by the applicable implementation plan or implementation plan submission for the attainment year. If emissions budgets are established for years after the attainment year, emissions in each analysis year or horizon year must be less than or equal to the motor vehicle emissions budget for that year, if any, or the motor vehicle emissions budget for the most recent budget year prior to the analysis year or horizon year; and

(4) For maintenance areas, emissions in each analysis or horizon year are less than or equal to the motor vehicle emissions budget established by the maintenance plan for that year, if any, or the emissions budget for the most recent budget year prior to the analysis or horizon year.

§93.119 Criteria and procedures: Motor vehicle emissions budget (TIP).

(a) The TIP must be consistent with the motor vehicle emissions budget(s) in the applicable implementation plan (or implementation plan submission). This criterion applies during the transitional period and the control strategy and maintenance periods, except as provided in §93.136. This criterion may be satisfied if the requirements in paragraphs (b) and (c) of this section are met:

(b) For areas with a conforming transportation plan that fully meets the content requirements of §93.106(a), this criterion may be satisfied without additional regional analysis if:

(1) Each program year of the TIP is consistent with the Federal funding which may be reasonably expected for that year, and required State/local matching funds and funds for State/local funding-only projects are consistent with the revenue sources expected over the same period; and

(2) The TIP is consistent with the conforming transportation plan such that the regional emissions analysis already performed for the plan applies to the TIP also. This requires a demonstration that:

(i) The TIP contains all projects which must be started in the TIP's timeframe in order to achieve the highway and transit system envisioned by the transportation plan in each of its horizon years;

(ii) All TIP projects which are regionally significant are part of the specific highway or transit system envisioned in the transportation plan's horizon years; and

(iii) The design concept and scope of each regionally significant project in the TIP is not significantly different from that described in the transportation plan.

(3) If the requirements in paragraphs (b)(1) and (b)(2) of this section are not met, then:

(i) The TIP may be modified to meet those requirements; or

(ii) The transportation plan must be revised so that the requirements in paragraphs (b)(1) and (b)(2) of this section are met. Once the revised plan has been found to conform, this criterion is met for the TIP with no additional analysis except a demonstration that the TIP meets the requirements of paragraphs (b)(1) and (b)(2) of this section.

(c) For areas with a transportation plan that does not meet the content requirements of §93.106(a), a regional emissions analysis must meet all of the following requirements:

(1) The regional emissions analysis shall estimate emissions from the entire transportation system, including all projects contained in the proposed TIP, the transportation plan, and all other regionally significant highway and transit projects expected in the nonattainment or maintenance area in the timeframe of the transportation plan;

- (2) The analysis methodology shall meet the requirements of §93.130(c); and
- (3) The regional analysis shall satisfy the requirements of §93.118(b)(1), §93.118(b)(5), and §93.118(c).

§93.120 Criteria and procedures: Motor vehicle emissions budget (project not from a plan and TIP).

(a) The project which is not from a conforming transportation plan and a conforming TIP must be consistent with the motor vehicle emissions budget(s) in the applicable implementation plan (or implementation plan submission). This criterion applies during the transitional period and the control strategy and maintenance periods, except as provided in §93.136. It is satisfied if emissions from the implementation of the project, when considered with the emissions from the projects in the conforming transportation plan and TIP and all other regionally significant projects expected in the area, do not exceed the motor vehicle emissions budget(s) in the applicable implementation plan (or implementation plan submission).

(b) For areas with a conforming transportation plan that meets the content requirements of §93.106(a):

(1) This criterion may be satisfied without additional regional analysis if the project is included in the conforming transportation plan, even if it is not specifically included in the latest conforming TIP. This requires a demonstration that:

(i) Allocating funds to the project will not delay the implementation of projects in the transportation plan or TIP which are necessary to achieve the highway and transit system envisioned by the transportation plan in each of its horizon years;

(ii) The project is not regionally significant or is part of the specific highway or transit system envisioned in the transportation plan's horizon years; and

(iii) The design concept and scope of the project is not significantly different from that described in the transportation plan.

(2) If the requirements in paragraph (b)(1) of this section are not met, a regional emissions analysis must be performed as follows:

(i) The analysis methodology shall meet the requirements of §93.130;

(ii) The analysis shall estimate emissions from the transportation system, including the proposed project and all other regionally significant projects expected in the nonattainment or maintenance area in the timeframe of the transportation plan. The analysis must include emissions from all previously approved projects which were not from a transportation plan and TIP; and

(iii) The emissions analysis shall meet the requirements of §§93.118(b)(1), 93.118(b)(4), and 93.118(c).

(c) For areas with a transportation plan that does not meet the content requirements of §93.106(a), a regional emissions analysis must be performed for the project together with the conforming TIP and all other regionally significant projects expected in the nonattainment or maintenance area. This criterion may be satisfied if:

(1) The analysis methodology meets the requirements of §93.130(c);

(2) The analysis estimates emissions from the transportation system, including the proposed project, and all other regionally significant projects expected in the nonattainment or maintenance area in the timeframe of the transportation plan; and

(iii) The regional analysis satisfies the requirements of §§93.118(b)(1), 93.118(b)(5), and 93.118(c).

§93.121 Criteria and procedures: Localized CO violations (hot spots) in the interim period.

(a) Each FHWA/FTA project must eliminate or reduce the severity and number of localized CO violations in the area substantially affected by the project (in CO nonattainment areas). This criterion applies during the interim and transitional periods only. This criterion is satisfied with respect to existing localized CO violations if it is demonstrated that existing localized CO violations will be eliminated or reduced in severity and number as a result of the project.

(b) The demonstration must be performed according to the requirements of §93.105(c)(1)(i) and §93.131.

(c) For projects which are not of the type identified by §93.131(a), this criterion may be satisfied if consideration of local factors clearly demonstrates that existing CO violations will be eliminated or reduced in severity and number. Otherwise, a quantitative demonstration must be performed according to the requirements of §93.131(b).

§93.122 Criteria and procedures: Interim period reductions in ozone and CO areas (transportation plan).

(a) A transportation plan must contribute to emissions reductions in ozone and CO nonattainment areas. This criterion applies during the interim and transitional periods only, except as otherwise provided in §93.136. It applies to the net effect on emissions of all projects contained in a new or revised transportation plan. This criterion may be satisfied if a regional emissions analysis is performed as described in paragraphs (b) through (f) of this section.

(b) Determine the analysis years for which emissions are to be estimated. Analysis years shall be no more than ten years apart. The first analysis year shall be no later than the first milestone year (1995 in CO nonattainment areas and 1996 in ozone nonattainment areas). The second analysis year shall be either the attainment year for the area, or if the attainment year is the same as the first analysis year or earlier, the second analysis year shall be at least five years beyond the first analysis year. The last year of the transportation plan's forecast period shall also be an analysis year.

(c) Define the 'Baseline' scenario for each of the analysis years to be the future transportation system that would result from current programs, composed of the following (except that projects listed in §93.134 and §93.135 need not be explicitly considered):

- (1) All in-place regionally significant highway and transit facilities, services and activities;
- (2) All ongoing travel demand management or transportation system management activities; and
- (3) Completion of all regionally significant projects, regardless of funding source, which are currently under construction or are undergoing right-of-way acquisition (except for hardship acquisition and protective buying); come from the first three years of the previously conforming transportation plan and/or TIP; or have completed the NEPA process. (For the first conformity determination on the transportation plan after November 24, 1993, a project may not be included in the "Baseline" scenario if one of the following major steps has not occurred within the past three years: NEPA process completion; start of final design; acquisition of a significant portion of the right-of-way; or approval of the plans, specifications and estimates. Such a project must be included in the "Action" scenario, as described in paragraph (d) of this section.)

(d) Define the 'Action' scenario for each of the analysis years as the transportation system that will result in that year from the implementation of the proposed transportation plan, TIPs adopted under it, and other expected regionally significant projects in the nonattainment area. It will include the following (except that projects listed in §93.134 and §93.135 need not be explicitly considered):

- (1) All facilities, services, and activities in the 'Baseline' scenario;
- (2) Completion of all TCMs and regionally significant projects (including facilities, services, and activities) specifically identified in the proposed transportation plan which will be operational or in effect in the analysis year, except that regulatory TCMs may not be assumed to begin at a future time unless the regulation is already adopted by the enforcing jurisdiction or the TCM is identified in the applicable implementation plan;
- (3) All travel demand management programs and transportation system management activities known to the MPO, but not included in the applicable implementation plan or utilizing any Federal funding or approval, which have been fully adopted and/or funded by the enforcing jurisdiction or sponsoring agency since the last conformity determination on the transportation plan;
- (4) The incremental effects of any travel demand management programs and transportation system management activities known to the MPO, but not included in the applicable implementation plan or utilizing any Federal funding or approval, which were adopted and/or funded prior to the date of the last conformity determination on the transportation plan, but which have been modified since then to be more stringent or effective;
- (5) Completion of all expected regionally significant highway and transit projects which are not from a conforming transportation plan and TIP; and
- (6) Completion of all expected regionally significant non-FHWA/FTA highway and transit projects that have clear funding sources and commitments leading toward their implementation and completion by the analysis year.

(e) Estimate the emissions predicted to result in each analysis year from travel on the transportation systems defined by the 'Baseline' and 'Action' scenarios and determine the difference in regional VOC and NO_x emissions (unless the Administrator determines that additional reductions of NO_x would not contribute to attainment) between the two scenarios for ozone nonattainment areas and the difference in CO emissions between the two scenarios for CO nonattainment areas. The analysis must be performed for each of the analysis years according to the requirements of §93.130. Emissions in milestone years which are between the analysis years may be determined by interpolation.

(f) This criterion is met if the regional VOC and NO_x emissions (for ozone nonattainment areas) and CO emissions (for CO nonattainment areas) predicted in the 'Action' scenario are less than the emissions predicted from the 'Baseline' scenario in each analysis year, and if this can reasonably be expected to be true in the periods between the first milestone year and the analysis years. The regional analysis must show that the 'Action' scenario contributes to a reduction in emissions from the 1990 emissions by any nonzero amount.

§93.123 Criteria and procedures: Interim period reductions in ozone and CO areas (TIP).

(a) A TIP must contribute to emissions reductions in ozone and CO nonattainment areas. This criterion applies during the interim and transitional periods only, except as otherwise provided in §93.136. It applies to the net effect on emissions of all projects contained in a new or revised TIP. This criterion may be satisfied if a regional emissions analysis is performed as described in paragraphs (b) through (f) of this section.

(b) Determine the analysis years for which emissions are to be estimated. The first analysis year shall be no later than the first milestone year (1995 in CO nonattainment areas and 1996 in ozone nonattainment areas). The analysis years shall be no more than ten years apart. The second analysis year shall be either the attainment year for the area, or if the attainment year is the same as the first analysis year or earlier, the second analysis year shall be at least five years beyond the first analysis year. The last year of the transportation plan's forecast period shall also be an analysis year.

(c) Define the 'Baseline' scenario as the future transportation system that would result from current programs, composed of the following (except that projects listed in §93.134 and §93.135 need not be explicitly considered):

- (1) All in-place regionally significant highway and transit facilities, services and activities;
- (2) All ongoing travel demand management or transportation system management activities; and
- (3) Completion of all regionally significant projects, regardless of funding source, which are currently under construction or are undergoing right-of-way acquisition (except for hardship acquisition and protective buying); come from the first three years of the previously conforming TIP; or have completed the NEPA process. (For the first conformity determination on the TIP after November 24, 1993, a project may not be included in the "Baseline" scenario if one of the following major steps has not occurred within the past three years: NEPA process completion; start of final design; acquisition of a significant portion of the right-of-way; or approval of the plans, specifications and estimates. Such a project must be included in the "Action" scenario, as described in paragraph (d) of this section.)

(d) Define the 'Action' scenario as the future transportation system that will result from the implementation of the proposed TIP and other expected regionally significant projects in the nonattainment area in the timeframe of the transportation plan. It will include the following (except that projects listed in §93.134 and §93.135 need not be explicitly considered):

- (1) All facilities, services, and activities in the 'Baseline' scenario;
- (2) Completion of all TCMs and regionally significant projects (including facilities, services, and activities) included in the proposed TIP, except that regulatory TCMs may not be assumed to begin at a future time unless the regulation is already adopted by the enforcing jurisdiction or the TCM is contained in the applicable implementation plan;
- (3) All travel demand management programs and transportation system management activities known to the MPO, but not included in the applicable implementation plan or utilizing any Federal funding or approval, which have been fully adopted and/or funded by the enforcing jurisdiction or sponsoring agency since the last conformity determination on the TIP;
- (4) The incremental effects of any travel demand management programs and transportation system management activities known to the MPO, but not included in the applicable implementation plan or utilizing any Federal funding or approval, which were adopted and/or funded prior to the date of the last conformity determination on the TIP, but which have been modified since then to be more stringent or effective;
- (5) Completion of all expected regionally significant highway and transit projects which are not from a conforming transportation plan and TIP; and
- (6) Completion of all expected regionally significant non-FHWA/FTA highway and transit projects that have clear funding sources and commitments leading toward their implementation and completion by the analysis year.

(e) Estimate the emissions predicted to result in each analysis year from travel on the transportation systems defined by the 'Baseline' and 'Action' scenarios, and determine the difference in regional VOC and NO_x emissions (unless the Administrator determines that additional reductions of NO_x would not contribute to attainment) between the two scenarios for ozone nonattainment areas and the difference in CO emissions between the two scenarios for CO nonattainment areas. The analysis must be performed for each of the analysis years according to the requirements of §93.130. Emissions in milestone years which are between analysis years may be determined by interpolation.

(f) This criterion is met if the regional VOC and NO_x emissions in ozone nonattainment areas and CO emissions in CO nonattainment areas predicted in the 'Action' scenario are less than the emissions predicted from the 'Baseline' scenario in each analysis year, and if this can reasonably be expected to be true in the period between the analysis years. The regional analysis must show that the 'Action' scenario contributes to a reduction in emissions from the 1990 emissions by any nonzero amount.

§93.124 Criteria and procedures: Interim period reductions for ozone and CO areas (project not from a plan and TIP).

A transportation project which is not from a conforming transportation plan and TIP must contribute to emissions reductions in ozone and CO nonattainment areas. This criterion applies during the interim and transitional periods only, except as otherwise provided in §93.136. This criterion is satisfied if a regional emissions analysis is performed which meets the requirements of §93.122 and which includes the transportation plan and project in the 'Action' scenario. If the project which is not from a conforming transportation plan and TIP is a modification of a project currently in the plan or TIP, the 'Baseline' scenario must include the project with its original design concept and scope, and the 'Action' scenario must include the project with its new design concept and scope.

§93.125 Criteria and procedures: Interim period reductions for PM₁₀ and NO₂ areas (transportation plan).

(a) A transportation plan must contribute to emission reductions or must not increase emissions in PM₁₀ and NO₂ nonattainment areas. This criterion applies only during the interim and transitional periods. It applies to the net effect on emissions of all projects contained in a new or revised transportation plan. This criterion may be satisfied if the requirements of either paragraph (b) or (c) of this section are met.

(b) Demonstrate that implementation of the plan and all other regionally significant projects expected in the nonattainment area will contribute to reductions in emissions of PM₁₀ in a PM₁₀ nonattainment area (and of each transportation-related precursor of PM₁₀ in PM₁₀ nonattainment areas if the EPA Regional Administrator or the director of the State air agency has made a finding that such precursor emissions from within the nonattainment area are a significant contributor to the PM₁₀ nonattainment problem and has so notified the MPO and DOT) and of NO_x in an NO₂ nonattainment area, by performing a regional emissions analysis as follows:

(1) Determine the analysis years for which emissions are to be estimated. Analysis years shall be no more than ten years apart. The first analysis year shall be no later than 1996 (for NO₂ areas) or four years and six months following the date of designation (for PM₁₀ areas). The second analysis year shall be either the attainment year for the area, or if the attainment year is the same as the first analysis year or earlier, the second analysis year shall be at least five years beyond the first analysis year. The last year of the transportation plan's forecast period shall also be an analysis year.

(2) Define for each of the analysis years the "Baseline" scenario, as defined in §93.122(c), and the "Action" scenario, as defined in §93.122(d).

(3) Estimate the emissions predicted to result in each analysis year from travel on the transportation systems defined by the "Baseline" and "Action" scenarios and determine the difference between the two scenarios in regional PM₁₀ emissions in a PM₁₀ nonattainment area (and transportation-related precursors of PM₁₀ in PM₁₀ nonattainment areas if the EPA Regional Administrator or the director of the State air agency has made a finding that such precursor emissions from within the nonattainment area are a significant contributor to the PM₁₀ nonattainment problem and has so notified the MPO and DOT) and in NO_x emissions in an NO₂ nonattainment area. The analysis must be performed for each of the analysis years according to the requirements of §93.130. The analysis must address the periods between the analysis years and the periods between 1990, the first milestone year (if any), and the first of the analysis years. Emissions in milestone years which are between the analysis years may be determined by interpolation.

(4) Demonstrate that the regional PM₁₀ emissions and PM₁₀ precursor emissions, where applicable, (for PM₁₀ nonattainment areas) and NO_x emissions (for NO₂ nonattainment areas) predicted in the 'Action' scenario are less than the emissions predicted from the 'Baseline' scenario in each analysis year, and that this can reasonably be expected to be true in the periods between the first milestone year (if any) and the analysis years.

(c) Demonstrate that when the projects in the transportation plan and all other regionally significant projects expected in the nonattainment area are implemented, the transportation system's total highway and transit emissions of PM₁₀ in a PM₁₀ nonattainment area (and transportation-related precursors of PM₁₀ in PM₁₀ nonattainment areas if the EPA Regional Administrator or the director of the State air agency has made a finding that such precursor emissions from within the nonattainment area are a significant contributor to the PM₁₀ nonattainment problem and has so notified the MPO and DOT) and of NO_x in an NO₂ nonattainment area will not be greater than baseline levels, by performing a regional emissions analysis as follows:

(1) Determine the baseline regional emissions of PM₁₀ and PM₁₀ precursors, where applicable (for PM₁₀ nonattainment areas) and NO_x (for NO₂ nonattainment areas) from highway and transit sources. Baseline emissions are those estimated to have occurred during calendar year 1990, unless the implementation plan revision required by §51.396 of this chapter defines the baseline emissions for a PM₁₀ area to be those occurring in a different calendar year for which a baseline emissions inventory was developed for the purpose of developing a control strategy implementation plan.

(2) Estimate the emissions of the applicable pollutant(s) from the entire transportation system, including projects in the transportation plan and TIP and all other regionally significant projects in the nonattainment area, according to the requirements of §93.130. Emissions shall be estimated for analysis years which are no more than ten years apart. The first analysis year shall be no later than 1996 (for NO₂ areas) or four years and six months following the date of designation (for PM₁₀ areas). The second analysis year shall be either the attainment year for the area, or if the attainment year is the same as the first analysis year or earlier, the second analysis year shall be at least five years beyond the first analysis year. The last year of the transportation plan's forecast period shall also be an analysis year.

(3) Demonstrate that for each analysis year the emissions estimated in paragraph (c)(2) of this section are no greater than baseline emissions of PM₁₀ and PM₁₀ precursors, where applicable (for PM₁₀ nonattainment areas) or NO_x (for NO₂ nonattainment areas) from highway and transit sources.

§93.126 Criteria and procedures: Interim period reductions for PM₁₀ and NO₂ areas (TIP).

(a) A TIP must contribute to emission reductions or must not increase emissions in PM₁₀ and NO₂ nonattainment areas. This criterion applies only during the interim and transitional periods. It applies to the net effect on emissions of all projects contained in a new or revised TIP. This criterion may be satisfied if the requirements of either paragraph (b) or paragraph (c) of this section are met.

(b) Demonstrate that implementation of the plan and TIP and all other regionally significant projects expected in the nonattainment area will contribute to reductions in emissions of PM₁₀ in a PM₁₀ nonattainment area (and transportation-related precursors of PM₁₀ in PM₁₀ nonattainment areas if the EPA Regional Administrator or the director of the State air agency has made a finding that such precursor emissions from within the nonattainment area are a significant contributor to the PM₁₀ nonattainment problem and has so notified the MPO and DOT) and of NO_x in an NO₂ nonattainment area, by performing a regional emissions analysis as follows:

(1) Determine the analysis years for which emissions are to be estimated, according to the requirements of §93.125(b)(1).

(2) Define for each of the analysis years the "Baseline" scenario, as defined in §93.123(c), and the "Action" scenario, as defined in §93.123(d).

(3) Estimate the emissions predicted to result in each analysis year from travel on the transportation systems defined by the "Baseline" and "Action" scenarios as required by §93.125(b)(3), and make the demonstration required by §93.125(b)(4).

(c) Demonstrate that when the projects in the transportation plan and TIP and all other regionally significant projects expected in the area are implemented, the transportation system's total highway and transit emissions of PM₁₀ in a PM₁₀ nonattainment area (and transportation-related precursors of PM₁₀ in PM₁₀ nonattainment areas if the EPA Regional Administrator or the director of the State air agency has made a finding that such precursor emissions from within the nonattainment area are a significant contributor to the PM₁₀

nonattainment problem and has so notified the MPO and DOT) and of NO_x in an NO₂ nonattainment area will not be greater than baseline levels, by performing a regional emissions analysis as required by §93.125(c)(1)-(3).

§93.127 Criteria and procedures: Interim period reductions for PM₁₀ and NO₂ areas (project not from a plan and TIP).

A transportation project which is not from a conforming transportation plan and TIP must contribute to emission reductions or must not increase emissions in PM₁₀ and NO₂ nonattainment areas. This criterion applies during the interim and transitional periods only. This criterion is met if a regional emissions analysis is performed which meets the requirements of §93.125 and which includes the transportation plan and project in the 'Action' scenario. If the project which is not from a conforming transportation plan and TIP is a modification of a project currently in the transportation plan or TIP, and §93.125(b) is used to demonstrate satisfaction of this criterion, the 'Baseline' scenario must include the project with its original design concept and scope, and the 'Action' scenario must include the project with its new design concept and scope.

§93.128 Transition from the interim period to the control strategy period.

(a) Control strategy implementation plan submissions.

(1) The transportation plan and TIP must be demonstrated to conform by 18 months from the date of the State's initial submission to EPA of each control strategy implementation plan establishing a motor vehicle emissions budget. If conformity is not determined by 18 months from the date of submission of such control strategy implementation plan, the conformity status of the transportation plan and TIP will lapse, and no new project-level conformity determinations may be made, until the transportation plan and TIP have been demonstrated to conform.

(2) For areas not yet in the control strategy period for a given pollutant, conformity shall be demonstrated using the motor vehicle emissions budget(s) in a submitted control strategy implementation plan revision for that pollutant beginning 90 days after submission, unless EPA declares such budget(s) inadequate for transportation conformity purposes. The motor vehicle emissions budget(s) may be used to determine conformity during the first 90 days after its submission if EPA agrees that the budget(s) are adequate for conformity purposes.

(b) Disapprovals.

(1) If EPA disapproves the submitted control strategy implementation plan revision and so notifies the State, MPO, and DOT, which initiates the sanction process under Clean Air Act sections 179 or 110(m), the conformity status of the transportation plan and TIP shall lapse 120 days after EPA's disapproval, and no new project-level conformity determinations may be made. No new transportation plan, TIP, or project may be found to conform until another control strategy implementation plan revision fulfilling the same Clean Air Act requirements is submitted and conformity to this submission is determined.

(2) Notwithstanding paragraph (b)(1) of this section, if EPA disapproves the submitted control strategy implementation plan revision but makes a protective finding, the conformity status of the transportation plan and TIP shall lapse on the date that highway sanctions as a result of the disapproval are imposed on the nonattainment area under section 179(b)(1) of the Clean Air Act. No new transportation plan, TIP, or project may be found to conform until another control strategy implementation plan revision fulfilling the same Clean Air Act requirements is submitted and conformity to this submission is determined.

(c) Failure to submit and incompleteness. For areas where EPA notifies the State, MPO, and DOT of the State's failure to submit or submission of an incomplete control strategy implementation plan revision, which initiates the sanction process under Clean Air Act sections 179 or 110(m), the conformity status of the transportation plan and TIP shall lapse on the date that highway sanctions are imposed on the nonattainment area for such failure under section 179(b)(1) of the Clean Air Act, unless the failure has been remedied and acknowledged by a letter from the EPA Regional Administrator.

(d) Federal implementation plans. When EPA promulgates a federal implementation plan that contains motor vehicle emissions budget(s) as a result of a State failure, the conformity lapse imposed by this section because of that State failure is removed.

(e) Projects. If the currently conforming transportation plan and TIP have not been demonstrated to conform according to transitional period criteria and procedures, the requirements of paragraphs (e)(1) and (2) of this section must be met.

(1) Before a FHWA/FTA project which is regionally significant and increases single-occupant vehicle capacity (a new general purpose highway on a new location or adding general purpose lanes) may be found to conform, the

State air agency must be consulted on how the emissions which the existing transportation plan and TIP's conformity determination estimates for the "Action" scenario (as required by §§51.436 through 51.446) compare to the motor vehicle emissions budget in the implementation plan submission or the projected motor vehicle emissions budget in the implementation plan under development.

(2) In the event of unresolved disputes on such project-level conformity determinations, the State air agency may escalate the issue to the Governor consistent with the procedure in §51.402(d), which applies for any State air agency comments on a conformity determination.

(f) Redetermination of conformity of the existing transportation plan and TIP according to the transitional period criteria and procedures.

(1) The redetermination of the conformity of the existing transportation plan and TIP according to transitional period criteria and procedures (as required by paragraphs (a)(1) and (d)(1) of this section) does not require new emissions analysis and does not have to satisfy the requirements of §§51.412 and 51.414 if:

(i) The control strategy implementation plan revision submitted to EPA uses the MPO's modeling of the existing transportation plan and TIP for its projections of motor vehicle emissions; and

(ii) The control strategy implementation plan does not include any transportation projects which are not included in the transportation plan and TIP.

(2) A redetermination of conformity as described in paragraph (f)(1) of this section is not considered a conformity determination for the purposes of §51.400(b)(4) or §51.400(c)(4) regarding the maximum intervals between conformity determinations. Conformity must be determined according to all applicable criteria and procedures of §51.410 within three years of the last determination which did not rely on paragraph (f)(1) of this section.

(g) Nonattainment areas which are not required to demonstrate reasonable further progress and attainment. If an area listed in §93.136 submits a control strategy implementation plan revision, the requirements of paragraphs (a) and (e) of this section apply. Because the areas listed in §93.136 are not required to demonstrate reasonable further progress and attainment the provisions of paragraphs (b) and (c) of this section do not apply to these areas.

(h) Maintenance plans. If a control strategy implementation plan revision is not submitted to EPA but a maintenance plan required by Clean Air Act section 175A is submitted to EPA, the requirements of paragraph (a) or (d) of this section apply, with the maintenance plan submission treated as a "control strategy implementation plan revision" for the purposes of those requirements.

§93.129 Requirements for adoption or approval of projects by recipients of funds designated under title 23 U.S.C. or the Federal Transit Act.

No recipient of federal funds designated under title 23 U.S.C. or the Federal Transit Act shall adopt or approve a regionally significant highway or transit project, regardless of funding source, unless there is a currently conforming transportation plan and TIP consistent with the requirements of §93.114 and the requirements of one of the following paragraphs (a) through (e) are met:

(a) The project comes from a conforming plan and program consistent with the requirements of §93.115;

(b) The project is included in the regional emissions analysis supporting the currently conforming TIP's conformity determination, even if the project is not strictly "included" in the TIP for the purposes of MPO project selection or endorsement, and the project's design concept and scope have not changed significantly from those which were included in the regional emissions analysis, or in a manner which would significantly impact use of the facility;

(c) During the control strategy or maintenance period, the project is consistent with the motor vehicle emissions budget(s) in the applicable implementation plan consistent with the requirements of §93.120;

(d) During Phase II of the interim period, the project contributes to emissions reductions or does not increase emissions consistent with the requirements of §93.124 (in ozone and CO nonattainment areas) or §93.127 (in PM₁₀ and NO₂ nonattainment areas); or

(e) During the transitional period, the project satisfies the requirements of both paragraphs (c) and (d) of this section.

§93.130 Procedures for determining regional transportation-related emissions.

(a) General requirements.

(1) The regional emissions analysis for the transportation plan, TIP, or project not from a conforming plan and TIP shall include all regionally significant projects expected in the nonattainment or maintenance area, including FHWA/FTA projects proposed in the transportation plan and TIP and all other regionally significant projects which are disclosed to the MPO as required by §93.105. Projects which are not regionally significant are not required to be explicitly modeled, but VMT from such projects must be estimated in accordance with reasonable professional practice. The effects of TCMs and similar projects that are not regionally significant may also be estimated in accordance with reasonable professional practice.

(2) The emissions analysis may not include for emissions reduction credit any TCMs which have been delayed beyond the scheduled date(s) until such time as implementation has been assured. If the TCM has been partially implemented and it can be demonstrated that it is providing quantifiable emission reduction benefits, the emissions analysis may include that emissions reduction credit.

(3) Emissions reduction credit from projects, programs, or activities which require a regulation in order to be implemented may not be included in the emissions analysis unless the regulation is already adopted by the enforcing jurisdiction. Adopted regulations are required for demand management strategies for reducing emissions which are not specifically identified in the applicable implementation plan, and for control programs which are external to the transportation system itself, such as tailpipe or evaporative emission standards, limits on gasoline volatility, inspection and maintenance programs, and oxygenated or reformulated gasoline or diesel fuel. A regulatory program may also be considered to be adopted if an opt-in to a Federally enforced program has been approved by EPA, if EPA has promulgated the program (if the control program is a Federal responsibility, such as tailpipe standards), or if the Clean Air Act requires the program without need for individual State action and without any discretionary authority for EPA to set its stringency, delay its effective date, or not implement the program.

(4) Notwithstanding paragraph (a)(3) of this section, during the transitional period, control measures or programs which are committed to in an implementation plan submission as described in §§93.118 - 93.120, but which has not received final EPA action in the form of a finding of incompleteness, approval, or disapproval may be assumed for emission reduction credit for the purpose of demonstrating that the requirements of §§93.118 - 93.120 are satisfied.

(5) A regional emissions analysis for the purpose of satisfying the requirements of §§93.122 - 93.124 may account for the programs in paragraph (a)(4) of this section, but the same assumptions about these programs shall be used for both the "Baseline" and "Action" scenarios.

(6) Ambient temperatures shall be consistent with those used to establish the emissions budget in the applicable implementation plan. Factors other than temperatures, for example the fraction of travel in a hot stabilized engine mode, may be modified after interagency consultation according to §93.105 if the newer estimates incorporate additional or more geographically specific information or represent a logically estimated trend in such factors beyond the period considered in the applicable implementation plan.

(b) Serious, severe, and extreme ozone nonattainment areas and serious carbon monoxide areas after January 1, 1995. Estimates of regional transportation-related emissions used to support conformity determinations must be made according to procedures which meet the requirements in paragraphs (b)(1) through (5) of this section.

(1) A network-based transportation demand model or models relating travel demand and transportation system performance to land-use patterns, population demographics, employment, transportation infrastructure, and transportation policies must be used to estimate travel within the metropolitan planning area of the nonattainment area. Such a model shall possess the following attributes:

(i) The modeling methods and the functional relationships used in the model(s) shall in all respects be in accordance with acceptable professional practice, and reasonable for purposes of emission estimation;

(ii) The network-based model(s) must be validated against ground counts for a base year that is not more than 10 years prior to the date of the conformity determination. Land use, population, and other inputs must be based on the best available information and appropriate to the validation base year;

(iii) For peak-hour or peak-period traffic assignments, a capacity sensitive assignment methodology must be used;

(iv) Zone-to-zone travel times used to distribute trips between origin and destination pairs must be in reasonable agreement with the travel times which result from the process of assignment of trips to network links. Where use of transit currently is anticipated to be a significant factor in satisfying transportation demand, these times should also be used for modeling mode splits;

(v) Free-flow speeds on network links shall be based on empirical observations;

(vi) Peak and off-peak travel demand and travel times must be provided;

(vii) Trip distribution and mode choice must be sensitive to pricing, where pricing is a significant factor, if the network model is capable of such determinations and the necessary information is available;

(viii) The model(s) must utilize and document a logical correspondence between the assumed scenario of land development and use and the future transportation system for which emissions are being estimated. Reliance on a formal land-use model is not specifically required but is encouraged;

(ix) A dependence of trip generation on the accessibility of destinations via the transportation system (including pricing) is strongly encouraged but not specifically required, unless the network model is capable of such determinations and the necessary information is available;

(x) A dependence of regional economic and population growth on the accessibility of destinations via the transportation system is strongly encouraged but not specifically required, unless the network model is capable of such determinations and the necessary information is available; and

(xi) Consideration of emissions increases from construction-related congestion is not specifically required.

(2) Highway Performance Monitoring System (HPMS) estimates of vehicle miles traveled shall be considered the primary measure of vehicle miles traveled within the portion of the nonattainment or maintenance area and for the functional classes of roadways included in HPMS, for urban areas which are sampled on a separate urban area basis. A factor (or factors) shall be developed to reconcile and calibrate the network-based model estimates of vehicle miles traveled in the base year of its validation to the HPMS estimates for the same period, and these factors shall be applied to model estimates of future vehicle miles traveled. In this factoring process, consideration will be given to differences in the facility coverage of the HPMS and the modeled network description. Departure from these procedures is permitted with the concurrence of DOT and EPA.

(3) Reasonable methods shall be used to estimate nonattainment area vehicle travel on off-network roadways within the urban transportation planning area, and on roadways outside the urban transportation planning area.

(4) Reasonable methods in accordance with good practice must be used to estimate traffic speeds and delays in a manner that is sensitive to the estimated volume of travel on each roadway segment represented in the network model.

(c) Areas which are not serious, severe, or extreme ozone nonattainment areas or serious carbon monoxide areas, or before January 1, 1995.

(1) Procedures which satisfy some or all of the requirements of paragraph (b) of this section shall be used in all areas not subject to paragraph (b) of this section in which those procedures have been the previous practice of the MPO.

(2) Regional emissions may be estimated by methods which do not explicitly or comprehensively account for the influence of land use and transportation infrastructure on vehicle miles traveled and traffic speeds and congestion. Such methods must account for VMT growth by extrapolating historical VMT or projecting future VMT by considering growth in population and historical growth trends for vehicle miles travelled per person. These methods must also consider future economic activity, transit alternatives, and transportation system policies.

(d) Projects not from a conforming plan and TIP in isolated rural nonattainment and maintenance areas. This paragraph applies to any nonattainment or maintenance area or any portion thereof which does not have a metropolitan transportation plan or TIP and whose projects are not part of the emissions analysis of any MPO's metropolitan transportation plan or TIP (because the nonattainment or maintenance area or portion thereof does not contain a metropolitan planning area or portion of a metropolitan planning area and is not part of a Metropolitan Statistical Area or Consolidated Metropolitan Statistical Area which is or contains a nonattainment or maintenance area).

(1) Conformity demonstrations for projects in these areas may satisfy the requirements of §§93.120, 93.124, and 93.127 with one regional emissions analysis which includes all the regionally significant projects in the nonattainment or maintenance area (or portion thereof).

(2) The requirements of §93.120 shall be satisfied according to the procedures in §93.120(c), with references to the "transportation plan" taken to mean the statewide transportation plan.

(3) The requirements of §§93.124 and 93.127 which reference "transportation plan" or "TIP" shall be taken to mean those projects in the statewide transportation plan or statewide TIP which are in the nonattainment or maintenance area (or portion thereof).

(4) - The requirement of §93.129(b) shall be satisfied if:

(i) The project is included in the regional emissions analysis which includes all regionally significant highway and transportation projects in the nonattainment or maintenance area (or portion thereof) and supports the most recent conformity determination made according to the requirements of §§93.120, 93.124, or 93.127 (as modified by paragraphs (d)(2) and (d)(3) of this section), as appropriate for the time period and pollutant; and

(ii) The project's design concept and scope have not changed significantly from those which were included in the regional emissions analysis, or in a manner which would significantly impact use of the facility.

(e) PM10 from construction-related fugitive dust.

(1) For areas in which the implementation plan does not identify construction-related fugitive PM10 as a contributor to the nonattainment problem, the fugitive PM10 emissions associated with highway and transit project construction are not required to be considered in the regional emissions analysis.

(2) In PM10 nonattainment and maintenance areas with implementation plans which identify construction-related fugitive PM10 as a contributor to the nonattainment problem, the regional PM10 emissions analysis shall consider construction-related fugitive PM10 and shall account for the level of construction activity, the fugitive PM10 control measures in the applicable implementation plan, and the dust-producing capacity of the proposed activities.

§93.131 Procedures for determining localized CO and PM₁₀ concentrations (hot-spot analysis).

(a) In the following cases, CO hot-spot analyses must be based on the applicable air quality models, data bases, and other requirements specified in 40 CFR part 51 Appendix W ("Guideline on Air Quality Models (Revised)" (1988), supplement A (1987) and supplement B (1993), EPA publication no. 450/2-78-027R), unless, after the interagency consultation process described in §93.105 and with the approval of the EPA Regional Administrator, these models, data bases, and other requirements are determined to be inappropriate:

(1) For projects in or affecting locations, areas, or categories of sites which are identified in the applicable implementation plan as sites of current violation or possible current violation;

(2) For those intersections at Level-of-Service D, E, or F, or those that will change to Level-of-Service D, E, or F because of increased traffic volumes related to a new project in the vicinity;

(3) For any project involving or affecting any of the intersections which the applicable implementation plan identifies as the top three intersections in the nonattainment or maintenance area based on the highest traffic volumes;

(4) For any project involving or affecting any of the intersections which the applicable implementation plan identifies as the top three intersections in the nonattainment or maintenance area based on the worst Level-of-Service; and

(5) Where use of the "Guideline" models is practicable and reasonable given the potential for violations.

(b) Other procedures or intersection selection criteria than paragraph (a) may be used with the current approval of EPA Regional Administrator *** (local addition to EPA regulations)

(cb) In cases other than those described in paragraph (a) of this section, other quantitative methods may be used if they represent reasonable and common professional practice.

(ed) CO hot-spot analyses must include the entire project, and may be performed only after the major design features which will significantly impact CO concentrations have been identified. The background concentration can be estimated using the ratio of future to current traffic multiplied by the ratio of future to current emission factors.

(de) PM₁₀ hot-spot analysis must be performed for projects which are located at sites at which violations have been verified by monitoring, and at sites which have essentially identical vehicle and roadway emission and dispersion characteristics (including sites near one at which a violation has been monitored). The projects which require PM-10 hot-spot analysis shall be determined through the interagency consultation process required in §93.105. In PM-10 nonattainment and maintenance areas, new or expanded bus and rail terminals and transfer points which increase the number of diesel vehicles congregating at a single location require hot-spot analysis. DOT may choose to make a categorical conformity determination on bus and rail terminals or transfer points based on appropriate modeling of various terminal sizes, configurations, and activity levels. The requirements of this paragraph for quantitative hot-spot analysis will not take effect until EPA releases modeling guidance on this subject and announces in the Federal Register that these requirements are in effect.

(ef) Hot-spot analysis assumptions must be consistent with those in the regional emissions analysis for those inputs which are required for both analyses.

(fg) PM₁₀ or CO mitigation or control measures shall be assumed in the hot-spot analysis only where there are written commitments from the project sponsor and/or operator to the implementation of such measures, as required by §93.133(a).

(gh) CO and PM₁₀ hot-spot analyses are not required to consider construction-related activities which cause temporary increases in emissions. Each site which is affected by construction-related activities shall be considered separately, using established "Guideline" methods. Temporary increases are defined as those which occur only during the construction phase and last five years or less at any individual site.

§93.132 Using the motor vehicle emissions budget in the applicable implementation plan (or implementation plan submission).

(a) In interpreting an applicable implementation plan (or implementation plan submission) with respect to its motor vehicle emissions budget(s), the MPO and DOT may not infer additions to the budget(s) that are not explicitly intended by the implementation plan (or submission). Unless the implementation plan explicitly quantifies the amount by which motor vehicle emissions could be higher while still allowing a demonstration of compliance with the milestone, attainment, or maintenance requirement and explicitly states an intent that some or all of this additional amount should be available to the MPO and DOT in the emission budget for conformity purposes, the MPO may not interpret the budget to be higher than the implementation plan's estimate of future emissions. This applies in particular to applicable implementation plans (or submissions) which demonstrate that after implementation of control measures in the implementation plan:

(1) Emissions from all sources will be less than the total emissions that would be consistent with a required demonstration of an emissions reduction milestone;

(2) Emissions from all sources will result in achieving attainment prior to the attainment deadline and/or ambient concentrations in the attainment deadline year will be lower than needed to demonstrate attainment; or

(3) Emissions will be lower than needed to provide for continued maintenance.

(b) If an applicable implementation plan submitted before November 24, 1993 demonstrates that emissions from all sources will be less than the total emissions that would be consistent with attainment and quantifies that "safety margin," the State may submit a SIP revision which assigns some or all of this safety margin to highway and transit mobile sources for the purposes of conformity. Such a SIP revision, once it is endorsed by the Governor and has been subject to a public hearing, may be used for the purposes of transportation conformity before it is approved by EPA.

(c) A conformity demonstration shall not trade emissions among budgets which the applicable implementation plan (or implementation plan submission) allocates for different pollutants or precursors, or among budgets allocated to motor vehicles and other sources, without a SIP revision or a SIP which establishes mechanisms for such trades.

(d) If the applicable implementation plan (or implementation plan submission) estimates future emissions by geographic subarea of the nonattainment area, the MPO and DOT are not required to consider this to establish subarea budgets, unless the applicable implementation plan (or implementation plan submission) explicitly indicates an intent to create such subarea budgets for the purposes of conformity.

(e) If a nonattainment area includes more than one MPO, the SIP may establish motor vehicle emissions budgets for each MPO, or else the MPOs must collectively make a conformity determination for the entire nonattainment area.

§93.133 Enforceability of design concept and scope and project-level mitigation and control measures.

(a) Prior to determining that a transportation project is in conformity, the MPO, other recipient of funds designated under title 23 U.S.C. or the Federal Transit Act, FHWA, or FTA must obtain from the project sponsor and/or operator written commitments to implement in the construction of the project and operation of the resulting facility or service any project-level mitigation or control measures which are identified as conditions for NEPA process completion with respect to local CO impacts. Before making conformity determinations written commitments must also be obtained for project-level mitigation or control measures which are conditions for making conformity determinations for a transportation plan or TIP and included in the project design concept and

scope which is used in the regional emissions analysis required by §§93.118 - 93.120 and §§93.122 - 93.124 or used in the project-level hot-spot analysis required by §§93.116 and 93.121.

(b) Project sponsors voluntarily committing to mitigation measures to facilitate positive conformity determinations must comply with the obligations of such commitments.

(c) ~~The implementation plan revision required in §51.206 of this chapter shall provide that~~ **Written commitments to mitigation measures must be obtained from project sponsors ^{*** (EPA Region 9 amendment to EPA regulation)} prior to a positive conformity determination, and that project sponsors must comply with such commitments.**

(d) During the control strategy and maintenance periods, if the MPO or project sponsor believes the mitigation or control measure is no longer necessary for conformity, the project sponsor or operator may be relieved of its obligation to implement the mitigation or control measure if it can demonstrate that the requirements of §§93.116, 93.118, and 93.119 are satisfied without the mitigation or control measure, and so notifies the agencies involved in the interagency consultation process. The MPO and DOT must confirm that the transportation plan and TIP still satisfy the requirements of §§93.118 and 93.119 and that the project still satisfies the requirements of §93.116, and therefore that the conformity determinations for the transportation plan, TIP, and project are still valid.

§93.134 Exempt projects.

Notwithstanding the other requirements of this subpart, highway and transit projects of the types listed in Table 2 are exempt from the requirement that a conformity determination be made. Such projects may proceed toward implementation even in the absence of a conforming transportation plan and TIP. A particular action of the type listed in Table 2 is not exempt if the MPO in consultation with other agencies (see §93.105(c)(1)(iii)), the EPA, and the FHWA (in the case of a highway project) or the FTA (in the case of a transit project) concur that it has potentially adverse emissions impacts for any reason. States and MPOs must ensure that exempt projects do not interfere with TCM implementation.

Table 2. - Exempt Projects

SAFETY

Railroad/highway crossing
Hazard elimination program
Safer non-Federal-aid system roads
Shoulder improvements
Increasing sight distance
Safety improvement program
Traffic control devices and operating assistance other than signalization projects
Railroad/highway crossing warning devices
Guardrails, median barriers, crash cushions
Pavement resurfacing and/or rehabilitation
Pavement marking demonstration
Emergency relief (23 U.S.C. 125)
Fencing
Skid treatments
Safety roadside rest areas
Adding medians
Truck climbing lanes outside the urbanized area
Lighting improvements
Widening narrow pavements or reconstructing bridges (no additional travel lanes)
Emergency truck pullovers

MASS TRANSIT

Operating assistance to transit agencies
Purchase of support vehicles
Rehabilitation of transit vehicles¹
Purchase of office, shop, and operating equipment for existing facilities
Purchase of operating equipment for vehicles (e.g., radios, fareboxes, lifts, etc.)
Construction or renovation of power, signal, and communications systems
Construction of small passenger shelters and information kiosks
Reconstruction or renovation of transit buildings and structures (e.g., rail or bus buildings, storage and maintenance facilities, stations, terminals, and ancillary structures)
Rehabilitation or reconstruction of track structures, track, and trackbed in existing rights-of-way
Purchase of new buses and rail cars to replace existing vehicles or for minor expansions of the fleet¹
Construction of new bus or rail storage/maintenance facilities categorically excluded in 23 CFR 771

AIR QUALITY

Continuation of ride-sharing and van-pooling promotion activities at current levels
Bicycle and pedestrian facilities

Table 2 (con't)

OTHER

Specific activities which do not involve or lead directly to construction, such as:
 Planning and technical studies
 Grants for training and research programs
 Planning activities conducted pursuant to titles 23 and 49 U.S.C

Federal-aid systems revisions
 Engineering to assess social, economic, and environmental effects of the proposed action or alternatives to that action
 Noise attenuation
 Advance land acquisitions (23 CFR 712 or 23 CFR 771)
 Acquisition of scenic easements
 Plantings, landscaping, etc.
 Sign removal
 Directional and informational signs
 Transportation enhancement activities (except rehabilitation and operation of historic transportation buildings, structures, or facilities)
 Repair of damage caused by natural disasters, civil unrest, or terrorist acts, except projects involving substantial functional, locational or capacity changes

¹In PM₁₀ nonattainment or maintenance areas, such projects are exempt only if they are in compliance with control measures in the applicable implementation plan.

§93.135 Projects exempt from regional emissions analyses.

Notwithstanding the other requirements of this subpart, highway and transit projects of the types listed in Table 3 are exempt from regional emissions analysis requirements. The local effects of these projects with respect to CO or PM₁₀ concentrations must be considered to determine if a hot-spot analysis is required prior to making a project-level conformity determination. These projects may then proceed to the project development process even in the absence of a conforming transportation plan and TIP. A particular action of the type listed in Table 3 is not exempt from regional emissions analysis if the MPO in consultation with other agencies (see §93.105(c)(1)(iii)), the EPA, and the FHWA (in the case of a highway project) or the FTA (in the case of a transit project) concur that it has potential regional impacts for any reason.

Table 3. - Projects Exempt From Regional Emissions Analyses

Intersection channelization projects
 Intersection signalization projects at individual intersections
 Interchange reconfiguration projects
 Changes in vertical and horizontal alignment
 Truck size and weight inspection stations
 Bus terminals and transfer points

§93.136 Special provisions for nonattainment areas which are not required to demonstrate reasonable further progress and attainment.

- (a) Application. This section applies in the following areas:
- (1) Rural transport ozone nonattainment areas;
 - (2) Marginal ozone areas;
 - (3) Submarginal ozone areas;
 - (4) Transitional ozone areas;
 - (5) Incomplete data ozone areas;
 - (6) Moderate CO areas with a design value of 12.7 ppm or less; and
 - (7) Not classified CO areas.

(b) Default conformity procedures. The criteria and procedures in §§93.122 - 93.124 will remain in effect throughout the control strategy period for transportation plans, TIPs, and projects (not from a conforming plan and TIP) in lieu of the procedures in §§93.118 - 93.120, except as otherwise provided in paragraph (c) of this section.

(c) **Optional conformity procedures.** The State or MPO may voluntarily develop an attainment demonstration and corresponding motor vehicle emissions budget like those required in areas with higher nonattainment classifications. In this case, the State must submit an implementation plan revision which contains that budget and attainment demonstration. Once EPA has approved this implementation plan revision, the procedures in §§93.118 - 93.120 apply in lieu of the procedures in §§93.122 - 93.124.

BAY AREA AIR QUALITY MANAGEMENT DISTRICT



MANUAL OF PROCEDURES

This Manual of Procedures is designed to give technical assistance and guidance to persons subject to the rules and regulations of the Bay Area Air Quality Management District. Mention of trade names or commercial products does not imply the Bay Area Air Quality Management District's endorsement or recommendation for use.

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VOLUME II — ENGINEERING PERMITTING PROCEDURES

VOLUME III — LABORATORY POLICY AND PROCEDURES

VOLUME IV — SOURCE TEST POLICY AND PROCEDURES

**VOLUME V — CONTINUOUS EMISSION MONITORING AND
PROCEDURES**

VOLUME VI — AIR MONITORING PROCEDURES

Adopted by the Board of Directors of the Bay Area Air Quality Management District on September 5, 1979, to become effective on January 1, 1980, and amended on March 19, 1980.

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MANUAL OF PROCEDURES

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1. EVALUATION OF VISIBLE EMISSIONS

REF: Regs. 6-301, 6-303, 6-304,
10-1-302,
12-4-301, 12-4-302

1.1 INTRODUCTION

The following guidelines have been developed to assure the uniform evaluation of visible emissions by a trained observer, and should be utilized with every observation to the extent they are applicable, and to whatever extent time and physical circumstances reasonably permit.

1.2 OBSERVERS LOCATION

1.2.1 Observations shall be made such that the line of sight is approximately at a right angle (90°) to the path of the plume.

1.2.2 The plume should be observed against a suitable background, at its point of maximum obscuration. Whenever possible, black plumes should be evaluated using a blue sky background and white plumes should be evaluated using a dark contrasting background.

1.2.3 Daylight observations should be made with the observer facing away from the sun.

1.2.4 Observations during hours of darkness should be made with the aid of a light source. This source of light may be ambient or artificial depending upon prevailing conditions and should emanate from behind the plume, opposite the observer.

1.2.5 When evaluating an elevated source the observer should be located at a suitable distance from the source. This location, depending upon viewing conditions, should normally fall somewhere between two stack heights and a quarter of a mile from the source.

1.3 TIME INTERVAL BETWEEN READINGS

Readings shall be noted at approximately 15 seconds intervals during the observation. Each 15 second momentary observation recorded shall be deemed to represent the average value of emissions for that 15 second period.

Reading intervals up to 1 minute shall be permitted where the appearance of the emission does not vary during such interval.

1.4 INTENSITY AND DURATION OF EXCESSIVE VISIBLE EMISSIONS

Regulation 2 states that any visible emission as dark or darker than a Ringelmann #1, for more than 3 minutes in any 60 minute period, is considered to be excessive. Our current policies and procedures, recognizing the subjectivity of the Ringelmann system, specify that a visible emission must be as dark or darker than a Ringelmann 1 1/2 to be considered excessive.

1.5 WET PLUMES

Wet plumes are defined as "Those plumes where the presence of uncombined water is the only reason for the failure of an emission to meet the limitations of Regulations 6-301, 6-303 and 10-1-302.

The guidelines for the evaluation of "Wet" plumes are as follows:

1.5.1 Residual plume is that part of the plume which continues to exist after the apparent evaporation of the water droplets emitted.

1.5.2 No violations will be written on wet plume without a residual plume.

1.5.3 Residual plumes which appear, in the judgment of the viewer, to be more than Ringelmann #1 when the relative humidity is less than 60 percent, will be considered to be in violation.

1.5.4 Changes in staff practices will be publicized and made available, particularly to those known to us to be interested in regulations on wet plumes.

1.6 QUALIFICATION CRITERIA FOR EVALUATION OF VISIBLE EMISSIONS

1.6.1 Certification. The Inspector must qualify on both black and white plumes at the plume evaluation training school. Qualification on either plume shall consist of meeting the following requirements during both Daylight and Night training sessions.

Observe and successfully evaluate the opacity of one run of black smoke and one run of white smoke in accordance with the following requirements:

1.6.1.1 The deviation of any reading must not be greater than 15%.

1.6.1.2 The average deviation for both black and white runs must be less than 7.5%.

1.6.2 The following definitions apply:

1.6.2.1 A "run" consists of 25 consecutive observations.

1.6.2.2 "Single reading deviation" means the absolute value of the difference between the calibrated meter's reading and the Inspector's record on an individual observation. This single reading deviation is expressed as a percentage on the basis that each full Ringelmann number represents 20%. Each one quarter Ringelmann then represents 5%.

1.6.2.3 "Average deviation" of a run is obtained by adding the absolute values of all the single reading deviations of the run, disregarding plus and minus signs, and dividing by the total number of single readings in the run.

1.6.3 Maintenance of certification -

1.6.3.1 The Inspector must satisfactorily complete the Certification Procedure every 6 months (twice/year) in order to maintain certification.

2. INSPECTION CRITERIA FOR PHASE II GASOLINE VAPOR BALANCE SYSTEMS

REF: Reg. 8-7-601

2.1 INTRODUCTION

Regulation 8-7-305 requires that all equipment be maintained in good working order. The following criteria have been developed to insure uniformity in the evaluation of Phase II gasoline vapor balance systems and the following procedures are used during the inspection of such systems.

2.2 VAPOR BALANCE SYSTEMS

2.2.1 Only two first generation vapor balance systems are approved for use within the BAAQMD, OPE 7VA and Emco Wheaton A300. Any system installed after September 26, 1978 must be certified by the California Air Resources Board (CARB). The first generation systems require only the nozzle, vapor hose, and underground vapor piping. The state certified systems required the nozzle, shorter hoses, an anti-recirculation valve, on retail facilities, swivels at the nozzle and dispenser, and a flow limiter. A further prerequisite for state certification is a maximum allowable pressure drop, through the underground system, of .35 inches of water column at a flowrate of 50 CFH.

2.3 THE BAAQMD INSPECTION

2.3.1 Various items are checked by BAAQMD inspectors during the evaluation of Phase II vapor balance systems. Figure I-1 is the inspection sheet (Form I-24-79) used to determine compliance status of the system. The following are the procedures for filling out Form #I-24-79.

- 2.3.2 Station. Enter the name of the service station.
- 2.3.3 Address. Enter the street address of the service station.
- 2.3.4 City. Enter the city in which the service station is located.
- 2.3.5 Contact. Enter the name of the station owner or manager.
- 2.3.6 Phone. Enter the telephone number of the service station.
- 2.3.7 Date. Enter the date of the inspection.
- 2.3.8 Inspector. Enter the name of the person performing the inspection.
- 2.3.9 VN #. If a Violation Notice is issued enter the violation notice number. If no VN is issued enter "none". Do not leave this space blank.
- 2.3.10 Permit. Enter the Permit to Operate number. Do not leave this space blank.
- 2.3.11 No. of Self-Service Islands. Enter the number of self-service islands.
- 2.3.12 No. of Full-Service Islands. Enter the number of full-service islands.
- 2.3.13 Total No. of Dispensers. Enter the total number of dispensers.
- 2.3.14 No. of Unleaded Dispensers. Enter the number of unleaded dispensers.
- 2.3.15 No. of Regular Dispensers. Enter the number of regular grade dispensers.

2.3.16 No. of Premium Dispensers. Enter the number of premium grade dispensers.

2.3.17 Pump Number. If a diagram is included on the inspection sheet then enter the number from the diagram (1,2,3, etc.). If a diagram is not included or if the pumps are not numbered then enter the serial number on the dispenser. (Note the dispenser model number.)

2.3.18 Nozzle Type. Enter the manufacturer and model number of the nozzle. The vapor balance nozzles most encountered will be OPW 7VA, OPE 7VC, Emco-Wheaton A300 and Emco-Wheaton A3003.

2.3.19 Gas Grade. Enter P for Premium, R for Regular, UL for unleaded, and D for diesel.

On the following 12 items, enter a Y in the appropriate square on Form I-24-79 if the item is acceptable as installed and enter a N if the item is not acceptable.

2.3.20 Nozzle Type. The following vapor balance nozzles are acceptable: OPE 7VA, Emco-Wheaton A3003, OPW 7VA properly maintained and Emco-Wheaton A300 properly maintained.

2.3.21 Mounting Rack. Nozzle must be mounted securely and in such a manner that the vapor check valve is closed. (Insure that bellows are not compressed.)

2.3.22 Face Seal. The face seal must not be cracked, torn or missing. If the nozzle is not equipped with a separate face seal enter N/A.

2.3.23 Plastic Cup. The OPW 7VA nozzles are equipped with a white plastic cup that pushes against the back

surface of the face seal. If the cup is broken or cracked, vapor can leak from the nozzle. For all other nozzle types, enter N/A on I-27-79.

2.3.24 Ring or Rivet. The latch ring shall be secured in its specified position and rivets must not be loose or sheared off.

2.3.25 Bellows. The bellows should be clamped securely to the nozzle barrel and must not have cracks or tears or holes.

2.3.26 Flow Limiter. If the state certified Emco-Wheaton A3003 nozzle is used a flow limiter must be present on the product line. If any other nozzle except the OPW 7VC is being used then enter N/A/ The OPW 7VC is equipped with an internal flow limiter.

2.3.27 Swivels. If a state certified OPW 7VC or Emco-Wheaton A3003 nozzle is used there must be two swivels attached to the nozzle. If a first generation OPW 7VA or Emco-Wheaton A300 nozzle is being used and no swivels are present enter N/A.

2.3.28 Hose 9/8 Length. If a state certified nozzle is used the vapor and product hose lengths must be 8 and 9 feet respectively, or 1/2 the island width plus 6 feet. If a first generation nozzle is used, any hose length is acceptable.

2.3.29 Recirculation Trap. If a state certified balance system is installed, an anti-recirculation valve must be included on commercial retail facilities. Acceptable are OPW 78 series or Emco-Wheaton A-8. These may be

installed inside or outside the dispenser and the inlet to the valve must be not greater than 3.5 inches above the island. If a first generation nozzle is used enter N/A.

2.3.30 Swivels. If a state certified system is installed there must be a swivel on the vapor hose at the anti-recirculation valve. The OPW 78-S anti-recirculation valve has a built-in swivel. If a first generation system is used and no swivel is present enter N/A.

2.3.31 Flat, Torn or Kinked. Vapor hoses shall be leak free and kinked or flattened hoses are unacceptable.

2.3.32 Pressure Drop Test, ΔP , Inches of Water Column.

2.3.32.1 Before Draining Hose. See Source Test Method ST-27.

2.3.32.2 After Draining Hose. See Source Test Method ST-27.

2.3.33 Auto Shutoff, Y or N. The automatic shutoff mechanism of the nozzle shall be checked in either of the following ways.

2.3.33.1 Fill a container with gasoline to a depth of approximately 3 inches, begin dispensing gas and dip the spout into the liquid, insuring that the pressure tap is submerged. If the nozzle does not shut off there is a defect in the nozzle.

2.3.33.2 With dispenser OFF engage the nozzle trigger, place finger securely over the pressure tap and use a squeeze bulb to induce a vacuum. If the nozzle trigger does not release, the automatic shut off mechanism is malfunctioning.

2.3.34 Comments. Enter any appropriate comments regarding compliance status of vapor recovery equipment.

2.3.35 After completing the inspection, give the pink copy of Form I-27-79 to the station contact along with the Violation Notice, if one is issued.

3. LABELING REQUIREMENTS FOR ASBESTOS WASTE CONTAINERS

REF: Reg. 11-2-304.1.1

3.1 INTRODUCTION

In accordance with the provisions of the regulation, asbestos waste containers shall be labeled with a warning label that states:

CAUTION

Contains Asbestos
Avoid Opening or Breaking Container
Breathing Asbestos is Hazardous
to Your Health

Alternatively, warning labels specified by the Occupational Safety and Health Administration may be used.

4. WARNING SIGN REQUIREMENTS FOR ASBESTOS WASTE DISPOSAL SITES

REF: Reg. 11-2-305.1

4.1 INTRODUCTION

Signs shall be posted in such a manner and location that a person may easily read the legend. The required warning signs shall conform to the requirements of 20" x 14" upright format signs specified by OSHA. The signs shall display the following legend in the lower panel, with letter sizes and styles of a visibility at least equal to those specified in the regulation.

LEGEND

Asbestos Waste Disposal Site
Do Not Create Dust
Breathing Asbestos is Hazardous
to Your Health

Notation

1" Sans Serif, Gothic or Block
3/4" Sans Serif, Gothic or Block
14 Point Gothic

Spacing between lines shall be at least equal to the height of the upper of the two lines.

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PERMIT REQUIREMENTS

REF: Regs. 2-1-301 to 2-1-306

1. INTRODUCTION

The BAAQMD requires permits for any machine, equipment, or other device which may emit any of the major air contaminants (particulate, organic gases, sulfur dioxide, nitrogen dioxide, or carbon monoxide) or any odorous or hazardous pollutants (such as asbestos, beryllium, mercury, sulfuric acid, hydrogen sulfide, hydrogen fluoride, and lead.) Also, any abatement device which may reduce or eliminate air contaminants must have a permit.

2. PERMITS APPLICATION, EMISSIONS

A variety of means may be used to estimate the quantity of emissions on the basis of information submitted in a permit application.

The emissions may be estimated from factors taken from AP-42, ("Compilation of Air Pollution Emission Factors," EPA), by material balances using engineering expertise and knowledge of the process, or by any other acceptable documented methodology.

Acceptable estimates may also be obtained from source tests of similar operations, from the technical literature, and from vendor specifications and guarantees.

The District Permit Services Division makes available guidelines for emissions calculations and other pertinent information related to emissions and is available for consultation.

3. LISTS AND CRITERIA FOR DETERMINING COMPLETENESS OF PERMIT APPLICATIONS

3.1 Objectives

Chapter 4.5, Section 65940 of the Government Code requires

that each APCD compile one or more lists which will specify the information required from any applicant for a development project. The APCD's are also to indicate the criteria which will be applied to determine the completeness of an application.

This document provides the information which an applicant will need to enable him to prepare and file an application with the Bay Area Air Quality Management District (BAAQMD). It will advise him what information is required to ensure a complete application and whom to call if he has problems in preparing the application. Information is also provided on approval schedules, fees and appeals.

In order to make this document more useful to the individual applicant, separate requirement lists and criteria for determining completeness are given for different types of development projects. (See the definition of "development project " attached.)

Applicants who find that the attached material does not fully answer their questions should contact the Permit Services Division at (415) 771-6000, ext. 259.

3.2 Procedures for Approval

For some development projects, the California Environmental Quality Act (CEQA) requires the preparation of an Environmental

Impact Report (EIR) including relevant air quality information. EIR requirements are separate from BAAQMD permit requirements. For further information, contact the city or county in which the proposed facility will be located.

Two types of permits are issued, the Authority to Construct (A/C) and the Permit to Operate (P/O). The A/C is an approval by the BAAQMD for construction of equipment described in the A/C. The P/O is issued after construction is complete and operation of the equipment has begun; it certifies that construction was in accordance with the A/C and that there are no apparent emission problems.

Only one application is required for both the A/C and P/O. It will be called the "permit application" and the instructions for information required in the following sections refer to this permit application.

Applications should be mailed to the District (Attention: Permit Services), preferably in duplicate. Within 20 days after the receipt of the application, the District will notify the applicant in writing whether the application is complete or incomplete. If it is incomplete, the information or data needed to make it complete will be listed in the letter. If no such notification is made by the District in 30 calendar days, the application will be deemed to be complete.

When complete, the application will be evaluated to determine whether it meets emission criteria. Further clarification or amplification may be requested during the evaluation. Emission limits are given in a number of documents which you may obtain on request. Call Public Information on (415) 771-6000, ext. 210.

For most applications, the District will complete its evaluation within 60 days of the receipt of the completed application and will notify the applicant of its decision on the application. The decision can be any one of the following:

1. Issue an Authority to Construct
2. Issue an Authority to Construct with Conditions
3. Find part or all of the application Exempt from permit requirements
4. Deny the application

The Authority to Construct is permission for erection of the equipment specified in the application. In the case of denials, the applicant is encouraged to discuss the application with the Permit Services staff; perhaps there is an alternate approach or new and improved abatement equipment whose use could enable the project to be approved. The applicant is encouraged to reapply.

In case an applicant is dissatisfied with the District's decisions, he may appeal to the Hearing Board. See 3.8, Appeals.

With applications for large projects requiring offsets or other specialized treatment or approvals, the 60-day action time cannot be guaranteed. In these cases, 30 additional days will be allowed for public comment and for review by EPA and the California Air Resources Board. Either of these agencies may ask for extensions.

Once the equipment is constructed and ready to operate, the applicant should notify the District in writing of the date of the expected "startup". The District will inspect the equipment to determine that it was built in accordance with the A/C and to see if there are any obvious emission problems.

As a time delay usually occurs between the time of receipt of the applicant's letter giving date of startup and the time when a District engineer can schedule an inspection, the holder of the A/C may operate without the P/O so long as he has sent the "startup" letter.

In some cases, a source test will be required before the P/O can be issued. If a source test is required, the District will advise the applicant to this effect in the A/C.

The District will issue the Permit to Operate within a few days after the engineering inspection. It is valid for one year and is renewable on the anniversary date of first issuance. (Large plants will be assigned a single anniversary date for the renewal of all P/O's.) Note that when alterations are planned which may affect the emissions from a piece of existing equipment, a new Authority to Construct should be applied for. This application should include the number of the existing Permit to Operate which it is to modify. Any installation of an abatement device on existing equipment, even though it results in a reduction in emissions, requires a new permit.

Again, if you have questions as to whether you require a permit or what the status of your application is, call Permit Services.

3.3 Fees

Fee schedules are given in Regulation 3. No permit application will be evaluated until the prescribed fees have been paid.

Note that a fee is paid for each source and one application may have several sources. A source is the operation or equipment which creates or separates the air pollutant. Abatement devices (that is, air pollution control devices) are not "sources" and do not require payment of fees.

3.4 Information required for a Permit Application

In order to carry out its statutory responsibilities, the District must obtain sufficient information from each applicant to enable it to determine what the emissions would be and whether the emissions will comply with District regulations. The nature of the information required varies considerably between various types of equipment and processes and between small projects and large projects. The data obtained is used both as the basis for issuing a permit and for obtaining an inventory of source emissions.

For each application, submit a Form P-101 and a quadrant map, with an "X" at the site of emissions. The District will supply this map. If your plant covers a visible area on the map, outline the plant boundaries.

The following paragraphs describe the additional information required for each type of equipment and the application forms to be filled out and submitted for each.

3.4.1 For gasoline tanks under 15,000 gallons, fill out Form P-101G only. Submit with this form a plot plan showing tank locations and a sketch or listing showing the vapor recovery equipment to be installed. (For industrial sources which also have gasoline tanks, fill out a Form T for each tank.)

3.4.2 For other tanks and for gasoline tanks over 15,000 gallons, fill out one Form T for each tank. Submit a plot plan showing the location of tanks and fill and delivery stations. (Note that any fuel with an initial boiling point greater than 300°F., such a diesel fuel or #2 to #6 fuel oil, is exempt from District Permit requirements; however, a Form T should be submitted for information purposes.) If there is an abatement device such as a vapor recovery system connected to the tank, a Form A is required.

3.4.3 For surface coating, printing operations, and other processes involving solvents, fill out one Form S for each surface coating or solvent source operation. Also submit a plot plan showing its location and its relation to other existing operations. If there is an oven or a combustion process connected with the surface coating operation, a Form C is required for each such item. If there are abatement devices planned, submit a Form A for each.

3.4.4 For process operations (such as chemical plants, refineries, can lines, microfilm manufacture, acid plants, metal operations, etc.) several different forms will be necessary to fully describe the operation and enable a good prediction of emissions and compliance to be made. The primary document is a flow chart for the operation, showing materials being handled, flow rates and temperatures. Indicate the relationship between major components and all abatement devices and emission points. (Write a description of the process on a separate sheet.) Submit a Form T for each tank, a Form C for each combustion source, a

Form S for each surface coating or solvent source, and a Form G for any other source which may generate air contaminants.

Provide a description of each abatement device on Form A and of each emission point on Form P. If the proposed operation will have more than four sources, summarize the expected emissions on Form P-202. Fugitive emissions should be discussed for new and modified sources.

3.4.5 For combustion processes (including incinerators, boilers, kilns, turbines, and fuel-burning abatement devices) fill out a Form C for each combustion device. List on the Form C the anticipated yearly consumption of each type of fuel and give the sulfur content of all non-gaseous fuels. Give also the maximum ash and fuel nitrogen content, if known. Where the burner itself is designed to minimize the emission of pollutants (as for example a low-NO_x burner or water injection), give details and a drawing of the pollution-reducing features. Also submit a Form P giving stack data.

3.4.6 General Operations. There are many operations which do not fit into any of the above categories. These include (but are not limited to) feed and grain handling, cement operations, sewage treatment plants, landfill operations, animal rendering, asphalt operations, rock and quarry operations, and metallurgical processes. Please submit a flow diagram giving the flow of material and the relation between existing and new sources. In addition to the P-101, submit one Form G for each source. In some cases, these operations will include some sources which burn fuel (for example, a kiln); if so, submit a Form C in

addition to the Form G. Form A (abatement devices) and Form P (stack) should be submitted where applicable. Fugitive emissions should be discussed for new sources.

Note: If your facility has emissions of any air contaminant of over 15 lb/hr or 150 lb/day, you will be required to use BACT for any new construction or modifications to existing equipment. (See BACT definition attached.) Call Permit Services at (415) 771-6000, if you wish an interpretation of what BACT is for your application.

3.5 Trade Secrets

If you feel that trade secrets are included in the application, you should submit the following information:

3.5.1 A claim that the material is trade secret as defined in Section 6254.7 of the Government Code.

3.5.2 A separate claim identifying each specific type of part of the information which is claimed as trade secret.

3.5.3 A factual statement indicating the basis for considering the information to be trade secret.

All information claimed as trade secret will be subjected to special handling by the District. We will discuss these procedures with you on request.

3.6 Criteria to Determine Completeness

A complete application provides sufficient information for the District to estimate what the emissions from the new or modified source will be. The following check list is for your assistance. Not all of the items given below refer to every

application. If you have fully answered all of the questions referring to your proposed installation, your application will be complete.

3.6.1 Is the application signed?

3.6.2 Have you included a check for the fee? As the evaluation does not start until the fee is received, you can save time by including a check with the application.

3.6.3 Is the quadrant map included, with the facility location identified?

3.6.4 If you claim any trade secrets, have you justified such a claim in writing and identified the pages with such material?

3.6.5 Note: SIC number on any of the emission forms need not be filled in if you do not have a SIC Manual available.

3.6.6 Have you made a clear statement as to whether the equipment in the application represents a new source, a modification to an existing source, or a replacement for an existing source?

3.6.7 Do you have any offsets for which you are claiming credit? If so, documentation on the offsets should accompany this application. This documentation should be quantitative; vague justifications will not be considered.

3.6.8 Are there any special factors in this application of which we should be aware? For example, if you intend to limit production rate or operating hours, you should so state.

3.6.9 Have you included a plot plan of the facility which shows the relation of the source to other existing sources, and shows all emission points? (If you have already submitted a plot plan, show changes only.)

3.6.10 Have you included a flow diagram showing the flow of process material, with flow rates and temperatures at key points?

3.6.11 For any abatement equipment to be used, have you given the manufacturer, model number and drawing, if available?

3.6.12 Have you given the planned operating schedule (hours/day, days/week and weeks/year)?

3.6.13 Have you given the process throughput?

3.6.14 Have you identified emission points and given stack diameter and height for each? Have you given composition, flow rate and temperature for emitted gases?

3.6.15 Have you submitted the data Forms (C,G,S,T,A and P, as required) and provided all of the data requested?

3.6.16 Gasoline Tanks Under 15,000 Gallons

3.6.16.1 Have you given the throughput in gallons per month?

3.6.16.2 Have you included a sketch or drawing of the vapor recovery equipment?

3.6.16.3 If you claim exemption from vapor recovery, have you stated the basis of such an exemption? (Call the District Permit Services Division at 771-6000 if you are uncertain as to whether you are exempt.)

3.6.17 Other Tanks (All non-gasoline tanks and all tanks over 15,000 gallons)

3.6.17.1 Have you given the annual throughput?

3.6.17.2 Have you given the maximum fill rate (except for external floating roof tanks)?

3.6.17.3 Have you given the maximum withdrawal rate (for external floating roof tanks)?

3.6.17.4 Have you given the descriptive name of each material stored and its approximate vapor pressure under actual storage conditions? (Code numbers given on the back of Form T will be acceptable in place of descriptive names.)

3.6.17.5 Have you indicated what the loading and unloading techniques are? Have you indicated whether submerged fill is used?

3.6.17.6 In the case of a floating roof, have you provided the design of primary and secondary seals?

3.6.17.7 If a vapor recovery system of any kind is used, have you described the system and provided a drawing?

3.6.17.8 Have you indicated the maximum storage temperature for the liquid being stored?

3.6.18 Surface Coating, Printing Operations and Other Processes Involving Solvents

3.6.18.1 Have you described the coating operation?

3.6.18.2 Have you described the coating material (by name) and given the solvent type and the percent of organic solvent in the material? (Code numbers given on the back of Form S will be acceptable in place of descriptive names.)

3.6.18.3 Have you given the use rate (that is, gallons per day)?

3.6.19 Process Operations (Chemical plants, refineries, can lines, microfilm manufacture, acid plants, metal operations, etc.)

3.6.19.1 Have you provided a process flow chart?

3.6.19.2 Do you have descriptions of all new or modified

equipment which may result in the separation of air contaminants from the process materials or in the conversion of the process materials into air contaminants (as in the case of the combustion of fuel)?

3.6.19.3 Have you shown flow rates, temperatures and other relevant parameters on the process flow chart?

3.6.19.4 Have you indicated emission points and marked each one clearly? Have you given stack heights, and diameters? Have you described any abatement equipment used, including manufacturer and design drawings, if available?

3.6.19.5 Have you provided a plot plan which shows transfer of raw materials and products, the relationship between the process line and buildings, and the location of emission points?

3.6.19.6 Have you given the maximum design rate (flow rate, throughput) for the process line? Have you given an operating schedule (hrs/day, days/week, weeks/yr)? Have you given the actual planned process rate or throughput for the first two years of operation (if it differs from design rate)?

3.6.19.7 Have you discussed the receipt of raw materials, including the emissions from carriers within the District.

3.6.19.8 Have you discussed fugitive emissions?

3.6.19.9 If tanks, combustion or solvent operations are part of the process, have you answered the question in

3.6.17, 3.6.18, and 3.6.20?

3.6.20 Combustion Processes (Incinerators, boilers, kilns, gas turbines, and fuel-burning abatement devices, etc.)

3.6.20.1 Have you described the fuel to be used, including sulfur content and ash and fuel nitrogen content, if known?

3.6.20.2 Have you described the burners, giving manufacturer name and model, where available? Have you given the firing type and mode of control?

3.6.20.3 If the unit is used to incinerate waste gas or liquid stream, have you described the waste fluid and its method of injection into the burner?

3.6.20.4 If the unit is used to incinerate solid waste, have you characterized the solid waste composition?

3.6.21 General Operations

3.6.21.1 Have you described the equipment, giving manufacturer and model number, where available?

3.6.21.2 Have you given the maximum design rate?

3.6.21.3 Have you given an operating schedule (hrs/day, days/week, weeks/yr)? Have you given the actual planned process rate or throughput for the first two years of operation (if it differs from the design rate)?

3.6.21.4 Have you shown combustion sources and storage tanks (if any)?

3.6.21.5 Have you listed and described all abatement equipment, giving manufacturer and model number, if available?

3.6.21.6 Have you provided a plot plan showing the locations of equipment, transfer of raw materials and products, and all emission points?

3.6.22 Abatement Equipment

3.6.22.1 Have you shown on all sketches, flow diagrams, etc., the abatement equipment to be used, the equipment which feeds it, and the emission point or points which it feeds?

3.6.22.2 Have you described all abatement equipment to be used, giving drawing, manufacturer, size, model number, and efficiency, if available? (Manufacturer's literature may be satisfactory in many cases. If you submit this, have you clearly indicated the specific model and size to be used)?

3.6.23 Emission Points

3.6.23.1 Have you described each emission point on a Form P?

3.6.23.2 Have you shown all emission points on sketches and flow diagrams?

3.7 New Source Review

When a source is subject to New Source Review, certain additional information may be required. This additional information is given below. (For the purposes of this Section, consider that any source which has new or added emissions of over 250 lb/day of particulates, sulfur dioxide and organics, or over 550 lb/day of NO_x is subject to New Source Review.)

3.7.1 Identify all facilities within the District (excluding service stations) which you own or operate and give the compliance status of each.

3.7.2 If you are applying for offsets from other existing sources:

3.7.2.1 Provide sufficient information to determine whether adequate emission reductions will be achieved to offset the air quality impact of your proposed source. This should include the name and location of the offset sources, a description of the emission reductions expected from the offset and a description

of how the offsets will be obtained. Source test data on the sources to be reduced are desirable.

3.7.2.2 If any contractual agreements are required to carry out the offset, give evidence that the arrangements have been agreed to by all parties concerned.

3.7.2.3 If the offset involves the shutdown of a facility or a piece of equipment, indicate what assurance there is that the facility or equipment will not be subsequently reused.

3.7.2.4 Give the following data on the emission of cargo carriers: frequency of visits, types and sizes of cargo carriers (other than motor vehicles) and nature of cargo.

3.7.2.5 Give special attention to air pollution control equipment, listing:

3.7.2.5.1 Air pollution control equipment to be used, including type, size, manufacturer, model number and expected control efficiency.

3.7.2.5.2 Changes in processes or operations utilized to reduce emissions.

3.7.2.5.3 Other means of reducing emissions.

3.7.2.6 Discuss fugitive emissions and your plan for controlling them.

3.7.2.7 If you claim an exemption from New Source Review, state the reason for your claim and document it as completely as possible.

3.8 Appeals

If you are dissatisfied with the District's decision on your permit application, you may appeal to the Hearing Board within ten (10) days from the day you are notified of the District's decision. In your appeal, you can ask for an order modifying or reversing the District's decision. The Hearing Board is located at 939 Ellis Street, San Francisco 94109; its telephone number is (415) 771-6000.

3.9 Definitions

3.9.1 Development Project (For the purposes of air pollution control): Any project which results in the discharge of any air pollutant into the atmosphere. (From Chapter 4.5, Section 65940 of the Government Code).

3.9.2 Trade Secrets: Any formula, plan, pattern, process, tool, mechanism, compound procedure, production data, or compilation of information which is not patented, and which gives its user an opportunity to obtain a business advantage over competitors who do not know it.

3.9.3 New Source Review: A procedure for evaluating all proposed new or modified stationary sources which will emit more than 250 lb/day of any particulates, organics or SO₂, or over 550 lb/day of NO_x.

3.9.4 Source: The equipment used to perform the operations preceding the emission of an air contaminant, which operations result in the creation or separation of the air contaminants, or determine or substantially affect the quantity of air contaminant emitted, but not including air pollution control operations.

3.9.5 Best Available Control Technology (BACT): BACT is that control equipment technology which gives the maximum reduction in emissions of any air contaminant.

3.9.6 Stationary Source: Any building, structure, facility or installation from which air contaminants are emitted. Note that cargo carriers, other than motor vehicles, are considered part of the stationary source for purposes of emission calculations; thus, emissions from the carrier's engines, from purging or venting vapors, and from loading or unloading cargo are considered in computing total emission from a stationary source.

PERMIT SERVICES DIVISION
 BAY AREA AIR QUALITY MANAGEMENT DISTRICT
 939 ELLIS STREET, SAN FRANCISCO, CA 94109

APPLICATION FOR AUTHORITY TO CONSTRUCT AND PERMIT TO OPERATE
 GASOLINE STORAGE AND DISPENSING FACILITIES

BUSINESS NAME _____

MAILING ADDRESS _____

EQUIPMENT ADDRESS _____

CONTACT NAME & TITLE _____ PHONE _____

NATURE OF BUSINESS _____

NUMBER OF TANKS NEW CONSTRUCTION MODIFICATION

DUPLICATE TRANSFER OF OWNERSHIP EST. DATE OF INSTALLATION _____

TYPE OF GASOLINE	TANK SIZE GALLONS	THROUGHPUT, GAL/MO.	NO. OF NOZZLES	SUBMERGED FILL DROP TUBE (YES OR NO)	VAPOR RECOVERY EQUIPMENT (YES OR NO)

DESCRIPTION OF VAPOR RECOVERY EQUIPMENT: _____

DO YOU CLAIM AN EXEMPTION FROM VAPOR RECOVERY? _____

IF SO, CHECK THE APPROPRIATE BOX:

TANKS 2000 GALS. OR LESS AND THROUGHPUT LESS THAN 6000 GALS. PER MONTH

AGRICULTURAL USE ONLY

DELIVERY OF GASOLINE FROM EXEMPT BULK DISTRIBUTOR

GIVE NAME OF DISTRIBUTOR: _____

SIGNATURE AND TITLE: _____

NAME (PRINTED) _____ PHONE _____

DATE _____

INSTRUCTIONS

1. Please insure that all applications are complete.
2. Please include the following items with each application:
 - a. Topographical or similar map of the area showing location of the facility.
 - b. Plot plan of facility drawn to scale, showing location of all gas tanks, pumps, or nozzles and the nearest street intersection.
 - c. Cross-section drawing, catalogue number, or make model of certified vapor recovery equipment.
 - d. Enclosed postcard, writing your name and mailing address on the front and equipment location on the back. It will be mailed to you in acknowledgement when an application number has been assigned.
3. Before processing can commence, it is necessary that permit fees be included with the application.

FEES

Standard \$100 + \$30 per nozzle

Duplicate \$20

Transfer of Ownership \$100

Modification (Addition of an extra tank with no increase in the number of nozzles) - \$100

4. In completing this application, please include all gasoline tanks and nozzles on your site, describing the vapor recovery equipment, if applicable.
5. In a separate cover letter, please describe any details necessary to explain your intentions for this application submittal. Include previous permit numbers if applicable.

**BAY AREA
AIR POLLUTION CONTROL DISTRICT**
939 Ellis Street, San Francisco, CA 94109 (415) 771-5000

PLANT DATA FORM P-201

Business Name _____ Plant Identification No. # _____

Other Business Name(s)(if any) _____ Plant Telephone No. _____

Name of Parent Company (if any) _____

PLANT ADDRESS _____ MAILING ADDRESS _____
Street Street
City State Zip Code City State Zip Code

PLANT AREA (Acres) _____

NUMBER OF EMPLOYEES _____

PRINCIPAL PRODUCT _____

OWNERSHIP:

- Private
- Utility
- Local Government
- State Government
- Federal Government

Please submit a name and address to whom all correspondence regarding air pollution control can be sent.

Contact Name & Title _____

Street Address _____

City State Zip Code

*Plant Identification Numbers are assigned by the BAAPCD. Leave blank if number is not known.

Name & Title of person preparing this form. _____

Date _____

PERMIT SERVICES SECTION
 BAY AREA AIR QUALITY MANAGEMENT DISTRICT
 939 Ellis Street, San Francisco, CA 94109
 (415) 771-6000

EMISSIONS SUMMARY P-202

COMPANY NAME _____ PLANT NO. _____

PROJECT TITLE _____

SOURCE		EMISSION IN LB/HR (ACTUAL)					USAGE		
Description	No.	Particulate	Organic	SO _x	NO _x	CO	HRS/DAY	DAYS/WK	WKS/YR
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									

New Construction (.) Demolition () Alteration () Tradeoff ()

Note: Give description of any trade-offs proposed. Note that BACT is required for any source (or facility) emitting over 15 lb/hr.

PREPARED BY _____ Phone No. _____ Date _____

MANUAL OF PROCEDURES
VOLUME III
LABORATORY POLICY AND PROCEDURES

MANUAL OF PROCEDURES
VOL. III
LABORATORY POLICY AND PROCEDURES
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 - Procedure No. - Analytical Procedure

1. INTRODUCTION

This volume of the Manual of Procedure specifies the analytical methods used for the determination of compliance to the Regulations of the Bay Area Air Quality Management District. As new methods are developed and found acceptable, they may replace or be added to the existing methods in this manual.

2. GENERAL PROVISIONS

2.1 Laboratory Quality Assurance Program - The goal of these procedures is to provide accurate and precise analyses, and it is essential that a laboratory assurance program be established and maintained.

2.2 Objectives of the laboratory quality assurance program are:

2.2.1 To provide ongoing information for monitoring unsatisfactory performance of personnel, equipment or procedures.

2.2.2 To provide prompt detection and correction of conditions which contribute to the generation of inadequate data.

2.2.3 To collect and supply information necessary to describe the quality of the data.

2.3 Implementation of the following elements will produce data of acceptable precision and accuracy.

2.3.1 Routine monitoring of the known variables which may affect the quality of data.

2.3.2 Routine training and evaluation of analysts.

2.3.2 Corrective action.

2.4 Representative Sampling

2.4.1 Analytical results, regardless of the accuracy and precision of the procedure, can be no better than the representativeness of a submitted sample.

2.5 Sample Submission and Continuity

2.5.1 All samples will be identified and the identification carried forth with the analytical results.

2.6 Reagents

2.6.1 Reagent grade or better chemicals shall be used. Lesser grades may be used provided it is first ascertained that their use will not degrade the accuracy of the determination.

2.6.2 Unless otherwise specified, inorganic reagents used in the preparation of standards shall be dried at 105°C for two hours and kept dessicated until used.

2.7 Distilled water or its equivalent shall be used for reagent preparations.

2.8 Gas Chromatography

2.8.1 Gas chromatographic units used shall have the required systems and sensitivities as specified in the procedure.

2.8.1.1 Each chromatograph will be equipped with a recorder which provides permanent charts for record purposes.

2.8.1.2 All carrier gases, fuel gases and air supplies will be free of interfering substances.

2.8.1.3 Analytical columns are specified in this manual for each procedure. The separation characteristics of an alternate column must be comparable to those specified.

2.9 Atomic Absorption

2.9.1 Atomic absorption spectrophotometers utilized should have the following minimum specifications:

- a. Analytical wavelength coverage of 1937A to 7800A
- b. Less than 0.3% light scatter at 3000A
- c. Less than 1% noise at full gain
- d. Slit system to provide 5A resolution

2.9.2 Acetylene, nitrous oxide, and air supplies used will be those commonly used for best analytical results.

2.10 Spectrophotometers

2.10.1 Spectrophotometers employed for colorimetric and turbidimetric procedures should be capable of operation in the 340 to 700 nm range.

2.10.2 Spectrophotometers should have a grating or prism system capable of ± 25 nm reproductivity of wavelength settings.

2.10.3 Spectrophotometers should be checked for wavelength accuracy once per year using a didymium filter or comparable system.

2.11 Volumetric Glassware

2.11.1 Class A glassware shall be used for all volumetric flasks, pipettes and burets employed in the procedures. Class A specifications are identical to those

found in the National Bureau of Standards publication "Circular 602".

3. APPLICABILITY

3.1 Each analytical procedure is applicable to a specific regulation, division and section. The designated numbering system applying to the regulation appears on the upper left corner of each procedure.

4. METHODOLOGY

4.1 Alternate analytical procedures may be used provided that such procedures have established equivalency to an accepted reference method. Any questions relating to equivalency may be referred to the Chief of Laboratory Services.

4.1.1 Appropriate ASTM and EPA approved methodologies will be deemed equivalent procedures.

5. LABORATORY PROCEDURES

Lab 1	Determination of Ammonia in Effluents
Lab 2	Determination of Beryllium in Effluents & Atmospheric Particulate Matter
Lab 3	Determination of Dimethylsulfide in Effluents
Lab 4A	Determination of Lead Content in Atmospheric Particulate Matter
Lab 4B	Determination of Total Lead in Effluents
Lab 5	Determination of Total Mercaptans in Effluents
Lab 6	Determination of Particulate and Gaseous Mercury Emissions
Lab 7A	Determination of Oxides of Nitrogen in Effluents (Alkaline Permanganate Procedure)
Lab 7B	Determination of Oxides of Nitrogen in Effluents (Grab Sample Procedure)

- Lab 8 Determination of Phenols in Effluents
- Lab 9 Determination of Compliance of Solvents, Coatings, and Related Products
- Lab 10 Determination of Sulfur in Fuel Oil
- Lab 11 Determination of Sulfur Dioxide in Effluents
- Lab 12 Determination of Sulfur Dioxide, Sulfur Trioxide, and Sulfur Acid Mist in Effluents
- Lab 13 Determination of the Reid Vapor Pressure of Petroleum Products
- Lab 14 Determination of Trimethylamine in Effluents
- Lab 15 Standardization of Carbon Dioxide Calibration Gas
- Lab 16 Standardization of Carbon Monoxide Calibration Gas
- Lab 17 Standardization of Hydrocarbon Calibration Gases
- Lab 18 Standardization of Hydrogen Sulfide Calibration Gas
- Lab 19 Standardization of Nitric Oxide Calibration Gas
- Lab 20 Standardization of Sulfur Dioxide Calibration Gas
- Lab 21 Determination of Compliance for Air-Dried Architectural Water Based Coatings
- Lab 22 Determination of Compliance for Air-Dried Architectural Oil Based Coatings
- Lab 23 Determination of Volatile Weight Loss of Polyester Resins
- Lab 24 Determination of Fluoride in Effluents
- Lab 25 Determination of Hydrogen Sulfide in Effluents

DETERMINATION OF AMMONIA IN EFFLUENTS

1. PRINCIPLE

1.1 The ammonia is absorbed in dilute acid solution. The absorbed ammonia is then reacted with Nessler's reagent to produce a yellow-brown color which is proportional to the ammonia content.

2. APPARATUS

2.1 Spectrophotometer

2.2 25 ml graduated test tubes

3. REAGENTS

3.1 Hydrochloric acid - (0.1 N). Dilute 8.4 ml of concentrated hydrochloric acid to 1 liter with distilled water.

3.2 Nessler's Reagent - may be purchased already prepared, or if desired prepare according to Snell and Snell "Colorimetric Methods of Analysis", page 814, Vol II, 3rd Ed. 6th Printing, D. Van Nostrand Co., 1957.

4. ANALYTICAL PROCEDURE

4.1 To 5.0 ml of sample or an aliquot brought to 5.0 ml with 0.1 N hydrochloric acid and containing no more than 80 μgm of ammonia, add 14.0 ml of distilled water.

4.2 Add 1.0 ml of Nessler's reagent and mix well.

4.3 Let stand and read after 10 minutes in a spectrophotometer at 420 nm using 13 mm cuvettes, after setting instrument at 100% transmittance with a reagent blank.

4.4 Determine the μgm of ammonia from the standard curve.

5. STANDARD CURVE

5.1 Standard Stock Ammonia Solution - Weigh 0.3144 g of ammonium chloride and dilute to 1 liter with distilled water. This solution contains 100 μgm of ammonia per ml.

5.2 Working Standard Ammonia Solution - Dilute the standard stock solution 1:5 to obtain a working solution of 20 μgm NH_3/ml .

5.3 To a series of graduated 25 ml test tubes, add respectively 0, 1.0, 2.0, 4.0, and 5.0 ml of the working standard.

5.4 To each test tube add 5.0 ml of 0.1 N hydrochloric acid solution, and bring the volume of all solutions to 19.0 ml with distilled water.

5.5 Add 1.0 ml of Nessler's reagent, mix and read in spectrophotometer as described under procedure. Prepare a graph of % transmittance vs. concentration on a semi-log graph paper.

6. CALCULATION

$$\text{PPM NH}_3 = \frac{\text{Total micrograms ammonia in sample}}{0.695 \times \text{sample volume (liters)}}$$

Where: 0.695 = the μgm in 1 μl of ammonia at 25°C and 760 mm Hg

7. REFERENCES

7.1 Goldman, F.H. and Jacobs, M.B., Chemical Methods of Industrial Hygiene. Interscience Publishers Inc., 250 Fifth Ave., New York, N.Y. 1953

7.2 Elkings, H.R., The Chemistry of Industrial Toxicology, 2nd Ed., John Wiley and Son, New York, N.Y. 1959

LAB 2

REF: Reg. 11-3-301 to 11-3-303

DETERMINATION OF BERYLLIUM IN EFFLUENT AND ATMOSPHERIC PARTICULATE MATTER

1. PRINCIPLE

Samples are collected by passing a known volume of air through an appropriate filter. The filter is decomposed by wet acid oxidation. The aqueous beryllium solution is then analyzed by atomic absorption spectrophotometry.

2. APPARATUS

2.1 Atomic absorption spectrophotometer

2.1.1 Acetylene

2.1.2 Nitrous Oxide

2.1.3 Beryllium hollow cathode lamp

2.2 Hot plate

3. REAGENTS

3.1 Concentrated Nitric Acid

3.2 Concentrated Sulfuric Acid

3.3 Concentrated Perchloric Acid

3.4 Hydrochloric Acid 25% (v/v). Dilute 250 ml of concentrated hydrochloric acid to 1 liter with distilled water.

3.5 Sulfuric Acid (12 N). Slowly add 33.6 ml concentrated sulfuric acid to 50 ml of distilled water, cool and dilute to 100 ml.

3.6 Beryllium Powder (98% minimum purity)

4. ANALYTICAL PROCEDURE

4.1 Place the sample filter in a 150 ml beaker. Add 35 ml concentrated nitric acid. Heat on a hot plate until light

brown fumes are evident, thus destroying all the organic matter. Cool to room temperature; add 5 ml of concentrated sulfuric acid and 5 ml of concentrated perchloric acid.

4.2 Replace the beaker on the hot plate and evaporate to dryness in a perchloric acid hood. Cool and dissolve the residue by pipetting 10 ml of 25% v/v hydrochloric acid into the beaker. The sample is now ready for analysis.

4.3 Prepare and analyze a blank filter in the same manner as the samples.

4.4 Set the spectrophotometer parameters to obtain maximum sensitivity at a wave length of 234.8 nm by use of beryllium standards, and manipulation of the acetylene and nitrous oxide gas flows. Use 25% v/v hydrochloric acid to set the instrument at 0% absorption.

4.4.1 Aspirate each sample into the flame and record the percent absorption. Convert the readings to absorbance units.

4.4.2 Samples that have percent absorption values greater than the range of the standard calibration curve of the instrument must be diluted with 25% v/v hydrochloric acid to be within the working range.

4.4.3 Determine the beryllium concentration of the sample from the beryllium standard curve.

4.4.4 Standards should be aspirated after every fourth or fifth sample to insure instrument response has not changed.

5. STANDARD AND CALIBRATION CURVE

5.1 Standard Stock Beryllium Solution. Dissolve 0.1000 g of beryllium powder in 80 ml of 12 N sulfuric acid and dilute to 1 liter with 25% v/v hydrochloric acid. This solution contains

100 µgm Be/ml.

5.2 Working Standard Beryllium Solution. Dilute 5.0 ml of the standard stock beryllium solution to 100.0 ml with 25% v/v hydrochloric acid to give a concentration of 5 µgm Be/ml. At least 3 individual standards normally in the range of 0 - 5 µgm Be/ml are freshly prepared by appropriate dilution of the working standard solution. The working standard solution should be freshly prepared prior to use.

5.3 Prepare a standard curve by plotting absorbance vs. concentration of beryllium on linear graph paper.

6. CALCULATION

6.1 A blank filter background beryllium value, if any, is subtracted from each sample.

$$*\mu\text{gm Be}/\text{m}^3 = \frac{\mu\text{gm Be from Std curve} \times 10}{\text{Air Sample Volume (m}^3\text{)}}$$

*If sample was diluted to be within the standard curve range (4.4.2), the calculation must be multiplied by the appropriate dilution factor.

6.2 Total µgm Be = µgm Be from Standard curve x 10

7. REFERENCE

7.1 40 CFR 61 Appendix B, Method 104. "Reference Method for Determination of Beryllium Emissions from Stationary Sources".

LAB 3

REF: Reg. 7-303

DETERMINATION OF DIMETHYLSULFIDE IN EFFLUENTS

1. PRINCIPLE

1.1 The sample effluent is collected in a 10 liter or larger capacity Tedlar bag. The sample is analyzed for dimethylsulfide by purging a portion of the sample through a gas sampling valve. The sample is then injected into a gas chromatograph containing a poly-m-phenyl ether-phosphoric acid column and flame photometric detector.

2. APPARATUS

2.1 Gas Chromatograph. A unit with a flame photometric detector, must be capable of detecting 10 ppb of dimethylsulfide with a peak height of at least 3 times the noise background at the attenuation being used. The instrument must be equipped with a 10 ml gas sampling loop constructed of Teflon or another inert material, to insure no loss of dimethylsulfide during sample transfer.

2.1.1 The analytical column used is a 30' x 1/8" O.D. Teflon tube, packed with 12% poly-m-phenyl ether, 0.5% phosphoric acid on 25 to 40 mesh Fluoropak 80. The column material is prepared, packed and conditioned employing standard techniques. General column parameters are 40 ml/min nitrogen, 150 ml/min hydrogen, 70 ml/min air, 10 ml/min oxygen and maintained at a temperature of 65°C.

2.2 Pump, capable of 1 liter/minute

2.3 Teflon lines

3. REAGENTS

3.1 Dimethylsulfide (DMS)

3.2 Charcoal Trap ~~Filter~~

4. ANALYTICAL ~~PROCEDURE~~

4.1 Connect the Tedlar sample bag to the inlet of the gas sampling valve of the chromatograph. To the outlet side of the sampling valve, connect a small diaphragm pump containing a charcoal trap filter. Pass the sample through the sampling valve, at a rate of about 100 ml/minute for 3 to 4 minutes. Turn off the pump and immediately activate the sampling valve to transfer the sample to the analytical column. Measure the peak height of the dimethylsulfide peak and determine the concentration of the sample by comparison with the standard calibration curve.

5. PREPARATION OF STANDARD CALIBRATION CURVE

5.1 Standards are prepared in Tedlar bags by filling with a known volume of purified air. During the filling, introduce into the air stream by means of micro-syringe, a known volume of liquid dimethylsulfide. Calculate ppb by the following equation:

$$\text{PPB DMS} = \frac{\mu\text{l dimethylsulfide} \times 10^3 \times 848 \mu\text{gm}/\mu\text{l}}{\text{vol. of purified air (liters)} \times 2.54}$$

Where: 2.54 = the μgm in 1 μl of dimethylsulfide
at 25°C and 760 mm Hg

5.2 Use three different concentrations of standard gas mixtures in the range of 50 to 5000 ppb of dimethylsulfide not including the zero gas, to give responses of 10 to 95% full scale on the recorder. Plot the peak height against the corresponding concentration of DMS on a log-log graph paper to obtain the standard calibration curve.

6. CALCULATION

6.1 The concentration of the dimethylsulfide in the sample is determined by referring its peak height to the calibration curve.

7. REFERENCES

7.1 Kremer, L. and Spicer, L., "Gas Chromatographic Separation of Hydrogen Sulfide, Carbonyl Sulfide and Higher Sulfur Components with a Single Pass". Anal. Chem., 45, 1963, 1973.

7.2 Stevens, R.K. et al. "Gas Chromatography of Reactive Sulfur Gases in Air at the Part-per-Billion Level". Anal. Chem., 43, 827, 1971.

LAB 4A

REF: Regs. 11-1-302
11-1-303

DETERMINATION OF LEAD CONTENT IN ATMOSPHERIC PARTICULATE MATTER

1. PRINCIPLE

1.1 Samples are collected by passing a known volume of air through a glass fiber filter. The filter is extracted with hot nitric acid to solubilize the lead and analyzed by atomic absorption spectroscopy.

2. APPARATUS

2.1 Glassware - Borosilicate glassware should be used throughout the analysis. The glassware must be cleaned with 10% HNO₃ and rinsed with distilled water prior to use.

2.2 Atomic absorption spectrophotometer

2.2.1 Acetylene

2.2.2 Air Supply

2.2.3 Lead hollow cathode lamp

2.3 Hot plate

2.4 500 ml Phillips beakers

3. REAGENTS

3.1 Concentrated Nitric Acid (69 to 71%)

3.2 Dilute Nitric Acid. Dilute 10 ml of concentrated nitric acid to 1 liter with distilled water.

3.3 Lead Nitrate (Pb (NO₃)₂)

4. ANALYTICAL PROCEDURE

4.1 Cut out 1/4 section of the exposed area of the glass fiber filter. Cut into pieces of approximately one inch square and place in a 500 ml Phillips beaker.

4.1.1 Add 50 ml of concentrated nitric acid and cover the beaker with a ribbed watch glass. Place the beaker on a hot plate and heat gently to boiling. Reflux for one hour and cool. Add 50 ml of distilled water to the beaker and mix.

4.1.2 Filter the acid extract through a Whatman No. 1 filter paper, collecting the filtrate in a 400 ml beaker. Transfer the glass filter pads to the filter. Wash the glass fiber filter pads and the filter paper with hot distilled water until approximately 250 ml of filtrate is collected.

4.1.3 Evaporate the filtrate on a hot plate to approximately 5 ml. Cool to room temperature and qualitatively transfer the filtrate to a 50 ml volumetric flask using distilled water. Bring to volume with distilled water.

4.2 Analyze a blank glass fiber filter from each purchased batch of glass fiber filters in the same manner as the samples.

4.3 Set spectrophotometer parameters to obtain maximum sensitivity at a wave length of 283.3 nm by use of lead standards, and manipulation of the acetylene and air flows.

4.4 Aspirate each sample and blank into the flame and record the percent absorption for each. Convert the readings to absorbance units.

4.4.1 Samples that have percent absorption values higher than the range of the standard calibration curve of the instrument, must be diluted with dilute nitric acid to be within the working range.

4.4.2 Determine the lead concentration of the sample from the lead standard curve.

4.4.3 Standards should be aspirated after every fourth or fifth sample to insure instrument response has not changed.

5. STANDARD CURVE

5.1 Standard Stock Lead Solution. Weigh and transfer 1.5984 g of lead nitrate to a 1 liter volumetric flask. Dissolve and bring to volume with dilute nitric acid. This solution contains 1000 $\mu\text{gm Pb/ml}$.

5.2 Working Standard Lead Solution. At least three individual standards, normally in the range of 0 to 20 $\mu\text{gm Pb/ml}$, are freshly prepared by appropriate dilution of the standard stock lead solution with dilute nitric acid.

5.3 Prepare a standard curve on linear graph paper by plotting absorbance of the individual standards vs. concentration of lead.

6. CALCULATION

6.1 A blank filter background lead value, if any, is subtracted from each sample.

$$*\mu\text{gm Pb/m}^3 = \frac{\mu\text{gm Pb/ml from Std curve} \times 4 \times 50}{\text{Volume of Air Sample (m}^3\text{)}}$$

*If sample was diluted to be within the standard curve range (4.4.1), the calculation must be multiplied by the appropriate dilution factor.

7. REFERENCE

7.1 Air and Industrial Hygiene Laboratory, State Dept. of Health, Method No. 54. "Analysis of Lead Content of Atmospheric Particulate Matter Collected on High Volume Glass Fiber Filters".

LAB 4B

REF: Regs. 10-1-301
11-1-301

DETERMINATION OF TOTAL LEAD IN EFFLUENTS

1. PRINCIPLE

Lead emissions are isokinetically sampled at the source using a glass wool filter, followed by acidic iodine monochloride impingers. The particulate lead content of the filter is removed by acid digestion and analyzed by atomic absorption spectroscopy. The gaseous lead compounds collected by iodine monochloride are determined by atomic absorption spectroscopy after the absorbing solution has been reduced to iodide.

2. APPARATUS

2.1 Glassware - Borosilicate glassware should be used throughout the analysis. The glassware must be cleaned with 10% HNO_3 , and rinsed with distilled water prior to use.

2.2 Atomic absorption spectrophotometer

2.2.1 Acetylene

2.2.2 Air supply

2.2.3 Lead hollow cathode lamp

2.3 Hot plate

2.4 500 ml Phillips beakers

3. REAGENTS

3.1 Concentrated Nitric Acid (69 to 71%)

3.2 Dilute Nitric Acid. Dilute 10 ml of concentrated nitric acid to 1 liter with distilled water.

3.3 Lead Nitrate ($\text{Pb}(\text{NO}_3)_2$)

3.4 Iodine Monochloride Stock Solution (1 M). Dissolve 100 g of potassium iodide in sufficient distilled water to make 400 ml of solution. Add slowly, 400 ml of concentrated hydrochloric acid and cool to room temperature. Add slowly with vigorous stirring, 68 g of potassium iodate. Continue stirring until all the free iodine initially formed has redissolved to yield a clear orange-red solution. Dilute to 1 liter with distilled water and store the solution in a dark bottle.

3.5 Iodine Monochloride Scrubber Solution (0.1 M). Dilute 100 ml of stock iodine monochloride solution to 1 liter with distilled water. This solution should be kept in dark glass bottle to prevent degradation. This reagent should be stable for at least 2 months; however, periodic checks should be performed to insure quality.

3.6 Potassium Iodide Solution (25%). Dissolve 25 g potassium iodide in sufficient distilled water to make 100 ml of solution.

3.7 Sodium Sulfite Solution (10%). Dissolve 10 g of anhydrous sodium sulfite in sufficient distilled water to make 100 ml of solution.

4. ANALYTICAL PROCEDURE

4.1 Particulate Lead

4.1.1 Transfer the glass wool from the sampling probe to a 500 ml Phillips beaker.

4.1.2 Add 50 ml of concentrated nitric acid or an amount sufficient to cover the glass wool, and cover the beaker with a ribbed watch glass. Place the beaker on a hot plate and heat gently to boiling. Reflux for one hour and cool. Add 50 ml of distilled water to the beaker and mix.

4.1.3 Filter the acid extract through a Whatman No. 1 filter paper, collecting the filtrate in a 400 ml beaker. Wash the glass wool three times with 50 ml portions of hot distilled water. Filter each wash, adding each to the original filtered acid extract.

4.1.4 Evaporate the filtrate on a hot plate to approximately 5 ml. Cool to room temperature and quantitatively transfer the filtrate to a 50 ml volumetric flask using distilled water. Bring to volume with distilled water.

4.2 From each batch of purchased glass wool, analyze a representative portion in the same manner as the sample.

4.3 Set spectrophotometer parameters to obtain maximum sensitivity at wavelength of 283.3 nm by use of lead standards, and manipulation of the acetylene and air flows.

4.4 Aspirate each sample and blank into the flame and record the percent absorption for each. Convert the readings to absorbance units.

4.4.1 Samples that have percent absorption values higher than the range of the standard calibration curve of the instrument must be diluted with dilute nitric acid to be within the working range.

4.4.2 Determine the lead concentration of the sample from the lead standard curve.

4.4.3 Standards should be aspirated after every fourth or fifth sample to insure instrument response has not changed.

4.5 Gaseous Lead

4.5.1 Measure and record the total volume of the iodine monochloride solution remaining in the impingers.

4.5.2 Transfer an aliquot of 20.0 ml to a 25 ml graduated test tube. Add 2.0 ml of 25% potassium iodide to the sample. Mix well to insure that all the iodine is in solution.

4.5.3 Add dropwise, 10% sodium sulfite solution until the solution turns pale yellow. Mix well, and add distilled water to the 25 ml mark.

4.6 Prepare a reagent blank in the same manner as the samples to ascertain the presence of any lead impurities.

4.7 Proceed as in Sections 4.3 and 4.4.

5. STANDARD CURVE

5.1 Standard Stock Lead Solution. Weigh and transfer 1.5984 g of lead nitrate to a 1 liter volumetric flask. Dissolve and bring to volume with dilute nitric acid. This solution contains 1000 $\mu\text{gm Pb/ml}$.

5.2 Working Standard Lead Solution. At least three individual standards, normally in the range of 0 to 20 $\mu\text{gm Pb/ml}$, are freshly prepared by appropriate dilution of the standard stock lead solution with dilute nitric acid.

5.3 Prepare a standard curve by plotting on linear graph paper the absorbance of the individual standards vs. the concentration of lead.

6. CALCULATIONS

6.1 Particulate Lead

6.1.1 The blank glass wool value, if any, is subtracted from each sample.

$$\text{*Total mg Pb} = \frac{\text{\mu gm Pb/ml from Std Curve} \times 50}{1000}$$

*If sample was diluted to be within the standard curve range (4.4.1), the calculation must be multiplied by the appropriate dilution factor.

6.2 Gaseous Lead

$$\text{*Total mg Pb per impinger} = \frac{\text{ugm Pb/ml} \times 25 \times \text{Vol of Impinger (ml)}}{1000 \times 20}$$

*If sample was diluted to be within the standard curve range (4.4.1), the calculation must be multiplied by the appropriate dilution factor.

Total mg Pb = Total mg Pb in 1st Impinger + 2nd Impinger

7. REFERENCES

7.1 Air and Industrial Hygiene Laboratory, State Dept. of Health, Method No. 54. "Analysis of Lead Content of Atmospheric Particulate Matter Collected on High Volume Glass Fiber Filter".

7.2 Purdue, L., Enrione, E. and Thompson, R., "Determination of Organic and Total Lead in the Atmosphere by Atomic Absorption Spectrometry", Anal. Chem. 45, 527-530, 1973.

LAB 5

REF: Reg. 7-303

DETERMINATION OF TOTAL MERCAPTANS IN EFFLUENTS

1. PRINCIPLE

Mercaptans are absorbed in a mercuric acetate solution forming stable mercaptide salts. The absorbed mercaptides are reacted with N,N,-Dimethyl-P-Phenylenediamine to form a red complex, the amount of which is proportional to the total mercaptides and is measured spectrophotometrically. The total mercaptans are expressed as methyl mercaptan by reference to a calibration curve prepared from known amounts of lead methyl mercaptide.

2. APPARATUS

2.1 Spectrophotometer

2.2 25 ml test tubes

3. REAGENTS

3.1 Mercuric Acetate Solution, 5%. Dissolve 50 g of mercuric acetate, essentially free of mercurous salts, in approximately 400 ml of water and add 20 ml glacial acetic acid. Mix and dilute the solution to 1 liter with distilled water.

3.2 Amine Solution 0.5%. Dissolve 0.5 g of N,N,-Dimethyl-P-Phenylenediamine dihydrochloride in 100 ml of concentrated hydrochloric acid and transfer to a dark bottle. The solution is stable for at least six months.

3.3 Reissner Solution. Dissolve 6.7 g of ferric chloride hexahydrate in approximately 50 ml distilled water. Add 7.2 ml concentrated nitric acid. Mix and dilute to 100 ml with distilled water. This solution is stable for at least six months.

3.4 Lead Methyl Mercaptide, Eastman Organic Co., No. 8561.

4. ANALYTICAL PROCEDURE

4.1 Measure and record the total liquid volume in each of the collection impingers.

4.2 Transfer to a 25 ml graduated test tube 10.0 ml of sample or an aliquot of sample containing no more than 80 μgm of methyl mercaptan equivalent. A blank containing 10.0 ml of 5% mercuric acetate is run with the samples.

4.3 To each sample and blank add 1.5 ml of amine solution and 2 drops of Reissner solution. Mix well, and allow 30 minutes for color development. Remove any turbidity in the sample by centrifuging for 2 minutes at 1000 RPM.

4.4 Read the formed color in a spectrophotometer set at 500 nm using 13 mm cuvettes after setting the instrument at 100% T with the blank. Determine the μgm of methyl mercaptan from the standard curve.

5. STANDARD CURVE

5.1 Standard Stock Mercaptan Solution. Weigh and transfer 0.1566 g of crystalline lead methyl mercaptide to a 100 ml volumetric flask. Dissolve and bring to volume with 5% mercuric acetate. This solution contains 500 μgm equivalent of methyl mercaptan per ml, and is stable for at least one year.

5.2 Working Standard Mercaptan Solution. Dilute 2.0 ml of the stock standard solution to 100.0 ml with 5% mercuric acetate. This solution contains 10 μgm per ml methyl mercaptan equivalent.

5.3 To a series of 25 ml graduated tubes, add respectively 0, 1.0, 3.0, 5.0, and 8.0 ml of the working standard.

5.4 Bring each to 10.0 ml with 5% mercuric acetate.

5.5 Develop color as described under the analytical procedure. Prepare a standard curve by plotting μgm methyl mercaptan vs % transmittance using semi-log graph paper.

6. CALCULATION

$$\text{PPM Total Mercaptans} = \frac{\mu\text{gm Found in Aliq.} \times \text{Imp. Vol.}}{1.97 \times \text{Aliq. Vol.} \times \text{Sample Vol. (liters)}}$$

Where: 1.97 = the μgm in 1 μl of mercaptan at 25°C and 760 mm Hg

Total PPM = PPM in 1st Impinger + PPM in 2nd Impinger

7. REFERENCE

7.1 Moore, H., et al, "A Spectrophotometric Method for the Determination of Mercaptan in Air", Amer. Ind. Hyg. Assoc. J. 21, 466, 1960.

LAB 6

REF: Regs. 11-5-301
11-5-302

DETERMINATION OF PARTICULATE AND GASEOUS MERCURY EMISSIONS

1. PRINCIPLE

Particulate and gaseous mercury emissions are sampled from the source and collected in acidic iodine monochloride solution. The mercury collected in the mercuric form is reduced to elemental mercury in basic solution by hydroxylamine sulfate. Mercury is aerated from the solution and analyzed using spectrophotometry.

2. APPARATUS

2.1 Spectrophotometer. To measure absorbance at 253.7 nm, a flameless atomic absorption spectrophotometer is equipped with a gas cell and hollow cathode source. Other suitable mercury analyzers can be used.

2.2 Glassware. Borosilicate glassware should be used throughout the analysis. The glassware must be cleaned with 1:1 v/v nitric acid and rinsed with distilled water prior to use.

2.3 250 ml BOD (Biological Oxygen Demand) sample bottles

2.4 Cylinder Air. Zero grade compressed air is used as an aeration gas.

3. REAGENTS

3.1 Potassium Iodide Solution (25%). Dissolve 250 g of potassium iodide in distilled water and dilute to 1 liter.

3.2 Concentrated Hydrochloric Acid

3.3 Potassium Iodate

3.4 Iodine Monochloride Solution (1 M). To 800 ml of 25% potassium iodide, add 800 ml of concentrated hydrochloric acid.

Cool to room temperature. With vigorous stirring, slowly add 135 g of potassium iodate and continue stirring until all free iodine has dissolved to give a clear orange-red solution. Cool to room temperature and dilute to 2 liter with distilled water. Store the solution in amber glass bottles to prevent degradation.

3.5 Absorbing Solution (0.1 M Iodine Monochloride). Dilute 100 ml of 1 M iodine monochloride to 1 liter with distilled water. Store the solution in an amber glass bottle to prevent degradation. The solution is stable for at least 2 months.

3.6 Sodium Hydroxide (10 N). Dissolve 400 g of sodium hydroxide pellets in distilled water and dilute to 1 liter.

3.7 Reducing Agent (12% Hydroxylamine Sulfate, 12% Sodium Chloride). To 60 ml of distilled water, add and dissolve 12 g of hydroxylamine sulfate and 12 g of sodium chloride. Dilute to 100 ml. This quantity is sufficient for 20 analyses and must be prepared daily.

3.8 Hydrochloric Acid (0.3 N). Dilute 25.5 ml of concentrated hydrochloric acid to 1 liter with distilled water.

4. ANALYTICAL PROCEDURE

4.1 Transfer the contents of each impinger containing absorbing solution to a graduated cylinder and measure and record the volume to the nearest milliliter. Transfer the sample to a 500 ml Erlenmeyer flask. Rinse the sampling probe and line with two 50 ml portions of absorbing solution and add to the flask. Record the total volume of sample in the flask.

4.2 Adjust the instrument settings according to the instrument manual.

4.3 Transfer a sample of aliquot up to 50 ml to the BOD bottle. Adjust the total volume to 50 ml with 0.1 M absorbing solution, if required.

4.4 Add 5 ml of 10 N sodium hydroxide, cap the bottle with a glass stopper and shake vigorously. Prolonged, vigorous shaking at this point is necessary to obtain an accurate analysis.

4.5 Add 5 ml of the reducing agent and cap the BOD bottle with the bubbler assembly.

4.6 Shake the bottle vigorously and immediately aerate the sample at 1 to 1.3 l/min into the spectrophotometer cell using cylinder compressed air. Continue to aerate until a maximum % absorbance value is reached. Convert the reading to absorbance unit and record the value.

4.7 Determine the mercury concentration of the sample from the mercury standard curve.

4.8 If the aliquot sample is out of the linear range of the spectrophotometer, the sample must be diluted with absorbing solution.

4.9 Prepare a blank from absorbing solution and analyze to determine the reagent blank mercury level.

4.10 Standards should be run after every fourth or fifth sample to insure instrument response has not changed.

5. STANDARD CURVE

5.1 Standard Stock Mercury Solution. Weigh and transfer 0.1354 g of mercuric chloride to a 100 ml volumetric flask containing 80 ml of 0.3 N hydrochloric acid. After the mercuric chloride has dissolved, dilute to 100.0 ml with

0.3 N hydrochloric acid. This solution contains 1000 µgm Hg/ml.

5.2 Standard Mercury Working Solution. Dilute 1.0 ml of standard stock mercury solution to 100.0 ml with 0.3 N hydrochloric acid to give a concentration of 10 µgm Hg/ml.

5.3 Prepare at least three 50 ml calibration standards in the linear range of the instrument. Solutions of 0 to 0.6 µgm Hg/ml have been found to be acceptable for most instruments. The working standard solution should be freshly prepared prior to use.

5.4 Prepare a standard curve by plotting absorbance vs. concentration of mercury on linear graph paper.

6. CALCULATION

6.1 A blank reagent background mercury value, if any, is subtracted from each sample.

$$\text{*Total mg Hg} = \frac{\text{µgm/ml from Std curve} \times \text{Total Samp. Volume}}{1000}$$

*If sample was diluted to be within the standard curve range (4.3), the calculation must be multiplied by the appropriate dilution factor.

7. REFERENCE

7.1 Method 101, "Reference Method for Determination of Particulate and Gaseous Mercury Emissions from Stationary Sources." 40 CFR 60, Appendix B, Revised July 1, 1976.

LAB 7A

REF: Regs. 9-3-301 to 9-3-304
9-4-301, 9-4-302
10-1-301

DETERMINATION OF OXIDES OF NITROGEN IN EFFLUENTS
(ALKALINE PERMANGANATE PROCEDURE)

1. PRINCIPLE

The method is based on the absorption of nitric oxide and nitrogen dioxide in alkaline permanganate bubblers fitted with semi-fine glass frits. The formed nitrite and nitrate ions are determined by first converting the nitrite formed during the collection to nitrate. The total nitrate is then reduced to nitrite, which is determined by a chromotropic acid indicator.

2. APPARATUS

2.1 Hot plate

2.2 50 ml graduated Erlenmeyer flasks with screw caps

2.3 Spectrophotometer

2.4 25 ml graduated test tubes

2.5 Burel wrist action shaker

3. REAGENTS

3.1 Absorption Solution. Dissolve 40 g of potassium permanganate and 20 g of sodium hydroxide in distilled water and dilute to 1 liter.

3.2 Oxalic Acid Solution. Dissolve 80 g of oxalic acid in 1 liter of distilled water.

3.3 Sulfuric Acid. Add 22.4 ml of concentrated sulfuric acid to 500 ml of distilled water and dilute to 1 liter.

3.4 Reducing and Color Reagent. Nitra Ver III (Cat. #14065) and Nitra Ver VI (Cat. #14119). Hach Chemical Co. Ames, Iowa.

4. ANALYTICAL PROCEDURE

4.1 Measure and record the liquid volume of each impinger. Transfer an aliquot, not to exceed 5.0 ml, for analysis containing 0 to 100 μgm of nitrite. The aliquot may require dilution with unreacted absorbing solution or may be used directly. If preferred, all three impingers may be combined to form a composite sample, thereby requiring only a single analysis.

4.2 The aliquot taken is transferred to a 50 ml Erlenmeyer flask fitted with a screw cap. A reagent blank of 2.0 ml is also prepared from the absorbing solution which was used for the sampling. Acidify with 0.8 N sulfuric acid, using 1 ml of acid per ml of aliquot and let stand overnight.

4.3 Add 1 ml of oxalic acid solution per ml of aliquot and let stand until colorless. Heat the sample on a hot plate at 50 to 60°C. Should more oxalic acid solution be required to reduce the permanganate, add dropwise, so as not to have more than 3 drops in excess. Cool to room temperature and dilute to the 30 ml mark with distilled water.

4.4 Add to the sample and the blank, the content of a Nitra Ver VI pillow. Cap the flask and shake for exactly 3 minutes. Allow the sample to stand for 30 seconds and transfer 25 ml to a graduated test tube. Add the content of a Nitra Ver III pillow, cover the test tube with parafilm and mix for one minute. Let stand for 10 minutes and read the formed pink color at 500 nm with a 13 mm cuvette, setting the blank at 100% transmittance. Determine the μgm NO_2 in the sample from a standard curve.

5. STANDARD CURVE

5.1 Standard Stock Nitrite Solution. Weigh 0.2198 g of potassium nitrate and transfer to a 1 liter volumetric flask containing 100 ml of distilled water. Dissolve and dilute to mark with distilled water. This standard solution contains 100 μgm NO_2 equivalent per ml.

5.2 Working Standard Nitrite Solution. Dilute 1:5 to make a working standard containing 20 μgm NO_2 equivalent per ml.

5.3 Prepare a series of standards containing 20 to 100 μgm of NO_2 , add 2 ml of the absorbing solution to each in 50 ml Erlenmeyer flasks. Proceed as in 4.2 to 4.4 to develop color forming reactions.

5.4 Prepare a standard curve plotting μgm NO_2 vs. % transmittance on semi-log graph paper.

6. CALCULATION

$$\text{PPM NO}_x \text{ as NO}_2 = \frac{(\mu\text{gm NO}_2 \text{ from Standard Curve}) (\text{Total Vol.})}{(1.88) (\text{Aliquot}) (\text{Sample Vol. in liters})}$$

Where: 1.88 = the μgm in 1 μl of nitrogen dioxide at 25°C and 760 mm Hg

7. REFERENCE

7.1 Levaggi, D.A. et al, "An Integrated Manual Impinger Method for the Simultaneous Determination of Nitrogen Oxides and Sulfur Oxides in Source Effluents. J. Air Poll. Cont. Assoc., 26, 783, 1976.

LAB 7B

REF: Regs. 9-3-301 to 9-3-304
9-4-301, 9-4-302
10-1-301

DETERMINATION OF OXIDES OF NITROGEN IN EFFLUENTS
(GRAB SAMPLE PROCEDURE)

1. PRINCIPLE

A grab sample of the effluent is collected in an evacuated glass flask. Any nitric oxide and nitrogen dioxide present is oxidized to nitrate ion in the flask containing sulfuric acid and hydrogen peroxide. The yellow compound resulting from the reaction of the nitrate ion with phenoldisulfonic acid is measured colorimetrically at 420 nm.

2. APPARATUS

- 2.1 Spectrophotometer
- 2.2 Mercury manometer, open end
- 2.3 Hot plate

3. REAGENTS

3.1 Phenoldisulfonic Acid (PDSA). In a 500 ml Erlenmeyer flask, dissolve 25 g of pure white phenol in 150 ml of concentrated sulfuric acid on a steam bath. Add 75 ml of fuming sulfuric acid (15-18% free SO_3), stir well, cover the flask with a watch glass and heat for two hours at 100°C . Store in a dark, stoppered glass bottle. The PDSA is stable for about 2 years.

3.2 Concentrated Ammonium Hydroxide

3.3 Sodium Carbonate (20%). Dissolve 20 g of sodium carbonate to 100 ml of distilled water.

3.4 pH Paper, 7-14 range

3.5 Litmus paper

4. ANALYTICAL PROCEDURE

4.1 The previously calibrated 2 liter glass flask, in which the sample has been collected should remain in contact with the absorbent at least overnight to complete oxidation prior to the analysis.

4.2 Connect the glass flask to an open end mercury manometer, open the stopcock slowly, note and record the manometer reading in millimeters of mercury (samples are normally under a slight vacuum).

4.3 Transfer the absorbing solution (dilute sulfuric acid and hydrogen peroxide) to a 50 ml volumetric flask and bring to volume with distilled water.

4.4 Transfer an aliquot of the sample containing between 40 to 200 μgm of equivalent NO_2 to a 50 ml casserole or beaker. Neutralize with 20% sodium carbonate solution until just basic using litmus paper as an indicator.

4.5 Carefully evaporate to complete dryness on a hot plate, avoiding any spattering and loss of sample.

4.6 Add 2 ml of PDSA making sure to "wet" all the residue. Quickly triturate the residue thoroughly with a glass rod for a few minutes. Carefully add 5 ml of distilled water.

4.7 Carefully add 6 to 7 ml of concentrated ammonium hydroxide dropwise with constant swirling until the maximum color is formed. Use pH paper to verify a solution pH of 10 or greater. Transfer the solution to a 25 ml graduated test tube and wash the beaker with small quantities of distilled water. Add the washing to the test tube. Dilute with distilled water to 15 ml.

4.8 Measure the % transmittance of the yellow color complex at 420 nm. Use the reagent blank, which was treated like the samples, to set the spectrophotometer at 100% transmittance. Determine the μgm of nitrite equivalent from the standard curve.

4.9 A standard curve must be prepared with each set of analyses.

5. STANDARD CURVE

5.1 Standard Nitrite Stock Solution. Weigh and transfer 0.5495 g of potassium nitrate to a 1 liter volumetric flask containing 100 ml of distilled water. Dissolve and dilute to the mark with distilled water. This standard solution contains 250 μgm NO_2 equivalent per ml.

5.2 Working Standard Nitrite Solution. Dilute the standard stock solution 1:10 to obtain a working standard solution containing 25 μgm of NO_2 equivalent per ml.

5.3 Prepare standards in 50 ml beakers containing 0, 25, 50, 75 and 100 μgm of NO_2 . Add 5 ml of the absorbing reagent and process as previously described for the samples in 4.4 to 4.8. Prepare a standard curve plotting μgm NO_2 vs. transmittance on a semi-log graph paper.

6. CALCULATIONS

$$\text{PPM NO}_x \text{ as NO}_2 = \frac{(\mu\text{gm NO}_2 \text{ from Standard Curve}) \times 50 \times 760 \text{ mm}}{1.88 \times \text{aliquot} \times \text{Sample flask vol} \times \text{flask pressure}}$$

$$\text{Flask pressure} = (760 \text{ mm Hg} - \text{manometer reading in mm Hg})$$

Where: 1.88 = the μgm in 1 μl of nitrogen dioxide at 25°C and 760 mm Hg

7. REFERENCES

7.1 Beatty, R., et al, "Determination of Oxides of Nitrogen by the Phenoldisulfonic Acid Method," U.S. Bureau of Mines Rept. Invest. 3687, 1943.

7.2 "Methods of Test for Oxides of Nitrogen in Gaseous Combustion Products (PDSA Method)", ASTM designation D 1608-68, Book of ASTM Standards, Part 23, 461-465, 1968.

7.3 Method 7, Reference Method for the "Determination of Nitrogen Oxide Emissions from Stationary Sources." 40 CFR 60, Appendix A, Revised July 1, 1976.

LAB 8

REF: Reg. 7-303

DETERMINATION OF PHENOLS IN EFFLUENTS

1. PRINCIPLE

1.1 The phenols are absorbed in 0.1 N sodium hydroxide solution to form phenolates. These compounds are hydrolyzed by acid, and the aqueous solution is analyzed for phenols by gas chromatography. Sample clean-up is performed, if necessary, by a carbon tetrachloride extraction.

2. APPARATUS

2.1 Gas Chromatograph. This unit is equipped with a flame ionization detector and fitted with a 7' x 1/8" stainless steel column which is packed with 10% Carbowax 20M/Terphthalic acid on acid-washed Chromosorb W(60 to 80 mesh). The gas chromatograph must be capable of detecting 3 ppm of phenol in solution with a peak height of at least 3 times the noise background at the attenuation used.

2.1.1 Injector port fitted with a glass sleeve

2.2 10 µl syringe

3. REAGENTS

3.1 Sodium Hydroxide (0.1 N). Dissolve 4 g of sodium hydroxide in 1 liter of distilled water.

3.2 Sulfuric Acid (1.0 N). To about 500 ml of distilled water, slowly add 28.0 ml of concentrated sulfuric acid and dilute to 1 liter with distilled water.

3.3 Copper Sulfate Solution (10%). Dissolve 10 g of copper sulfate in 100 ml of distilled water.

3.4 Carbon Tetrachloride

3.5 Litmus Paper - Blue

4. ANALYTICAL PROCEDURE

4.1 All samples are to be refrigerated. If samples are to be analyzed within three days, proceed with 4.2. If samples are to be stored for more than three days, add 1 ml of 10% copper sulfate solution to each impinger.

4.2 If the sample is contaminated with heavy oil, an extraction with carbon tetrachloride is required. If the sample is "clean", no extraction is necessary.

4.3 Measure and record the total liquid volume of each impinger. Transfer a 9.0 ml aliquot to a 25 ml test tube and add 1 ml of 1 N sulfuric acid. Cover the test tube with parafilm, invert and mix well. Check to insure the sample is acidic with litmus paper.

4.4 Inject a 2 μ l sample into the gas chromatograph injection port. The operating parameters of the chromatograph are: column temperature 180°C; detector temperature 260°C; injection port temperature 250°C; carrier gas 25 ml/min; hydrogen 20 ml/min; and air 250 to 300 ml/min.

4.5 Compare the peak heights of phenols, m-cresol and 3,4 dimethylphenol with those contained in the standard solution and injected in the same manner. Quantitation of the sample may also be made by integrated area technique.

5. PREPARATION OF STANDARD SOLUTION

5.1 Standard Phenol Stock Solution. Weigh 0.1 to 0.11 g (± 0.0001 g) of each reagent grade phenol, m-cresol and 3, 4 dimethylphenol. Dissolve in 0.1 N NaOH solution and dilute to 1.0 liter with 0.1 N NaOH. This solution will contain approximately 100 $\mu\text{g}/\text{ml}$ of each phenol. If kept refrigerated this solution is stable for one month.

5.2 Standard Phenol Working Solution. Dilute the stock standard phenol solution 1:10 with 0.1 N NaOH to prepare a standard phenol working solution of approximately 10 $\mu\text{g}/\text{ml}$ of each phenol. This working standard solution must be prepared freshly prior to use.

6. CALCULATIONS

$$1) \text{ Total } \mu\text{g} \text{ of Phenol}^* \text{ in sample} = \frac{\text{Tot. Vol of Imp. Pk. ht of Sample}}{\text{Pk. ht. of Standard}} \times \text{Conc. of Standard}$$

*Calculate individually for m-cresol and 3, 4 dimethylphenol, if present.

Total μg of phenol in sample = μg in 1st Imp. + μg in 2nd Imp.

Total μg of m-cresol in sample = μg in 1st Imp. + μg in 2nd Imp.

Total μg of 3, 4 dimethylphenol in sample = μg in 1st Imp. + μg in 2nd Imp.

$$2) \text{ PPM Phenol} = \frac{\text{Total } \mu\text{g} \text{ Phenol in Sample}}{(\text{f}^*) \times \text{Sample volume (liters)}}$$

(f*) = 3.84 for phenol; 4.42 for m-cresol; 4.99 for 3, 4 dimethylphenol

The values are the μg in 1 μl of each individual phenol at 25°C and 760 mm Hg

$$3) \text{ Total PPM Phenols} = \text{PPM Phenol} + \text{PPM M-Cresol} + \text{PPM 3, 4 Dimethylphenol}$$

7. REFERENCES

7.1 Phenols in Water by Gas Chromatography: ASTM Standard Test Method D 2580-68, 1975 Annual Book of ASTM Standards (Water) Part 31.

7.2 Levaggi, D.A., Feldstein, M., "Determination of Phenols and Trimethylamine in Industrial Effluent." AIAA Library No. 71-1115, 750 3rd Ave., New York, N.Y. 10017.

LAB 9

REF: Regs. 8-4-201, 8-4-302, 8-4-303
8-4-310, 8-4-311

DETERMINATION OF COMPLIANCE OF SOLVENTS, COATINGS, AND RELATED PRODUCTS

1. PRINCIPLE

The tests performed in this procedure are designed so that the paraffinic olefinic, aromatic and oxygenated hydrocarbons found in solvents, coatings and related products may be individually identified and determined.

The analysis scheme is outlined in Figures III-1 and III-2. Solvents are treated as is; whereas coatings must be steam distilled to isolate the hydrocarbon fraction for further identification.

Fluorescent Indicator Analysis (FIA) is first performed on the solvent or water immiscible hydrocarbon fraction of the distillate to ascertain the volume percent of the different organic classes. Two FIA procedures are used, one for petroleum related products containing olefins, aromatics and saturates; and the other for solvents which contain oxygenated hydrocarbons in the presence of aromatics and saturates. Compliance may be determined on the basis of the appropriate FIA; if compliance is not defined sufficiently, gas chromatography is necessary for identifying specific compounds in the mixture.

The gas chromatographic procedures are somewhat complex utilizing various analytical columns and subtractive techniques. First, obtain a chromatogram of the solvent diluted with CS₂. For the selective removal of oxygenated hydrocarbons, 85% sulfuric acid is used. For the selective removal of olefins, aromatics and oxygenated hydrocarbons, sulfonation acid is utilized.

A second and possibly third chromatogram is then obtained by the selective subtractive techniques applied to the diluted mixture. By comparison of the chromatograms, it is possible to identify the class compounds required for determining compliance with the regulation.

2. APPARATUS

2.1 Fluorescent Indicator Analysis apparatus, as shown in Figure III-3

2.2 Pressurized gas manifold (nitrogen or air), equipped with an open end mercury manometer

2.3 Ultra-violet light source

2.4 1 and 5 ml graduated hypodermic syringes

2.5 Steam distillation apparatus, as shown in Figure III-4

2.6 Separatory funnel, 500 ml

2.7 Aluminum foil dish, 58 mm diameter x 10 mm high with flat bottom

2.8 Gas chromatograph. This unit is equipped with a compatible recorder and flame ionization detector

2.9 Vari-whirl mixer

3. REAGENTS

3.1 Silica Gel, 100 to 200 mesh, Grade 923. This is available from Davison Chemical, Baltimore, Maryland (Davison Code No. 923-08-08220). Before use, dry the gel at 350°F for 3 hours; transfer and store in a desiccator.

3.2 Fluorescent Indicator Dyed Gel. This is available from U.O.P. Process Division, U.O.P. Inc. Des Plaines, Ill. 60016 (U.O.P. Product No. 675).

3.3 Isopropyl Alcohol

3.4 Pressurized Gas, cylinder nitrogen or air

3.5 Analytical columns used in solvent analyses are:

3.5.1 14' x 1/8" 10% Carbowax 20M/Chromosorb W AW DCMS,
80 to 100 mesh

3.5.2 15' x 1/8" 10% 1,2,3 Tris (2-cyano-ethoxy) propane/
Chromosorb W, 60 to 80 mesh

3.5.3 15' x 1/8" 10% N N Bis 2 cyano-ethyl formamide/
Chromosorb W, 60 to 80 mesh

3.6 Rhodamine B Solution. Rhodamine B base (DuPont Inc.)
is prepared by dissolving 400 mg of solid in 10 ml of 200 proof
ethyl alcohol.

3.7 N-Butyl Amine

3.8 Carbon Disulfide

3.9 Standards for Fluorescent Indicator Analysis (FIA) and
Modified Fluorescent Indicator Analysis

3.9.1 Equal volumes of isooctane, heptene and xylene, or
appropriate substitutes. Prepare prior to use.

3.9.2 Equal volumes of isooctane, methyl ethyl ketone
and xylene or appropriate substitutes. Prepare prior to use.

3.10 85% Sulfuric Acid. To 12 ml of distilled water, slow-
ly add 88 ml of concentrated sulfuric acid.

3.11 Sulfonation Acid. Add the content of a 1 lb (454 g)
bottle of P₂O₅ to 575 ±5 ml of fuming sulfuric acid in an
Erlenmeyer flask. Stir with a glass rod or mechanical stirrer
until only a small amount of residue remains, cover with a watch
glass while the mixture cools to room temperature. Decant the acid
mixture into ground glass stoppered bottles. Store the acid mixture

in a desiccator. Prepare the reagent as rapidly as possible to minimize absorption of moisture from the air during preparation.

4. ANALYTICAL PROCEDURES

4.1 Determination of Volatile Content of Coatings

4.1.1 Weigh accurately 0.4 to 0.6 g (± 0.0001 g) of coating in a pre-weighed aluminum dish. Dry the sample in the oven at $105 \pm 10^\circ\text{C}$ for three hours. Cool the sample in the desiccator and weigh. Analyze the samples in duplicate. Results should agree to within $\pm 5\%$ of the mean.

4.2 Calculations

$$4.2.1 \text{ Wt. Coating} = \frac{\text{Wt. aluminum dish with paint} - \text{Wt. aluminum dish}}{\text{Wt. aluminum dish}}$$

$$4.2.2 \text{ Wt. Solid} = \frac{\text{Wt. aluminum dish with solid} - \text{Wt. aluminum dish}}{\text{Wt. aluminum dish}}$$

$$4.2.3 \text{ \% Solid in paint} = \frac{\text{Wt. Solid}}{\text{Wt. Coating}} \times 100$$

$$4.2.4 \text{ \% W/W Volatiles in paint} = 100\% - \text{\% Solid in paint}$$

4.3 Steam Distillation of Coatings

4.3.1 Transfer approximately 50 ml of thoroughly mixed coating to a tared 125 ml Erlenmeyer flask, reweigh and determine the weight of coating. Attach the flask to the steam generator and the collection apparatus shown in Figure III-4.

4.3.2 Heat and control the flask temperature with an electric heating mantle at approximately 70 to 80°C and commence delivery of steam to the flask. Collect a minimum of 200 ml of distillate.

4.3.3 Separate the hydrocarbon layer from the water layer by means of a separatory funnel. Record the volumes of both

fractions and weight of the hydrocarbon fraction (± 0.1 g). When oxygenates are not present, the weight of collected hydrocarbon layer must be within 10% of the expected weight determined by 4.2.4. The water layer is discarded. If oxygenated hydrocarbons are present, the weight of the immiscible hydrocarbon layer is added to the weight of miscible oxygenated hydrocarbons found in the water layer which is determined by gas chromatography, as described in 4.11. The combined weight of the immiscible hydrocarbon layer and the total miscible oxygenates in the water must be within 10% of the expected weight determined by 4.2.4.

4.3.4 For further processing, the immiscible hydrocarbon layer is dried by the addition of a few grams of anhydrous sodium sulfate.

4.4 Fluorescent Indicator Analysis (FIA) for Solvents and Hydrocarbon Fractions of Distillates Not Containing Oxygenated Hydrocarbons

4.4.1 Referring to Figure III-3, freely suspend the column. While vibrating the column along its entire length, add small increments of silica gel through a funnel until the column is 3/4 full. Stop the vibrator and add 3 to 5 mm layer of Fluorescent Indicator Dyed Gel. Start the vibrator and vibrate the column while adding additional silica gel. Continue to add the silica gel until it is tightly packed and extends 75 mm into the charger section.

4.4.2 Attach the filled column to the apparatus assembly. Chill the sample and the hypodermic syringe to 35 to 40°F. Draw 0.75 ml sample into the syringe and inject the sample 30 mm below the surface of the silica gel into the charger section.

4.4.3 Fill the charger section with isopropyl alcohol and connect the column to the gas manifold. Apply 40 to 80 mm Hg pressure for several minutes to move the liquid front down the column. Adjust the pressure to give a transit time of approximately one hour.

4.4.4 Before commencing to read the zone boundaries, carefully wipe the side of the column with a cloth dampened with ethyl alcohol and avoid handling the column with bare hands thereafter.

4.4.5 After the red aromatic boundary has advanced about 50 mm into the analyzer section, make a set of readings by quickly marking the boundary of each hydrocarbon type observed in ultraviolet light in the following sequence. For the non-fluorescent saturate zone, mark the front of the charge and the point where the yellow fluorescence first reaches its maximum intensity; for the upper end of the second or olefin zone, mark the point where the first intense blue fluorescence occurs; finally for the upper third or aromatic zone, mark the upper end of the reddish or brown zone. With colorless distillates, the alcohol-aromatic boundary is clearly defined by a red ring of the dye. When the sample has advanced about an additional 50 mm down the column, make a second set of readings and continue the reading until the zone lengths are constant. On completion, release the gas pressure and disconnect the column.

4.4.6 A standard solution prepared as in 3.9.1 should be run with each set of analyses performed.

4.5 Calculations

For each set of observations, calculate the % v/v of each hydrocarbon type to the nearest 0.1% as follows:

$$L_t = L_s + L_o + L_a$$

Where: L_t = Total length of the hydrocarbon zone

L_s = Total length of the saturate zone

L_o = Total length of the olefin zone

L_a = Total length of the aromatic zone

$$\% \text{ V/V Saturates} = \frac{L_s}{L_t} \times 100$$

$$\% \text{ V/V Olefins} = \frac{L_o}{L_t} \times 100$$

$$\% \text{ V/V Aromatics} = \frac{L_a}{L_t} \times 100$$

Determine compliance with Regulation 8, Rule 4, Section 201. If definite as to non-compliance, no further analysis is required; if indefinite continue with gas chromatography (4.8) for specific compound identification.

4.6 Modified FIA for Solvents and Hydrocarbon Fractions of Distillates Containing Oxygenated Hydrocarbons

4.6.1 Referring to Figure III-3, freely suspend the column. While vibrating the column along its entire length, add small increments of silica gel through a funnel until the column is 3/4 full. Stop the vibrator and add 3 to 5 mm layer of Fluorescent Indicator Dyed Gel and 3 drops of Rhodamine B solution. Vibrate the column while adding additional silica gel, continuing to add silica gel until it is tightly packed and the gel extends 75 mm into the charger section.

4.6.2 Attach the filled column to the apparatus assembly. Chill the sample and the hypodermic syringe to 35 to 40°F. Inject 0.75 ml of the sample 30 mm below the surface of the silica gel in the charger section.

4.6.3 Fill the charger with n-butyl amine and connect the column to the gas manifold; apply a pressure of 40 to 80 mm Hg. Higher pressure can result in poor boundary definitions. Adjust the pressure to give a transit time of approximately one hour.

4.6.4 Before commencing to read the zone boundaries, carefully wipe the side of the column with a cloth dampened with ethyl alcohol and avoid handling the column with bare hands thereafter.

4.6.5 After the fluorescent orange oxygenated hydrocarbon boundary of the sample has advanced about 50 mm into the analyzer section, make a set of readings by quickly marking the boundary of each hydrocarbon type observed in ultra-violet light in the following sequence. The leading saturate section is colorless; the aromatic section is blue throughout. The aromatic saturate section is taken as the point where the blue fluorescence first reaches its maximum intensity, usually split by a yellow-blue band. The upper aromatic boundary is marked by a red or brown zone which is readily observed in ordinary light and is included in the aromatic portion. The oxygenated compounds are colorless and extend from the brown section at the top of the aromatic section, to the top of the bright orange fluorescence marking the boundary of the oxygenated compounds. When the sample has advanced an additional 50 mm down the column, a second set of readings are made. Continue the readings until the relative zone lengths are constant. On completion, release the gas pressure and disconnect the column.

4.6.6 A standard solution prepared as in 3.9.2 should be run with each set of analyses performed.

4.7 Calculations

For each set of observations calculate to the nearest 0.1% of the hydrocarbon type as follows:

$$L_t = L_s + L_a + L_{ox}$$

Where: L_t = Total length of the hydrocarbon zone

L_s = Total length of the saturate zone

L_a = Total length of the aromatic zone

L_{ox} = Total length of the oxygenated zone

$$\% \text{ V/V Saturates} = \frac{L_s}{L_t} \times 100$$

$$\% \text{ V/V Aromatics} = \frac{L_a}{L_t} \times 100$$

$$\% \text{ V/V Oxygenated Hydrocarbon} = \frac{L_{ox}}{L_t} \times 100$$

4.7.1 For solvents, determine compliance with Reg. 5, Rule 1, Section 203. If definite as to non-compliance, no further analysis is required; if indefinite, continue with gas chromatography (4.8) for specific compound identification.

4.7.2 For coating distillates, the modified FIA values calculated in 4.7 must be corrected for the volume of oxygenated hydrocarbons found in the water layer (4.11) as follows:

$$(1) \text{ Corrected FIA Saturates} = \frac{V_{hl} \times (L_s/L_t \times 100)}{V_{hl} + V_{sd}}$$

$$(2) \text{ Corrected FIA Aromatics} = \frac{V_{hl} \times (L_a/L_t \times 100)}{V_{hl} + V_{sd}}$$

$$(3) \text{ Corrected FIA Oxygenates} = \frac{V_{hl} \times (L_{ox}/L_t \times 100) + V_{sd}}{V_{hl} + V_{sd}}$$

Where: V_{hl} = Volume of the hydrocarbon layer from the steam distillation

V_{sd} = Volume of water soluble oxygenates as calculated in 4.12.2

Determination is now made for compliance. If definite as to non-compliance, no further analysis is required; if indefinite, continue with gas chromatography (4.8) for specific compound identification.

4.8 Gas Chromatographic Analysis of Solvents and the Hydrocarbon Layer of the Steam Distillation

4.8.1 The selection of the proper analytical column(s) to be used should be based on the FIA using the following criteria:

4.8.1.1 If aromatics and high boiling oxygenates are reported as being present in the sample the Carbowax 20M column is recommended. Columns described in 3.5.2 and 3.5.3 are not recommended where high boilers are present or suspected.

4.8.1.2 If solvent contains only paraffins (olefins are rarely if ever present in solvents) and aromatics all three columns in Section 5 are adequate. All specified columns have the capability of separating C_9 to C_{11} paraffins and olefins from toluene.

4.8.2 Prepare a 2 to 5% V/V ($\pm 0.01\%$) solution of the solvent or hydrocarbon distillate in carbon disulfide. Calculate the dilution factor.

4.8.3 Inject 2.0 μ l of the diluted sample in a gas chromatograph containing one of the specified columns in Section 3.5, using the general criteria outlined in 4.8.1. Due to the complex mixtures used in solvents there will be many cases of overlapping peaks and complete masking of some compounds. Retain the chromatogram.

4.8.4 If oxygenates are present transfer 2 to 3 ml of the diluted sample (4.8.2) to a 10 ml test tube. Add approximately 3 ml of 85% sulfuric acid, cap well and mix thoroughly by use of a Vari-whirl mixer for 30 to 40 seconds. Let the sample settle for a few minutes. All the oxygenated compounds will have been sulfonated and selectively absorbed in the acid layer leaving only the hydrocarbons and aromatics in the carbon disulfide.

4.8.4.1 Inject 2.0 μ l of the sample now containing only paraffins and aromatics in the gas chromatograph. Retain the chromatogram.

4.8.5 To another 10 ml test tube, repeat steps in Section 4.8.4, substituting sulfonation acid in place of the 85% sulfuric acid. All the aromatics and oxygenated hydrocarbons will have been sulfonated and selectively absorbed in the acid layer.

4.8.5.1 Inject 2.0 μ l of the sample now containing only paraffins in the gas chromatograph. Retain the chromatogram.

4.8.6 Prepared standards are run with each set of samples. These standards are diluted with carbon disulfide, as are samples, and normally are prepared to contain C₆ to C₁₂ aliphatics, C₇ to C₁₂ aromatics, and a variety of commonly encountered ketones, esters and alcohols. The standards are prepared on a v/v basis

($\mu\text{l}/\text{ml}$ for ready calculation on a volume percent required by the regulation).

4.9 Calculations

Having the retention times and concentrations of specific compounds derived from the prepared standards the comparisons may now be made of the sample chromatograms obtained in 4.8.3, 4.8.4.1, 4.8.5.1 and 4.8.6.

4.9.1 Specific Oxygenates are identified and quantified by comparing the chromatograms derived in 4.8.3 and 4.8.4.1. The "disappearance" of peaks in 4.8.4.1 found in 4.8.3 identifies oxygenated compounds. The retention time is then matched to the oxygenated standards run in 4.8.6 and quantified by the peak height technique as follows:

$$\text{Total \% V/V of each individual oxygenate found} = \frac{(\text{Conc. of Std } \mu\text{l}/\text{ml})(\text{Peak Height of Samp.})(\text{Dil. Factor}^*)(100)}{(\text{Peak Height of Std})(1000)}$$

*As found in 4.8.2.

4.9.2 Specific Aromatics are identified and quantified by comparing the chromatograms derived in 4.8.4.1 and 4.8.5.1. Since the aromatics are found in the same retention time frame as many of the oxygenates, comparison of 4.8.4.1 (which has oxygenates selectively removed) and "disappearance" of peaks in 4.8.5.1 (which has both the oxygenates and aromatics remove) will identify the aromatic compounds. The compounds are then quantified and specifically identified by comparing to the standards run in 4.8.6 as follows:

$$\text{Total } \% \text{ V/V of each individual aromatic found} = \frac{(\text{Conc. of Std } \mu\text{l/ml}) (\text{Peak Height of Samp.})(\text{Dil. Factor}^*)(100)}{(\text{Peak Height of Std})(1000)}$$

*As found in 4.8.2.

4.10 Compliance with the regulation is determined by calculation and summation of the volume percent of the applicable compounds found in 4.9.1 and 4.9.2 as described in the regulation.

In the case of coatings, which are steam distilled and contain water soluble oxygenates, these oxygenates (4.11) must be added to the total volume of the sample for calculating the volume percents.

4.11 Gas Chromatographic Analysis of the Oxygenated Hydrocarbons in the Water Layer of Steam Distillation of Coatings

It is necessary to identify and quantify the miscible oxygenated hydrocarbons in the water layer of steam distilled coatings, so that corrections may be made to the FIA (4.7) and gas chromatographic data (4.10) for compliance purposes.

4.11.1 The Carbowax 20M column described in Section 3.5 is the most appropriate when analyzing water mixtures.

4.11.2 Inject 2.0 μl of the water layer of the distillate from 4.3 in a gas chromatograph, containing a Carbowax 20M analytical column. Retain the chromatogram.

4.11.3 A standard containing the normally encountered oxygenates, is prepared in distilled water ($\mu\text{l/ml}$). Inject 2.0 μl of the standard and record the retention times and peak heights. Retain the chromatogram for future reference.

4.12 Calculation

Compare the chromatograms of 4.11.2 and 4.11.3 to identify the specific oxygenates in the water layer of the distillate. Quantitate the individual compounds by the peak height technique.

$$4.12.1 \text{ Total } \mu\text{l of an individual oxygenate found} = \frac{(\text{Conc. of Std } \mu\text{l/ml})(\text{Peak Height of Samp.})(\text{Total Vol of Samp.}^*)}{\text{Peak Height of Std}}$$

*As found in 4.3.3.

$$4.12.2 \text{ Total } \mu\text{l of Oxygenates} = \text{Summation of individual oxygenates found}$$

5. REFERENCES

5.1 Mac Phee, R., et al, "Recommended Test Methods for Organic Solvents and Vapors (Rule 66)", Technical Services Division Report, April 1968, Los Angeles County Air Pollution Control District.

5.2 Ellis, W.H. and Le Tourneau, R.F., "Analysis of Lacquer Thinner by Fluorescent Indicator Absorption Method" Anal. Chem. 25, 1269-1270, 1953.

5.3 "Hydrocarbon Types in Liquid Petroleum Products" Fluorescent Indicator Absorption (FIA) Method. ASTM Designation D 1319-58. Book of ASTM Standards of Petroleum Products and Lubricants, 761-767, 1959.

5.4 Esposito, G.G., "Application of Gas Chromatography to the Analysis of Organic Coatings", Facts and Methods for Scientific Research, F&M Scientific Corp., 4, 1, 1963.

5.5 Esposito, G.G., et al, "Quantitative Measurements of Photochemically Reactive Aromatic Hydrocarbons in Enamels and Thinners", Journal of Paint Tech., JPTYA, 40, 214, 1968.

ANALYTICAL SCHEME FOR SOLVENTS

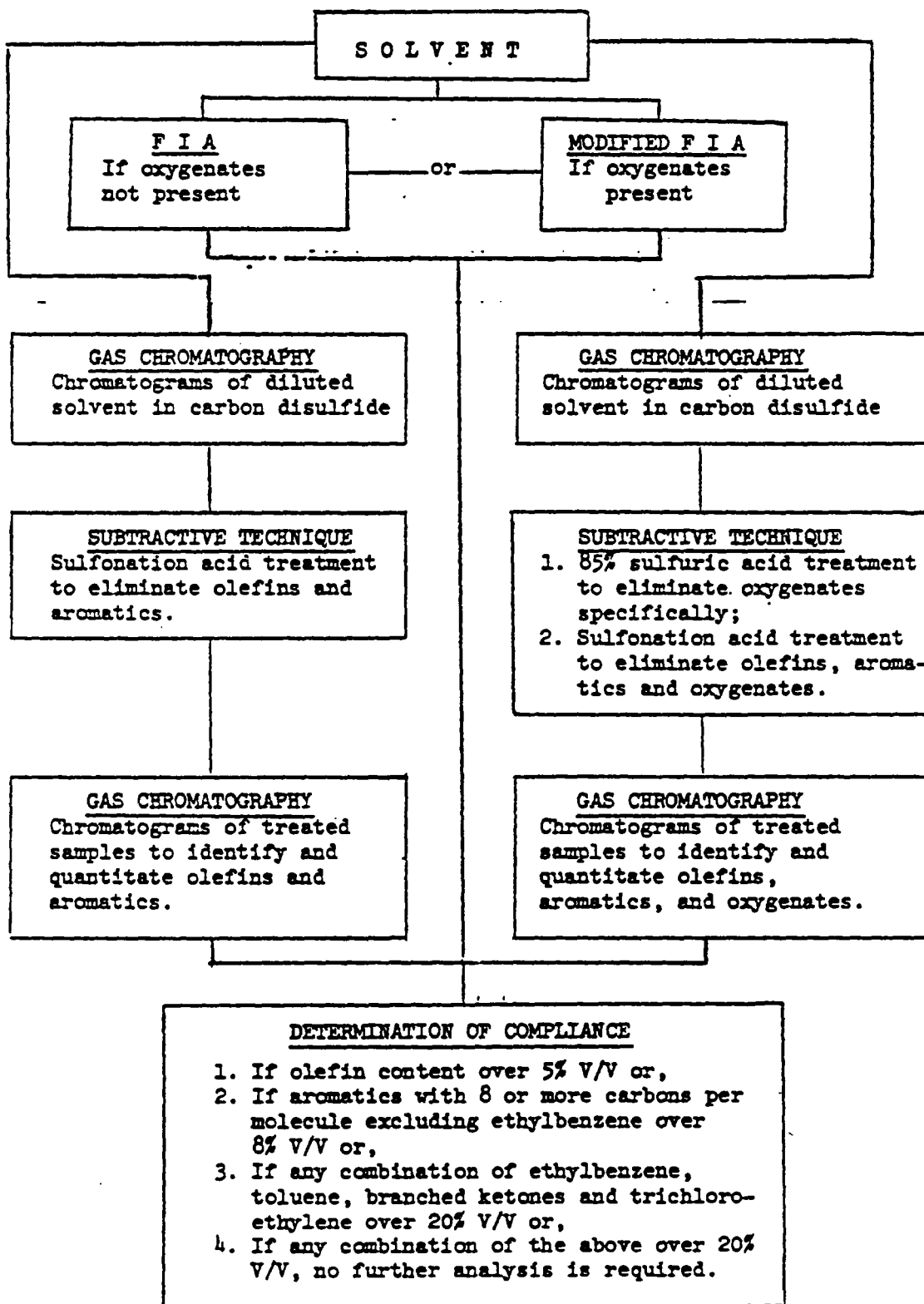


FIG. III-1

ANALYTICAL SCHEME FOR COATINGS

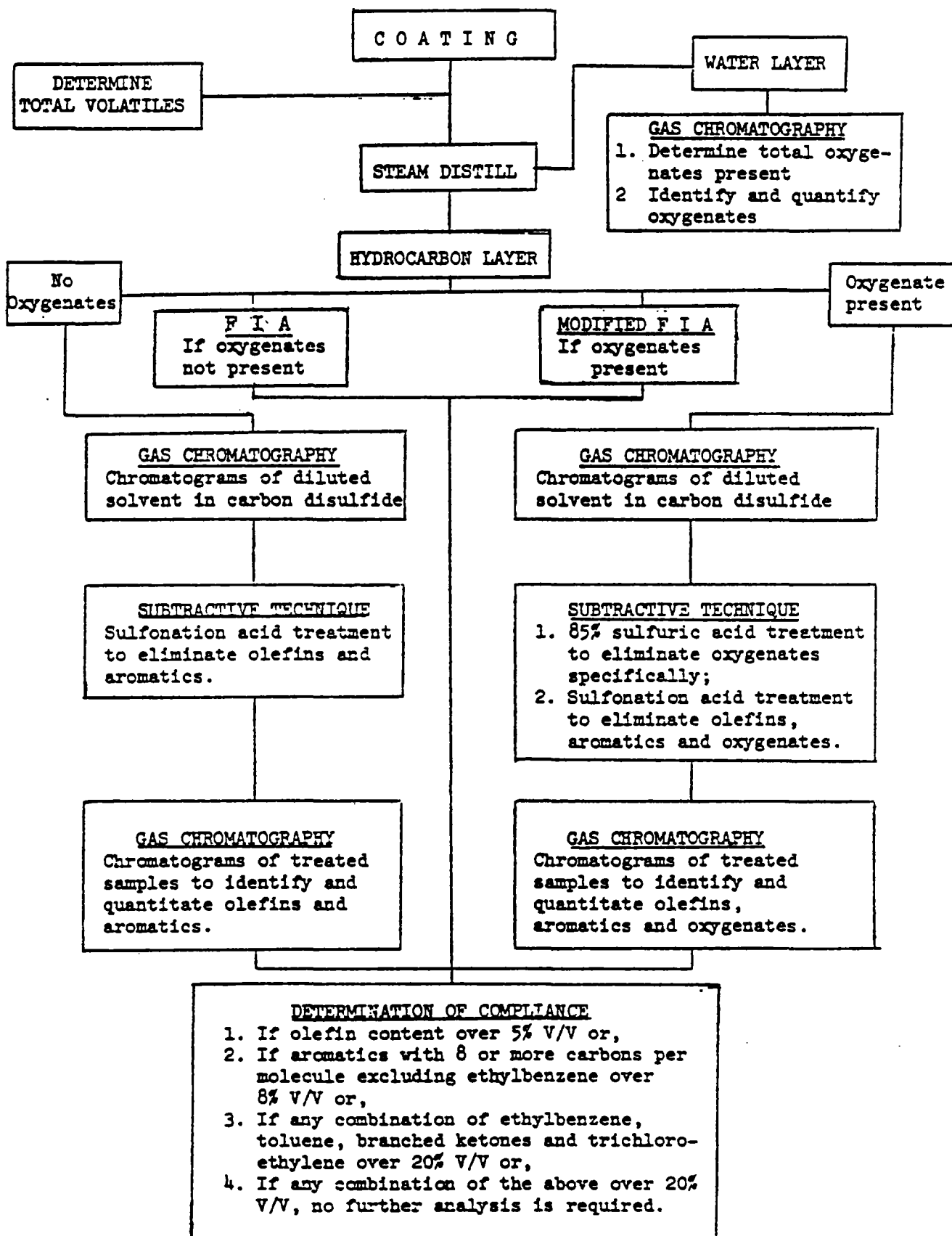


FIG. III-2

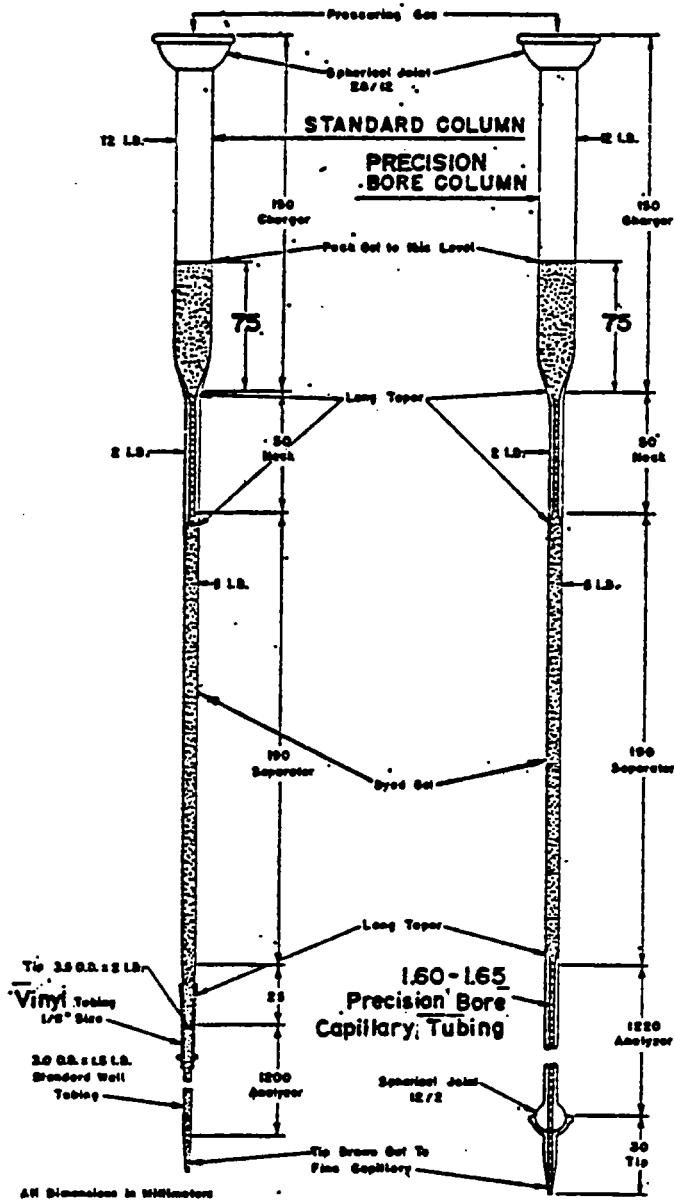


FIG. III-3
FIA APPARATUS

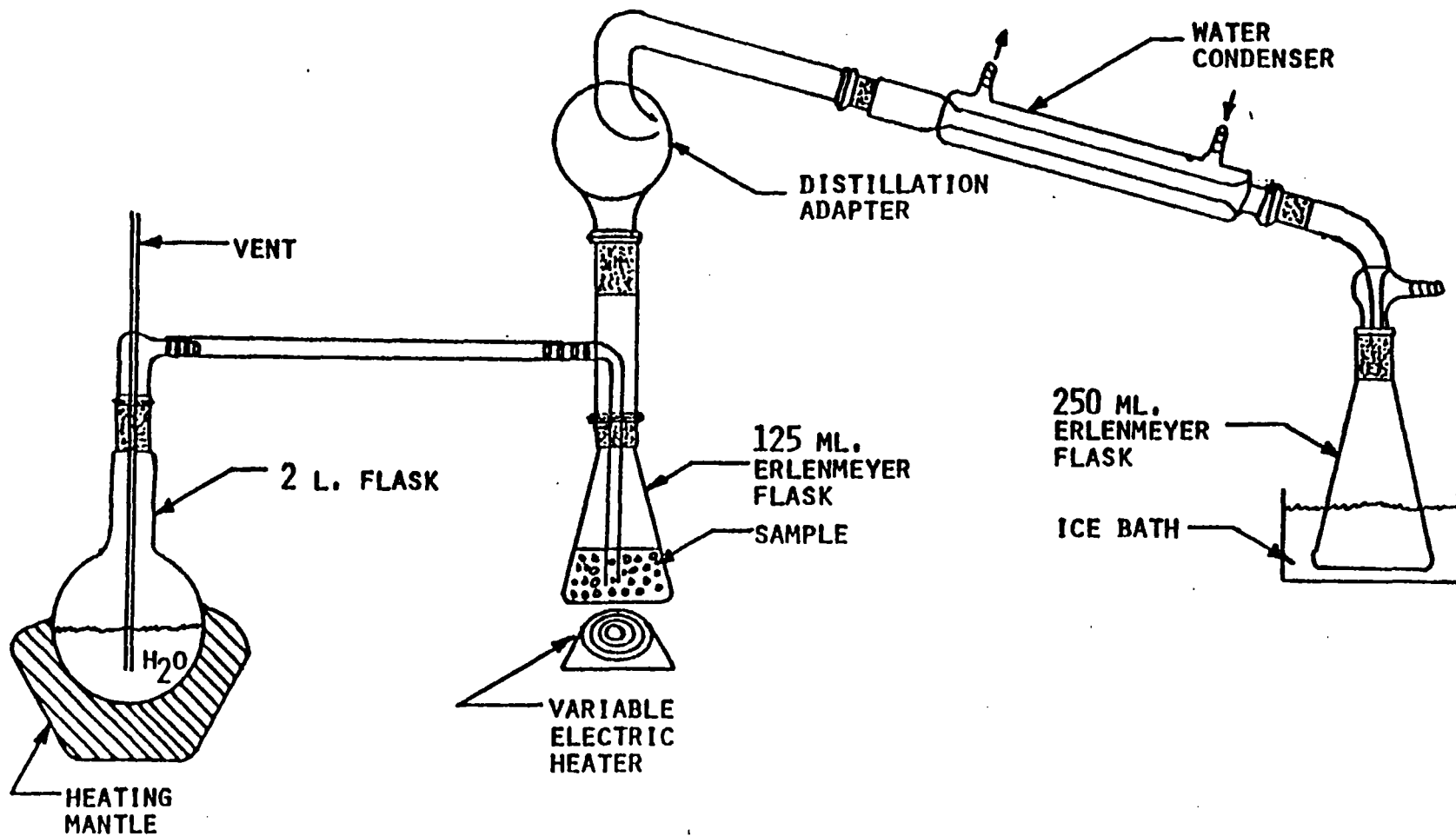


FIG. III-4

STEAM DISTILLATION APPARATUS

LAB 10

REF: Regs. 9-1-304
10-2-501.2

DETERMINATION OF SULFUR IN FUEL OIL

1. PRINCIPLE

The fuel oil sample is oxidized by combustion in a Schöniger Oxygen Combustion Flask. The sulfur dioxide formed during the combustion is absorbed in a dilute solution of sodium hydroxide containing hydrogen peroxide. The formed sulfate in the sodium hydroxide solution is filtered, if necessary and determined turbidimetrically as barium sulfate.

2. APPARATUS

2.1 Schöniger Oxygen Combustion Flask, 1 liter, available from A. Thomas Co., Philadelphia, Pa.

2.2 Filter paper carrier for 2.1, available from A. Thomas Co., Philadelphia, Pa.

2.3 Special Filter paper for 2.2, available from A. Thomas Co., Philadelphia, Pa.

2.4 Special screw clamp to attach 2.2 to 2.1, available from A. Thomas Co., Philadelphia, Pa.

2.5 Safety Oxygen Flask Ignitor, Thomas-Ogg Model 11, available from A. Thomas Co., Philadelphia, Pa.

2.6 Spectrophotometer

2.7 Analytical balance

2.8 25 ml graduated test tubes

3. REAGENTS

3.1 Cylinder Oxygen, U.S.P. grade

3.2 Sodium Hydroxide (0.05 N). Dissolve 2 g of sodium hydroxide in distilled water and dilute to 1 liter.

3.3 30% Hydrogen Peroxide

3.4 HCl (6 N). Dilute concentrated hydrochloric acid 1:1 with distilled water.

3.5 Sulfa Ver IV Pillows, Cat. No. 12065-00 available from Hach Chemical Co., Ames, Iowa.

4. ANALYTICAL PROCEDURE

4.1 Place 20 ml of 0.05 N NaOH and 5 drops of 30% H₂O₂ in the Schöniger Oxygen Combustion Flask.

4.2 Weigh a sample of fuel oil directly onto a tared special filter paper, adding the oil dropwise from a capillary pipet. Record the weight of the oil. The weight of the sample required depends on the sulfur content of the fuel oil. As a general guide, for samples containing 5 to 10% sulfur a 10 to 15 mg sample is taken; for 2 to 5% sulfur 15 to 30 mg; for 0.5 to 2% sulfur 30 to 40 mg; for 0.1 to 0.5% sulfur 40 to 50 mg; for samples containing less than 0.1% 60 to 70 mg. The maximum weight of oil which may be taken is in the 60 to 70 mg range using one liter combustion flask. Larger weights will result in incomplete combustion, evidenced by soot formation during the burning of the sample.

4.3 Fold the filter paper containing the fuel oil sample and attach it to the filter paper carrier (2.2).

4.4 The Schöniger flask is then thoroughly flushed with oxygen.

4.5 Quickly insert the filter paper carrier in the combustion flask and attach the screw clamp and tighten. Place the flask in the safety ignitor and position so that the filter paper will be in line with the infra-red beam. Push ignitor button until the filter paper ignites.

Alternately, the ignition may be performed manually as follows (however, the automatic ignition is preferred) with a match ignite the tip of the filter paper. Quickly insert the filter paper carrier into the combustion flask, holding it securely against the flask as considerable pressure builds up during the combustion. Invert the flask while combustion takes place. After combustion has ceased shake the flask vigorously. After a few moments, the flask pressure will reduce to a partial vacuum; then set the flask aside.

4.6 After combustion is complete, allow the sample to stand 10 to 15 minutes to permit complete absorption of sulfur dioxide and then shake vigorously. If combustion is incomplete (large amount of soot formed) sample must be re-run.

4.7 Filter, if necessary, and pipette a 10 ml aliquot of the filtrate into a 25 ml graduated test tube.

4.8 Make up volume to 19 ml with distilled water. Add 1 ml of 6 N HCl and the contents of a Sulfa Ver IV pillow.

4.9 Cover the test tube with parafilm and invert several times to mix thoroughly and dissolve the reagent.

4.10 Read after 10 minutes at 500 nm using 25 mm cuvettes. Determine the μgm sulfate in the aliquot from the standard curve prepared in Section 5.

4.11 Run a blank and standards with each sample.

5. STANDARD CURVE

5.1 Standard Stock Sulfate Solution. Weigh and transfer 0.1480 g of dry sodium sulfate to a 1 liter flask. Dissolve and dilute to mark with distilled water. This solution contains 100 micrograms of sulfate per ml.

5.2 Prepare a standard curve from the 100 µgm/ml standard sulfate solution by pipetting respectively 0, 2, 4, 6, 8, and 10 ml into a series of 25 ml graduated test tubes.

5.3 Make up to 19 ml with distilled water. Add 1 ml 6 N hydrochloric acid and the contents of a Sulfa Ver IV pillow.

5.4 Cover the test tube with parafilm and invert several times to mix.

5.5 Read after 10 minutes at 500 nm using 25 mm cuvettes. Plot % transmittance vs. concentration on semi-log graph paper. The standard curve is non-linear in the 0 to 400 micrograms range.

6. CALCULATIONS

$$\text{Total mg sulfur} = \frac{(\mu\text{gm from Standard curve}) (20 \text{ ml}) (32)}{(1000)(\text{ml aliquot}) (96)}$$

Where: 32 = the mol. wt. of sulfur
96 = the mol. wt. of Sulfate

$$\% \text{ Sulfur} = \frac{\text{Total mg Sulfur}}{\text{Wt. of Sample (mg)}} \times 100$$

7. REFERENCE

7.1 Levaggi, D.A., Feldstein, M., "A Rapid Method for the Determination of Sulfur in Fuel Oil by the Schöniger Flask Method," J. Air Poll. Cont. Assoc. 13, 380, 1963.

LAB 11

REF: Regs. 9-1-302, 9-1-304.3,
9-1-305 to 9-1-310,
10-1-301

DETERMINATION OF SULFUR DIOXIDE IN EFFLUENTS

1. PRINCIPLE

The sulfur dioxide is absorbed and reacted with a 3% hydrogen peroxide solution forming sulfuric acid. The resultant sulfuric acid is determined by either titration with standard sodium hydroxide or by a barium sulfate turbidimetric procedure. The titration method should not be used if other acidic or basic gases are known to be present in the effluent gas, but may be used when sampling sulfur recovery plants and sulfuric acid plants.

2. APPARATUS

2.1 Buret, 0 to 50 ml

2.2 Spectrophotometer with 25 mm cuvettes

2.3 Graduated 25 ml test tubes

3. REAGENTS

3.1 Standard Sodium Hydroxide Solution (0.1 N). Dissolve 4.0 g of sodium hydroxide pellets in 150 ml of distilled water and dilute to 1 liter. Determine normality of the solution within ± 0.0003 N by standardization against potassium acid phthalate using phenolphthalein indicator (6.1).

3.2 Bromcresol Green Indicator. Mix 0.1 g of bromcresol green in a mortar with 14.3 ml of 0.01 N sodium hydroxide. Dilute to 250 ml with distilled water.

3.3 Precipitating Reagent. Sulfa Ver IV Pillows, Cat. No. 12065-00 obtainable from the Hach Chemical Company, Ames, Iowa.

3.4 Hydrochloric Acid (6 N). Dilute concentrated hydrochloric acid 1:1 with distilled water.

3.5 Phenolphthalein Indicator (0.05%). Dissolve 50 mg phenolphthalein in 50 ml of ethanol and add 50 ml of distilled water.

3.6 Standard Sulfate Solution. Weigh 0.1480 g of anhydrous sodium sulfate and transfer to a 1 liter volumetric flask. Dissolve and bring to volume with distilled water. This solution contains 100 micrograms of sulfate per ml of solution.

4. ANALYTICAL PROCEDURE

4.1 Measure and record the total liquid volume of the impingers. Quantitatively transfer a 50.0 ml aliquot to a 250 ml Erlenmeyer flask.

4.2 Bring each flask to a boil, cool to room temperature and add 4 ml of the bromocresol green indicator solution. Titrate to the blue color end point using the standard sodium hydroxide solution.

4.3 Calculations

$$\text{mg SO}_2 = \frac{(\text{Total Imp. Vol}) \times N \times V(\text{NaOH}) \times 32}{\text{Aliquot Vol}}$$

Where: 32 = the equivalent weight of sulfur dioxide

$$\text{Total mg SO}_2 = \text{mg SO}_2 \text{ 1st Imp.} + \text{mg SO}_2 \text{ 2nd Imp.}$$

5. ALTERNATE ANALYTICAL PROCEDURE (TURBIDIMETRIC METHOD)

5.1 Measure and record the total liquid volume in each impinger.

5.2 Transfer an aliquot of sample containing 200 to 1000 μgm of sulfate to a graduated 25 ml test tube and dilute to the 20 ml mark with distilled water.

5.3 To another series of test tubes add 0, 200, 500 and 1000 micrograms of the sulfate standard (3.6) and dilute to 20

ml with distilled water.

5.2 To the sample and standards add 1.0 ml of 6 N hydrochloric acid and the content of a Sulfa Ver IV pillow. Bring volume to 25.0 ml with distilled water. Stopper and shake sufficiently to dissolve all the Sulfa Ver pillow reagents. Let stand for ten minutes and take readings at 500 nm using the 0 standard to set 100% transmission. Use 25 mm cuvettes. Plot % transmittance vs. concentration, using semi-log graph paper. The standard curve is non-linear in the 0 to 400 μgm range. Use this plot to determine the sulfate concentration in the sample runs.

5.3 Calculation

$$\text{mg SO}_2 = \frac{(\text{Total Imp. Vol})(\text{Micrograms SO}_4^{\equiv} \text{ from Std curve})}{\text{Aliquot Vol} \times 1000} \times \frac{64}{96}$$

Where: 64 = the mol. wt. of sulfur dioxide
96 = the mol. wt. of sulfate

$$\text{Total mg SO}_2 = \text{mg SO}_2 \text{ 1st Imp.} + \text{mg SO}_2 \text{ 2nd Imp.}$$

6. PREPARATION OF STANDARD SODIUM HYDROXIDE SOLUTION

6.1 Standardize the prepared sodium hydroxide solution (3.1) with potassium acid phthalate ($\text{KHC}_8\text{H}_4\text{O}_4$) using phenolphthalein indicator. Run in triplicate.

$$N \text{ NaOH} = \frac{\text{Wt of Potassium Acid Phthalate}}{(0.2042) \times (\text{ml NaOH})}$$

Where: 0.2042 = the gms/meqv. of potassium acid phthalate

7. REFERENCES

7.1 Jacobs, M.B., "Chemical Analysis of Pollutants," Interscience Publishers Inc, New York, 1960.

7.2 Levaggi, D.A., et al, "An Integrated Manual Impinger Method for the Simultaneous Determination of Nitrogen Oxides and Sulfur Oxides in Source Effluents," J. Air Poll. Cont. Assoc.

LAB 12

REF: Regs. 6-320, 6-330,
9-1-302, 9-1-304.3,
9-1-305 to 9-1-310,
10-1-301, 10-6-301,
12-6-301

DETERMINATION OF SULFUR DIOXIDE, SULFUR TRIOXIDE, AND SULFURIC
ACID MIST IN EFFLUENTS

1. PRINCIPLE

In a single extractive sampling system, sulfuric acid mist is trapped on a quartz wool probe extracted with distilled water and titrated with a standard sodium hydroxide solution. Sulfur trioxide is absorbed in an impinger containing 80% isopropyl alcohol followed by a backup filter. The formed sulfuric acid is titrated with a standard barium chloride solution using thorin indicator. The sulfur dioxide is absorbed in 3% hydrogen peroxide and the formed sulfuric acid is determined by titration with standard sodium hydroxide solution (applicable to sulfur recovery units and sulfuric acid plants). An alternate turbidimetric barium sulfate procedure can be used when other acids or bases are known or suspected to be present in the effluent gas.

2. APPARATUS

- 2.1 pH meter
- 2.2 Burets, 0 to 5 ml and 0 to 50 ml
- 2.3 Spectrophotometer with 25 mm cuvettes
- 2.4 Graduated 25 ml test tubes

3. REAGENTS

3.1 Standard Sodium Hydroxide Solution (0.1 N). Dissolve 4.0 g of sodium hydroxide pellets in distilled water and dilute to 1 liter. Standardize to ± 0.0003 N, using an acceptable method.

3.2 Bromcresol Green Indicator. Mix 0.1 g of bromcresol green in a mortar with 14.3 ml of 0.01 N sodium hydroxide. Dilute to 250 ml with distilled water.

3.3 Precipitating Reagent. Sulfa Ver IV Pillows, Cat. No. 12065-00, available from Hach Chemical Company, Ames, Iowa.

3.4 Hydrochloric Acid (6 N). Dilute concentrated hydrochloric acid 1:1 with distilled water.

3.5 80% Isopropyl Alcohol (Peroxide free). Add 200 ml of distilled water to 800 ml of isopropyl alcohol.

3.5.1 Test for peroxide in 80% isopropyl alcohol. Place 50 ml of 80% isopropyl alcohol in a 250 ml Erlenmeyer flask. Add 1 ml of concentrated sulfuric acid, 1 ml of 10% potassium iodide solution and swirl. Any yellow color indicates the present of peroxide.

3.6 Standard Barium Chloride Solution (0.100 N). Dissolve 6.1000 g of barium chloride dihydrate in a 500 ml volumetric flask containing 250 ml of distilled water. Add approximately 200 ml of 100% isopropyl alcohol and bring to volume with distilled water. Store in a tightly capped bottle. One ml of this solution is equivalent to 4.0 mg of sulfur trioxide.

3.7 Thorin Indicator ((0- $\sqrt{2}$ -hydroxy-3, 6 disulfo-1 naphthyl) -azo benzene arsonic acid disodium salt). Dissolve 0.2 g in 100 ml of distilled water.

3.8 Standard Sulfate Solution. Weigh 0.1480 g of anhydrous sodium sulfate and transfer to a liter volumetric flask. Dissolve and bring to volume with distilled water. This solution contains 100 micrograms of sulfate per ml of solution.

4. ANALYTICAL PROCEDURES

4.1 Determination of Sulfuric Acid Mist.

4.1.1 Remove the quartz wool from the glass probe and transfer to a 500 ml beaker. Add 200 ml of distilled water, mix well and soak with occasional swirling for at least 2 hours.

4.1.2 Take a 50 ml aliquot, add 4 ml of bromocresol green indicator and titrate to a blue color endpoint using the standard sodium hydroxide solution.

4.1.3 Calculation:

Total mg H_2SO_4 = (ml of NaOH) x (N of NaOH) x 49 x 4 ml

Where: 49 = the equivalent wt. of sulfuric acid

4.2 Determination of Sulfur Trioxide

4.2.1 The analysis should be performed within four hours after sample collection. If a delay is anticipated, sample should be refrigerated until the analysis can be performed.

4.2.2 The first 80% isopropyl alcohol impinger content is transferred to a 250 beaker. The backup filter is added, mixed, and allowed to soak in the beaker for approximately one hour. The contents are then decanted into a 250 ml volumetric flask. The remaining filter is washed consecutively with 80% isopropyl alcohol and the washings added to the volumetric flask. Make up to the mark with 80% isopropyl alcohol. Take a 25.0 ml aliquot and transfer it to a 125 ml Erlenmeyer flask. Adjust the pH to 3.0 with 1:4 perchloric acid. Add 2 drops of Thorin indicator and titrate using standard barium chloride (using a 0 to 5 ml microburet) to a salmon pink endpoint.

The second 80% isopropyl alcohol impinger is treated the same as in 4.2.2.

4.2.3 Calculation

$$\text{Total mg SO}_3 = \frac{\text{Net Titer (1st Imp. + Filter - 2nd Imp)} \times 4.0 \times 250 \text{ ml}}{25 \text{ ml aliquot}}$$

Where 4.0 = the mg sulfur trioxide per ml of titrant

4.2.3.1 The second impinger is regarded as a blank since some SO₂ may be oxidized to SO₃ when sampling sources which have high concentrations of SO₂.

4.3 Determination of Sulfur Dioxide

4.3.1 In the absence of other acids or bases in the sample, measure accurately the total liquid volume in each hydrogen peroxide impinger. Transfer a 50.0 ml aliquot from each impinger into a separate 250 ml Erlenmeyer flask and bring to a boil. Cool to room temperature, add 4 ml of bromcresol green indicator and titrate with standard sodium hydroxide solution to blue color endpoint.

4.3.2 Calculations

$$\text{mg SO}_2 = \frac{(\text{Total Imp. Vol}) \times (\text{N of NaOH}) \times (\text{ml (NaOH)}) (32)}{\text{Aliquot Vol}}$$

Where 32 = the equivalent wt. of sulfur dioxide

Total mg SO₂ = mg SO₂ 1st Imp. + mg SO₂ 2nd Imp.

4.3.3 Alternative Analytical Procedure (Turbidimetric Method)

4.3.3.1 Measure accurately the total liquid volume in each impinger and transfer an aliquot of the sample containing 200 to 1000 micrograms of sulfate to a graduated 25 ml test tube.

4.3.3.2 To another series of tubes add 0, 200, 500 and 1000 µgm of the sulfate standard (3.8).

4.3.3.3 To the samples and standards add 1 ml of 6 N hydrochloric acid and dilute to 25.0 ml with distilled water.

4.3.3.4 Add the contents of one Sulfa Ver pillow, stopper and shake to dissolve the pillow reagents.

4.3.3.5 Let stand for ten minutes and take readings at 500 nm with 25 mm cuvettes using the 0 µgm standard to set the spectrophotometer at 100% T. The standard curve is non-linear in the - to 400 µgm range.

4.3.3.6 Calculations

$$\text{mg SO}_2 = \frac{(\text{Total Imp. Vol}) (\text{Micrograms SO}_4^{\equiv} \text{ from Std Curve}) \times \frac{64}{96}}{\text{Aliquot Vol} \times 1000}$$

Where 64 = the mol. wt. of sulfur dioxide

96 = the mol. wt. of sulfate

Total mg SO₂ = mg SO₂ 1st Imp. + mg SO₂ 2nd Imp.

5. REFERENCES

5.1 Shell Development Co., Analytical Dept., "Determination of Sulfur Dioxide and Sulfur Trioxide in Stack Gases. Emeryville Method Series 4516/59a.

5.2 Flint, D., "A Method for the Determination of Small Concentrations of Sulfur Trioxide in the Presence of Higher Concentrations of Sulfur Dioxide", J. Soc. Chem. Inc. (British) 67, 2, 1948.

LAB 13

REF: Regs. 8-1-206, 8-5-101,
8-6-206, 8-18-111,
10-9-301, 10-9-302

DETERMINATION OF THE REID VAPOR PRESSURE OF PETROLEUM PRODUCTS

1. PRINCIPLE

This method provides for air partial saturation of petroleum products with a Reid vapor pressure below 26 lb using a Reid Vapor Pressure Bomb. The gasoline chamber portion of the vapor pressure apparatus is filled with a chilled sample and connected to the air chamber. The apparatus is immersed in a constant temperature bath ($100 \pm 0.2^{\circ}\text{F}$) and shaken periodically, until equilibrium is reached.

2. APPARATUS

2.1 Refrigerator or Freezer

2.2 Reid Vapor Pressure Bomb. This unit is equipped with a 4 in., 0 to 15 psig gauge (Fig. III-6).

2.3 Constant temperature water bath ($100 \pm 0.2^{\circ}\text{F}$)

3. ANALYTICAL PROCEDURE

3.1 Handling of Sample

3.1.1 The size of the sample container used in taking the sample shall not be less than 1 quart nor more than 1 gallon.

The container shall be a solvent can, with a 1 3/4 in. lid opening, and filled to approximately 90% capacity.

3.1.2 In all cases after a sample has been taken, the container shall not be opened unless it has been cooled to $< 32^{\circ}\text{F}$.

3.1.3 Samples shall be put in ice as soon as taken, and transferred to the laboratory for immediate storage in the refrigerator, and stored there until the tests have been completed.

Samples in leaky containers shall not be considered for tests but shall be discarded and new samples taken.

3.2 Preparation for Test

3.2.1 Air Saturation of Sample in Sample Container -

Remove the sample container from the refrigerator, unseal it examine it for its liquid content, which shall be approximately 90 percent of the container capacity. After the liquid content has been assured, reseal the container, shake vigorously and return it to the refrigerator.

3.2.2 Preparation of the Gasoline Chamber -

Place the open gasoline chamber and the sample transfer connection into the refrigerator for sufficient time to allow the chamber and connection to reach temperature (32°F to 40°F).

3.2.3 Preparation of Air Chamber (100°F Procedure) -

After rinsing and purging the air chamber, connect the gauge to the air chamber. Immerse the air chamber to at least 1 in. above its top in the water bath maintained at $100 \pm 0.2^\circ\text{F}$ for not less than 10 minutes just before coupling it to the gasoline chamber. Do not remove the air chamber from the bath until the gasoline chamber has been filled as described in Section 3.3.

3.3 Sample Transfer -

With all in readiness, remove the chilled sample from the refrigerator, uncap it and insert the chilled transfer connection and air tube (Fig. III-5). Then place the empty chilled gasoline chamber over the sample delivery tube of the transfer connection. Invert the entire system rapidly so that the gasoline chamber is finally in an upright position with the delivery tube extending to within 1/4 in.

of the bottom of the gasoline chamber. Fill the gasoline chamber to overflowing. Lightly tap the gasoline chamber against the work bench to insure that the sample is free of air bubbles. If any sample is displaced, refill the chamber to overflowing.

3.3.1 Assembly of Apparatus - Without delay and as quickly as possible, attach the air chamber to the gasoline chamber.

3.3.2 Introduction of Apparatus to Bath - Turn the assembled vapor pressure apparatus upside down to allow the sample in the gasoline chamber to run into the air chamber and shake vigorously in a direction parallel to the length of the apparatus. Immerse the assembled apparatus into the bath, maintained at $100 \pm 0.2^\circ\text{F}$, in an inclined position so that the connection of the gasoline and air chamber is below the water level and may be observed closely for leaks. If no leaks are observed, immerse the apparatus to at least 1 in. above the top of the air chamber. Observe the apparatus for leaks throughout the test. If a leak is detected, discard the test.

3.3.3 Measurement of Vapor Pressure - After the assembled vapor pressure apparatus has been immersed in the bath for 5 minutes, tap the pressure gauge lightly and record the reading. Withdraw the apparatus from the bath, invert it, shake it vigorously and immediately place back in the bath. At intervals of about 10 minutes, repeat this agitation and gauge observation at least five times, until the last two gauge readings are constant. These operations normally require 60 to 90 minutes. Read the final gauge pressure to the nearest 0.05 psig for gauges with intermediate graduations of 0.1 psig and to the nearest 0.1 psig for gauges with

graduation of 0.2 to 0.5 psig. The value obtained is the Reid Vapor Pressure of the sample under test.

4. A nomograph Figs. III-7 and III-8) is used to convert Reid Vapor Pressure to true vapor pressure (See Reference 4.2).

4. REFERENCES

4.1 Vapor Pressure of Petroleum Products (Reid Method)
ASTM designation D-323-72, Book 23 ASTM Petroleum Products (1977).

4.2 Nomograph of Petroleum Products Vapor Pressure.
Air Pollution Engineering Manual, 2nd Ed., AP40, 635-636.

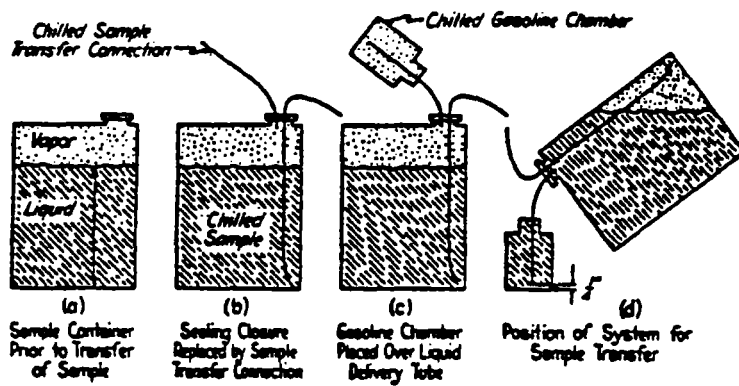
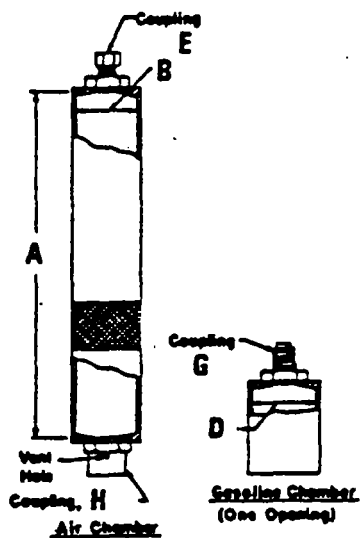


FIG. III-5
SAMPLE TRANSFER TO GASOLINE CHAMBER



DIMENSIONS OF VAPOR PRESSURE BOMB

Key	Description	in.	mm
A	Air chamber, length	$10 \pm \frac{1}{16}$	254 ± 3
B, D	Air and gasoline chambers, ID	$2 \pm \frac{1}{16}$	51 ± 3
E	Coupling, ID min	$\frac{3}{16}$	
G	Coupling, OD	$\frac{1}{2}$	
H	Coupling, ID	$\frac{1}{2}$	

FIG. III-6
REID VAPOR PRESSURE BOMB

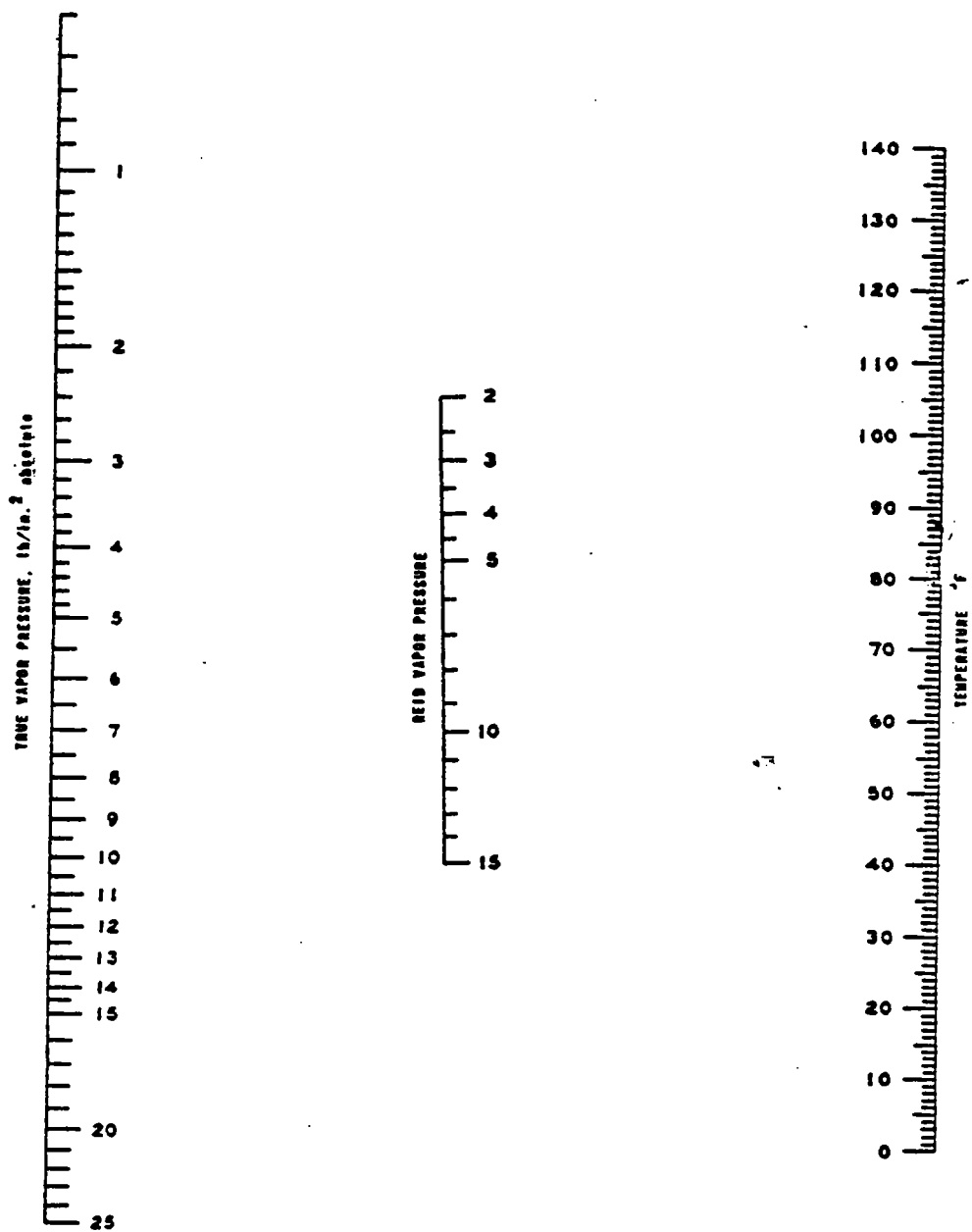


Fig. III-7
 VAPOR PRESSURES OF CRUDE OIL

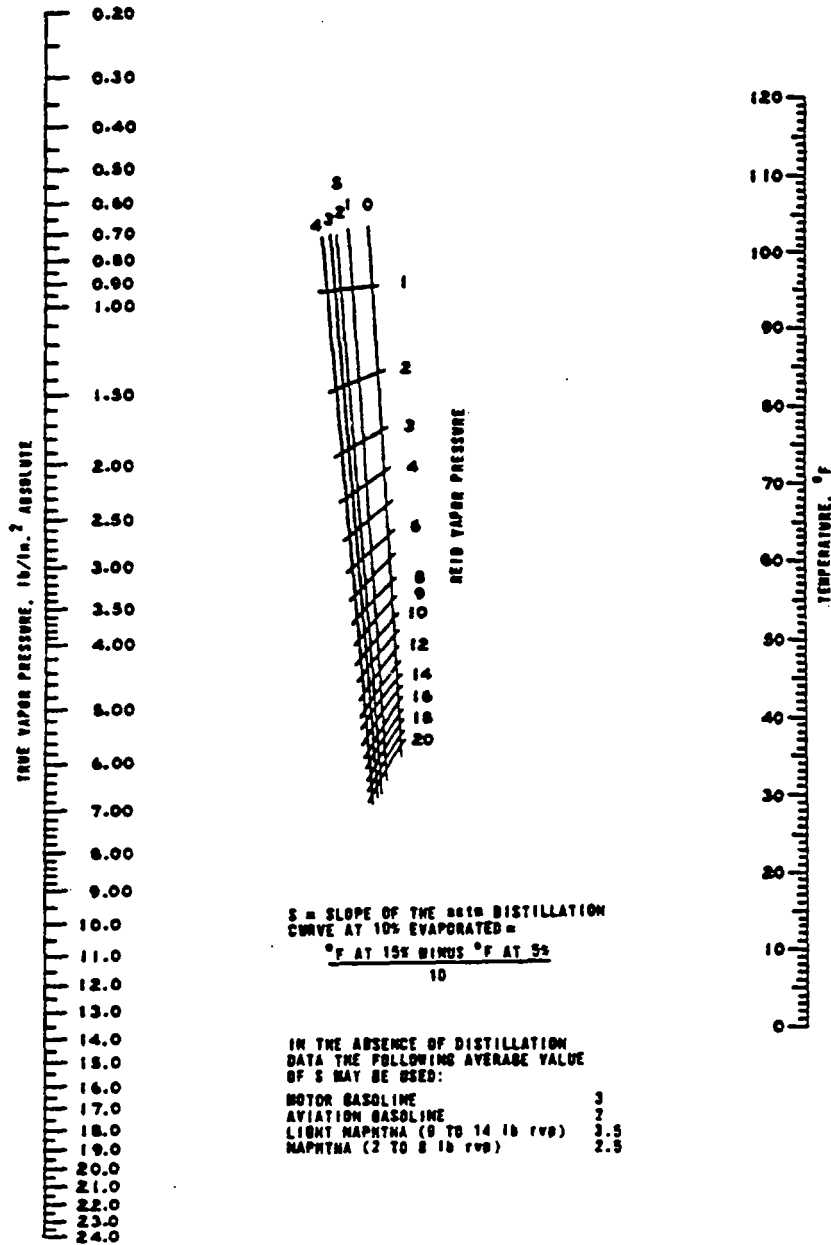


Fig. III-8
 VAPOR PRESSURES OF GASOLINES AND FINISHED PETROLEUM PRODUCTS (1 - 20 lb)

REF: Reg. 7-303

DETERMINATION OF TRIMETHYLAMINE IN EFFLUENTS

1. PRINCIPLE

The trimethylamine is absorbed and converted to the stable hydrochloride salt in dilute hydrochloric acid solution. The trimethylamine is regenerated by addition of sodium hydroxide and determined by gas chromatography using flame ionization detection.

2. APPARATUS

2.1 Gas Chromatograph. This unit equipped with a flame ionization detector, must be capable of detecting 2 $\mu\text{gm/ml}$ of trimethylamine with a peak height of at least 3 times the noise level.

2.1.1 A glass 4' x 1/8" analytical column is used, containing 15% Dowfax 9N9 + 7.5% TEPA on Chromosorb W 60/80 mesh. The material is prepared, packed and conditioned employing standard techniques.

2.2 10 μl syringe

2.3 Injection port fitted with a glass sleeve

3. REAGENTS

3.1 Hydrochloric Acid (0.1 N). Add 8.4 ml of concentrated hydrochloric acid to 500 ml distilled water and dilute to 1 liter.

3.2 Sodium Hydroxide Solution (1 N). Dissolve 40 g of sodium hydroxide pellets in 500 ml of distilled water and dilute to 1 liter.

3.3 Litmus Paper - Red

4. ANALYTICAL PROCEDURE

4.1 Measure and record the total liquid volume of the impingers. If samples are to be analyzed within 3 days proceed as in 4.2 to 4.4. If analysis is delayed keep samples refrigerated.

4.2 Transfer a 9.0 ml aliquot of the sample to a 25 ml graduated test tube. Add 1 ml of 1 N sodium hydroxide, sufficient to make the solution basic. Cover the test tube with parafilm; invert and mix well. Check to insure the sample is basic with pH paper.

4.3 Inject a 2 μ l sample into the gas chromatograph injection port. The operating parameters are: column temperature 75°C; detector temperature 200°C; injection port temperature 160°C; carrier gas 40 ml/min; hydrogen 20 ml/min and air 250 to 300 ml/min.

4.4 Using peak heights, calculate the trimethylamine concentration compared to the peak heights of the standard solutions of trimethylamine.

5.1 Standard Stock Amine Solution. To a 1 liter volumetric flask, add 0.1691 g of trimethylamine hydrochloride salt, dissolve and bring to volume with 0.1 N hydrochloric acid. This standard solution contains 100 μ gm trimethylamine/ml.

5.2 Working Standard Solution. Dilute the standard stock solution with 0.1 N hydrochloric acid to make working standards containing 2, 5 and 10 μ gm trimethylamine/ml. These standards are processed in the same manner as the samples described in Section 4.1.

6. CALCULATION

$$\text{PPM TMA (V/V)} = \frac{(\mu\text{gm in sample})(\text{Total vol of impinger})}{(\text{Aliquot of sample}) (2.4) (\text{Sample vol in liters})}$$

Where 2.4 = the μgm in 1 μl of trimethylamine at
25°C and 760 mm Hg

7. REFERENCES

7.1 Di Corcia A., et al. "Gas Chromatographic Determination at the Part per Million Level of Aliphatic Amines in Aqueous Solution", Anal. Chem. 46, 977, 1974.

7.2 Levaggi, D.A., Feldstein, M., "Determination of Phenols and Trimethylamine in Industrial Effluents", AIAA Library No. 71-115, 750 3rd Ave., New York, N.Y. 10017.

LAB 15

STANDARDIZATION OF CARBON DIOXIDE CALIBRATION GAS

1. RATIONALE

Carbon dioxide standards used for calibrating source test instrumentation must be checked periodically for accuracy and quality assurance purposes.

2. PRINCIPLE

The carbon dioxide gas is absorbed by Ascarite and the increase in weight of the absorbent is determined gravimetrically. The carbon dioxide gas must first pass through Drierite to remove water vapor, which would otherwise interfere with the determination.

3. APPARATUS

3.1 Analytical balance

3.2 Schwartz Absorption Combustion Tubes. These tubes are available from Kontes Glass Co. (Cat. No. K891250). The tubes are filled with the appropriate material and plugged at each end with glass wool.

3.3 Wet Test Meter (readout in liters)

3.4 Rotameter 0 to 1 liter/min range

3.5 Two Stage Regulator, with a controlling valve

4. REAGENTS

4.1 Anhydrone

4.2 Ascarite

4.3 Drierite (8 to 14 mesh)

5. ANALYTICAL PROCEDURE

5.1 Assemble the sampling train as shown in Figure III-9. The train consists of 2 U-shaped Schwartz Combustion absorption

tubes attached to the carbon dioxide standard cylinder equipped with a 2 stage regulator and controlling valve. The first absorption tube contains Drierite to remove water vapor which may be present in the cylinder gas. The inlet of the second absorption tube contains Ascarite and the other half Anhydrone, (separated by a glass wool plug) to remove respectively the carbon dioxide, and any water formed during the collection reaction.

5.2 Prior to the analysis, flush the entire sampling train with approximately 2 liters of the calibration gas.

5.3 Disconnect the Ascarite-Anhydrone tube from the sample train and carefully weigh with an analytical balance. Record the weight (W_1). Reconnect the Ascarite-Anhydrone tube to the sampling train.

5.4 Record the wet test meter reading (M_1). The cylinder controlling valve is slowly opened, and using the rotometer as a guide, the flow is adjusted as rapidly as possible to 0.5 to 1 liter per minute.

5.5 The volume of sample depends on the concentration of carbon dioxide in the sample. The gain in weight of the Ascarite-Anhydrone tube should be at least 20 mg. As a guide, 1000 ppm carbon dioxide should have a sample size of about 10 liters.

5.6 After sufficient sample has been collected, close the controlling valve. The Ascarite-Anhydrone tube is disconnected and again carefully weighed (W_2). The final wet test meter reading is then recorded (M_2).

5.7 At least two determinations are to be made and must agree to within $\pm 5\%$ of the mean.

6. CALCULATION

1 mg carbon dioxide per liter is equal to 556 ppm

$$\text{PPM CO}_2 = \frac{(W_2 - W_1) (556)}{(M_2 - M_1)}$$

7. REFERENCE

7.1 Textbook of Quantitative Inorganic Analysis, Kolthoff and Sandell, 3rd Ed. 1952, MacMillan, N.Y.

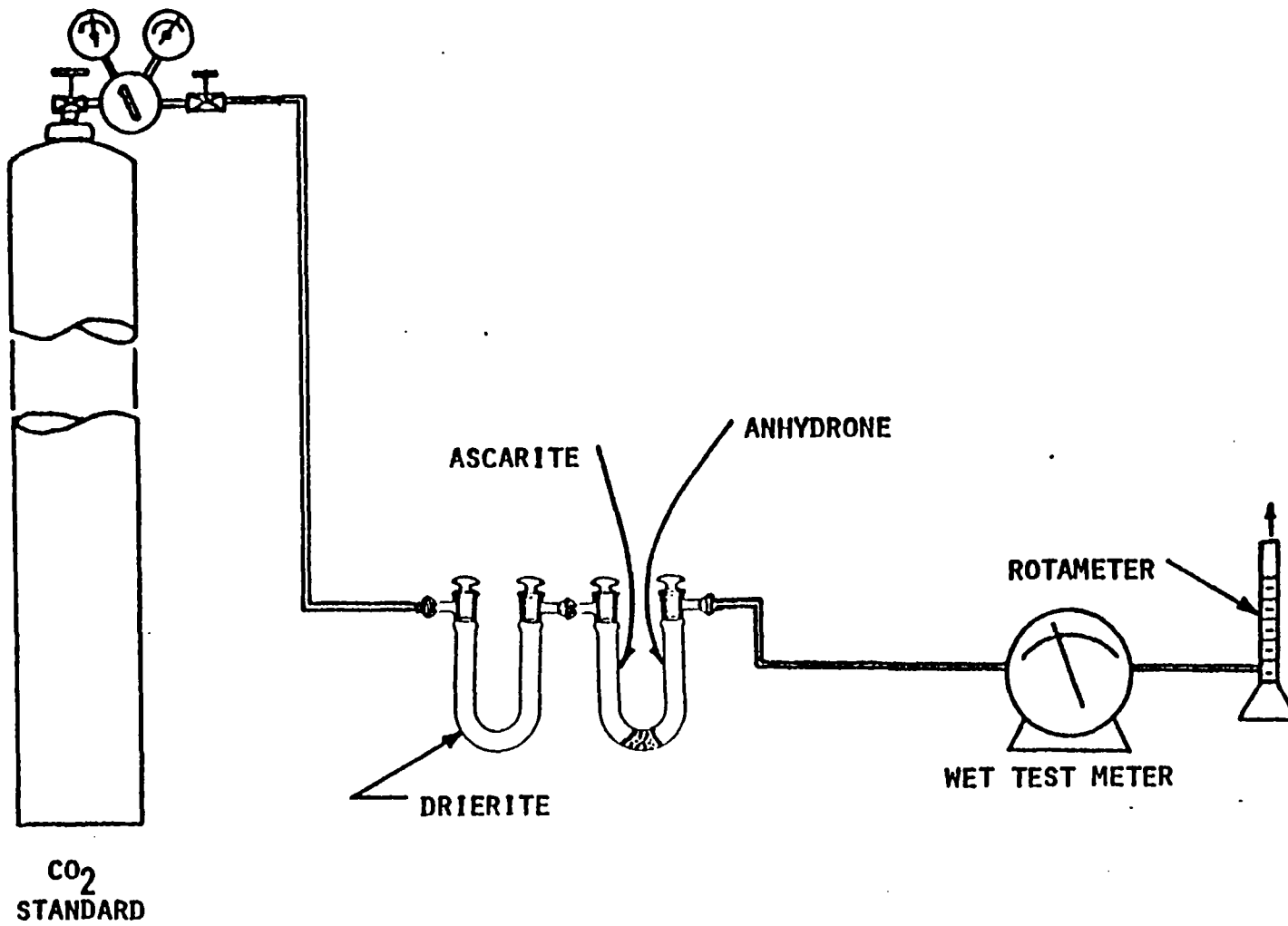


FIG. III-9
GRAVIMETRIC DETERMINATION OF CARBON DIOXIDE

LAB 16

STANDARDIZATION OF CARBON MONOXIDE CALIBRATION GAS

1. RATIONALE

Carbon monoxide standards used to calibrate source test instrumentation must be checked periodically for accuracy and quality assurance purposes.

2. PRINCIPLE

Carbon monoxide calibration gas is oxidized to carbon dioxide by use of Hopcalite catalyst. The formed carbon dioxide is absorbed by the Ascarite and is determined gravimetrically. Any water vapor and carbon dioxide in the sample must be removed prior to the Hopcalite catalyst.

3. APPARATUS

3.1 Analytical balance

3.2 Rotameter, 0 to 1 liter range

3.3 Wet Test Meter (readout in liters)

3.4 Two stage regulator, with a controlling valve

3.5 Schwartz Absorption Combustion Tubes. These tubes are available from Kontes Glass Co. (Cat. No. K891250). The tubes are filled with the appropriate material and plugged at each end with glass wool.

3.6 Boiling water bath

3.7 Hopcalite U-trap. This trap is constructed of 7 to 10 mm ID borosilicate glass and is approximately 20 cm in length. The trap is filled with 3 to 6 g of Hopcalite and plugged at each end with glass wool. The trap should be fitted with spherical joints for ease of assembling and disassembling.

4. REAGENTS

4.1 Anhydrone

4.2 Ascarite

4.3 Hopcalite, Active (4 to 20 mesh, available from the Mine Safety Appliance Co.)

4.4 Drierite (8 to 14 mesh)

5. ANALYTICAL PROCEDURE

5.1 Assemble a sampling train as shown in Figure III-10. The train consists of a Drierite trap to remove moisture; an Ascarite trap to remove carbon dioxide; Hopcalite trap, immersed in boiling water bath, a Drierite trap to remove the generated moisture and a final Ascarite-Anhydrone trap to collect the carbon dioxide formed in the oxidation process. A wet test meter and a rotameter complete the train.

5.2 The Hopcalite catalyst must be conditioned prior to each determination. This is accomplished by disconnecting the sampling train after the Hopcalite trap and allowing approximately 15 liters of the calibration gas to pass through at approximately 0.5 liter/min with the Hopcalite trap immersed in the boiling water bath.

5.3 While conditioning the Hopcalite catalyst, carefully weigh the Ascarite-Anhydrone trap with an analytical balance. Record the weight (W_1).

5.4 After conditioning, reconnect the sampling train.

5.5 Record the original wet test meter reading (M_1). By means of the controlling valve on the 2 stage regulator, adjust the flow through the sampling train to approximately 0.5 liter

per minute as rapidly as possible using the rotameter as an indicator. The gain in weight of the Ascarite-Anhydrone tube should be at least 20 mg. The sample time will depend on the concentration of the carbon monoxide in the sample. As a guide, 200 ppm of carbon monoxide should have a sample size of approximately 60 liters.

5.6 After sufficient sample has been collected, close the controlling valve. The Ascarite-Anhydrone tube is disconnected and again carefully weighed (W_2). The final wet test meter reading is then recorded (M_2).

5.7 At least two determinations are to be made and must agree to within $\pm 5\%$ of the mean.

6. CALCULATIONS

1 mg carbon monoxide per liter is equal to 873 ppm

$$\text{PPM CO in cylinder} = \frac{(W_2 - W_1) (873)}{(M_2 - M_1)} \times \frac{28}{44}$$

Where: 28 = the mol. wt. of carbon monoxide
44 = the mol. wt. of carbon dioxide

7. REFERENCES

7.1 Feldstein, M., Progress in Chemical Toxicology
Vol. 13, 105-106, 1967 Ed. A Stolman, Academic Press, N.Y.

7.2 Methods of Air Sampling and Analysis, 2nd Ed.
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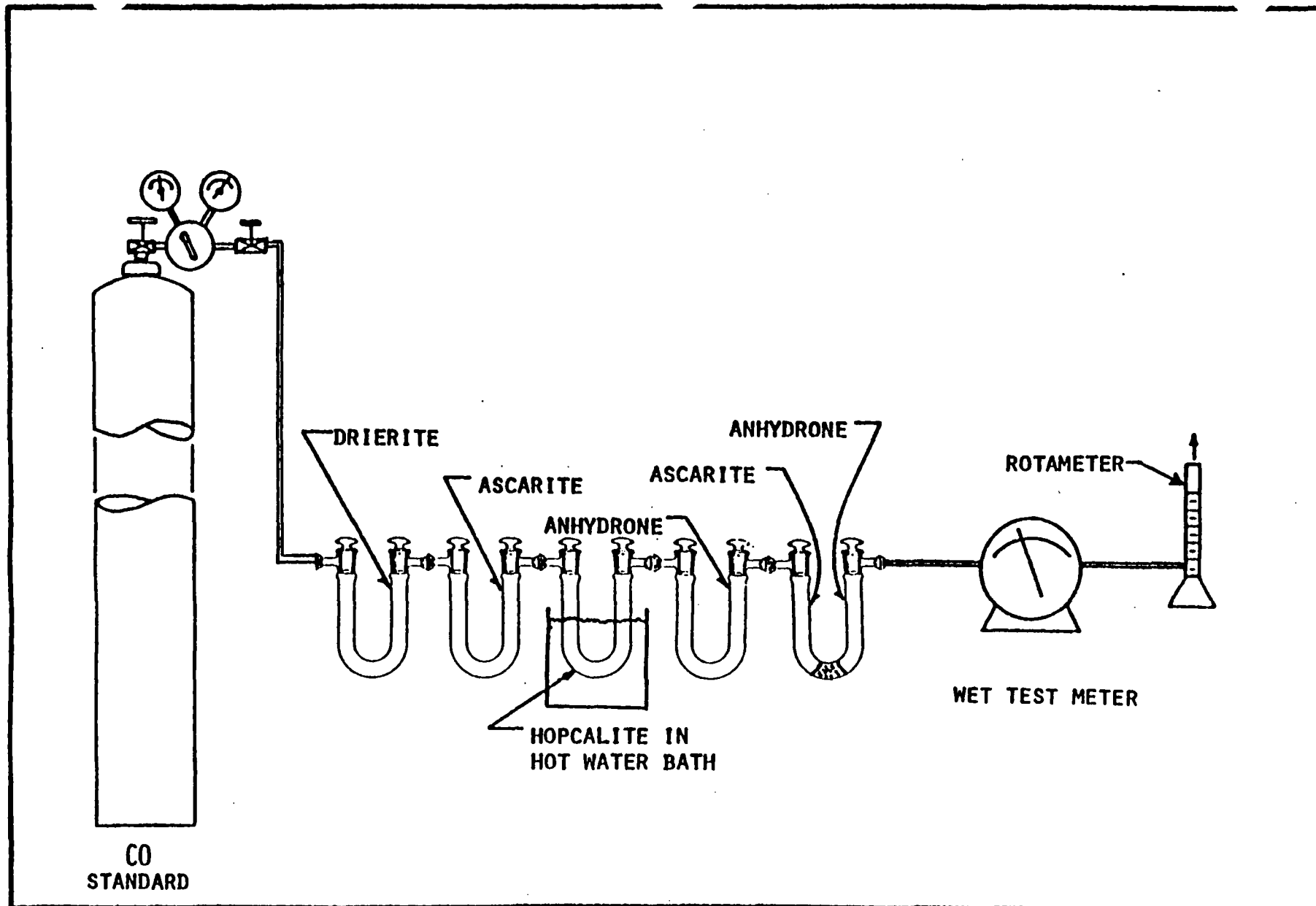


Fig. III-10
GRAVIMETRIC DETERMINATION OF CARBON MONOXIDE

LAB 17

STANDARDIZATION OF HYDROCARBON CALIBRATION GASES

1. RATIONALE

Hydrocarbon gas standards used for calibrating source test instrumentation must be checked periodically for accuracy and quality assurance purposes. These standards usually consists of a single hydrocarbon normally methane, propane or hexane.

2. PRINCIPLE

The hydrocarbon calibration gas concentration is determined by preparing two laboratory standards, one higher and one lower than the expected cylinder concentration. Gas chromatography is then used to determine the cylinder gas concentration by comparison with prepared laboratory standards.

3. APPARATUS

3.1 Gas Chromatograph. This unit is equipped with a gas sampling valve, a flame ionization detector and necessary accessory gases.

3.2 Analytical columns. Any column may be used which is capable of resolving the hydrocarbons of interest such as :

3.2.1 For methane, a 6 ft 1/8" Chromosorb 102, 80 to 100 mesh column is normally used.

3.2.2 For propane, a 6 ft 1/8" Chromosorb 102, 80 to 100 mesh column is normally used.

3.2.3 For hexane, a 6 ft 1/4" silicone L-45 on firebrick 60 to 80 mesh is normally used.

3.3 Stainless Steel (SS) Tanks. Use 4 to 34 liter tanks, calibrated for volume which have been previously steam cleaned, to be hydrocarbon free and fitted with a vacuum-pressure gauge, valve and nipple.

3.4 Syringes. Use 5, 10, and 30 ml calibrated syringes.

3.5 Flex Tubing. This tubing must be able to withstand 300 lbs line pressure. The tubing is usually 3 to 4 feet long and adapted with quick connect fittings to easily connect the SS tank to a nitrogen or air cylinder.

3.6 Test gauges (0 to 60 and 0 to 250 psig)

3.7 Two stage regulator with a controlling valve

4. REAGENTS

4.1 Reagent grade lecture bottles of the hydrocarbons of interest (99+% purity)

4.2 Cylinder Nitrogen gas or air (<1 ppm hydrocarbon)

5. PREPARATION OF LABORATORY STANDARDS

5.1 Evacuate two hydrocarbon free SS tanks to at least a vacuum of 100 mm Hg. Introduce the hydrocarbon gas of interest to each evacuated tank by means of a calibrated syringe. The amount of hydrocarbon added is pre-determined in each case to bracket the nominal concentration of the cylinder to be standardized (see 5.4). The addition of the pure hydrocarbon is accomplished by injecting the hydrocarbon from the syringe through a rubber septum placed over the SS tank nipple, and slowly opening the valve of the evacuated SS tank.

5.2 Connect the SS tank to the nitrogen or air cylinder by means of the flex tubing. Pressurize the SS tank to an

approximate pre-determined value (see 5.1 and 5.4) using the tank pressure gauge as an indicator.

5.3 Allow the tank to equilibrate for 3 hours. Measure and record the pressure accurately with the appropriate test gauge.

5.4 Calculate the prepared standard concentration with the following formula:

$$\text{PPM HC} = \frac{\text{Vol (cc) of Added Hydrocarbon} \times 1000}{\text{Tank Vol (L)} \times \text{Total Tank Pressure (psig} + 14.7)} \times \frac{14.7 \text{ psi}}{14.7 \text{ psi}}$$
$$\text{PPM Hexane} = \frac{(\mu\text{l Hexane}) (664 \mu\text{g}/\mu\text{l})}{\text{Tank Vol (L)} \times \left(\text{Total Tank Pressure (psig} + 14.7) \right) (3.52)} \times \frac{14.7 \text{ psi}}{14.7 \text{ psi}}$$

Where: 3.52 = the μgm in 1 μl of hexane at 25°C and 760 mm Hg

6. STANDARDIZATION OF HYDROCARBON CYLINDER

6.1 By use of the gas chromatograph gas sampling valve, introduce each laboratory hydrocarbon gas standard in the gas chromatograph and record the peak height of the hydrocarbon. This should be repeated a minimum of 5 times for each standard. Obtain the average peak height for each standard (individual peak heights should not vary by more than 5% of the mean). The peak height to concentration ratio of each standard should not exceed 5%.

6.2 As in 6.1 above, determine the peak height of the hydrocarbon calibration gas cylinder.

7. CALCULATION

$$\text{PPM HC in cylinder} = \frac{\text{Peak Height Cylinder Gas}}{\text{Peak Height of Standard}} \times \text{Conc. of Standard}$$

7.1 This calculation is performed using both prepared laboratory standards. The cylinder concentration to be reported is the average of the two calculations.

8. REFERENCE

8.1 Halzas, I. and Wegner, E.F., Gas Chromatographic Separation of Low Boiling Hydrocarbons. Nature, 57, 189, 1961.

LAB 18

STANDARDIZATION OF HYDROGEN SULFIDE CALIBRATION GAS

1. RATIONALE

Hydrogen sulfide standards used for source test instrumentation must be checked periodically for accuracy and quality assurance purposes.

2. PRINCIPLE

Hydrogen sulfide is absorbed from a gas stream by a solution of cadmium sulfate forming a precipitate of cadmium sulfide. The collected sulfide is oxidized by an excess of standard iodine solution which is back titrated with standard sodium thiosulfate.

3. APPARATUS

3.1 Greenburg Smith Impingers

3.2 Rotameter, 0 to 10 liter/min range

3.3 Dry Test Meter (readout in cubic feet)

3.4 50 ml burettes

3.5 Two stage regulator with a controlling valve

4. REAGENTS

4.1 Cadmium sulfate solution. Add 11.2 g of anhydrous cadmium sulfate to 1 liter of distilled water.

4.2 Hydrochloric Acid, (6 N). Dilute concentrated hydrochloric acid 1:1 with distilled water.

4.3 Standard Sodium Thiosulfate Solution, (0.1 N). Dissolve 15.8 g of anhydrous sodium thiosulfate in 1 liter of distilled water. Add 1 g of sodium carbonate as a preservative. Allow to stand for a day before standardizing.

4.4 Starch Solution - 1% Indicator. Available from any chemical supply house.

4.5 Iodine Solution (0.1 N KI_3). Place 12.7 g of reagent grade iodine (I_2) in a 500 ml beaker, add 40 g of potassium iodide and 250 ml of distilled water. Stir periodically. When all the iodine is completely dissolved, dilute to approximately 1 liter. Keep the solution in a dark glass stoppered bottle and store in a cool place.

4.6 Arsenic Trioxide

4.7 Sodium Bicarbonate

4.8 Sodium Hydroxide (1 N). Dissolve 40 g of sodium hydroxide pellets in 250 ml of distilled water and dilute to 1 liter.

5. SAMPLING PROCEDURE

5.1 Add 100 ml of cadmium sulfate solution to each of the two Greenburg Smith impingers. Connect the impingers in series, the first connected to the standard gas cylinder, the second to a dry test meter, followed by a rotameter. All connections are made with teflon tubing. Fig. III-11 details the sampling train.

5.2 Record the original dry test meter reading (M_1). By means of the controlling valve on the 2 stage regulator, on the cylinder, adjust the flow through the sampling train to approximately 10 liters per minute as rapidly as possible, using the rotameter as an indicator. The sampling time will depend on the concentration of the hydrogen sulfide in the cylinder. As a guide, 100 ppm hydrogen sulfide should have a sample size of approximately 300 liters.

5.3 After sufficient sample has been collected, shut off the controlling valve. Record the final dry test meter reading (M_2), and remove the impingers from the sampling train.

5.4 A minimum of two determinations are to be made and must agree to within $\pm 5\%$ of the mean.

6. ANALYTICAL PROCEDURE

6.1 Quantitatively transfer the solution and precipitate from the CdSO_4 impingers into glass stoppered 500 ml Erlenmeyer flasks.

6.2 From a 50 ml burette, add iodine solution rapidly until an excess is indicated, record the volume added.

6.3 Rapidly add 10 ml of 6 N HCl and back titrate with 0.1 N sodium thiosulfate solution with constant stirring. When the color of the liquid becomes a pale yellow, add 1 ml of starch solution and continue the titration until the color changes from blue to colorless. Record the amount of sodium thiosulfate solution used.

7. CALCULATION

$$\text{PPM H}_2\text{S} = \frac{[(N \times V) \text{ KI}_3 - (N \times V) \text{ Na}_2\text{S}_2\text{O}_3] \times 17 \times 10^3}{(1.39) (M_2 - M_1) (27.3 \text{ liters/cubic ft})}$$

Where: 17 = the equivalent wt. of hydrogen sulfide

1.39 = the μgm in 1 μl of hydrogen sulfide at 25°C and 760 mm Hg

Total PPM H_2S = PPM H_2S 1st Imp + PPM H_2S 2nd Imp

8. STANDARDIZATION OF IODINE SOLUTION

8.1 Weigh three portions (0.2 to 0.25 g ± 0.0001 g) of arsenic trioxide and transfer them to 250 ml Erlenmeyer flasks. Dissolve each in 10 to 20 ml of 1 N sodium hydroxide, and neutralize until just acid with 6 N hydrochloric acid. Add 1 g of sodium bicarbonate, and dilute to approximately 100 ml.

8.2 Add 2 ml of starch solution indicator and titrate with the iodine solution to a blue tint. Record volume of KI_3 used.

8.3 Calculation (Use average of three determinations)

$$\text{Normality of } KI_3 = \frac{\text{Wt of arsenic trioxide}}{0.4946 \times \text{Vol. of } KI_3}$$

Where: 0.4946 = the gms/meqv. of arsenic trioxide

9. STANDARDIZATION OF SODIUM THIOSULFATE

9.1 To two Erlenmeyer flasks containing 50 ml of distilled water add exactly 25.0 ml of standard iodine solution.

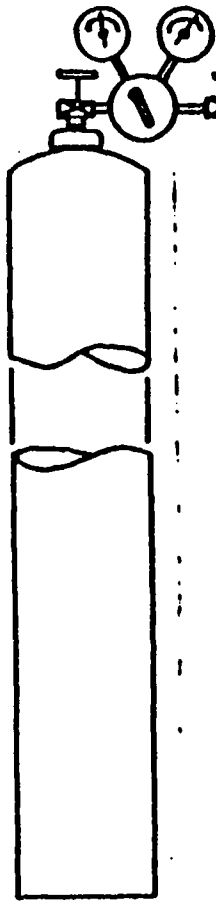
9.2 Add 10 ml of 6 N hydrochloric acid and immediately titrate with the sodium thiosulfate solution until a pale yellow color remains. Add 2 ml of starch solution and resume titration until the disappearance of all traces of a blue color. Record the volume.

9.3 Calculation (Use average of two determinations)

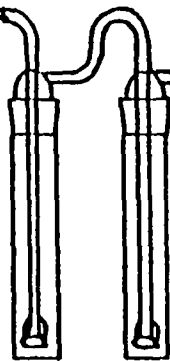
$$\text{Normality of Sodium Thiosulfate} = \frac{(N \times V) \text{ Iodine}}{(V) \text{ Sodium Thiosulfate}}$$

10. REFERENCE

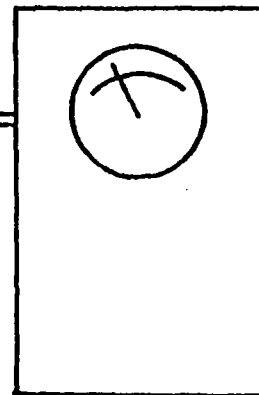
10.1 Jacobs, M., The Chemical Analysis of Air Pollutants, Interscience Publishers Inc., New York, 1960.



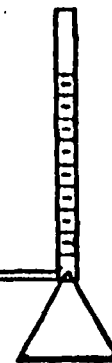
H₂S
STANDARD



IMPINGERS
Cd(SO₄)₂ SOL'N



DRY TEST METER



ROTAMETER

Fig. III-11
HYDROGEN SULFIDE CALIBRATION TRAIN

LAB 19

STANDARDIZATION OF NITRIC OXIDE CALIBRATION GAS

1. RATIONALE

Nitric oxide standards used for source test instrumentation must be checked periodically for accuracy and quality assurance purposes.

2. PRINCIPLE

The nitric oxide is absorbed in alkaline permanganate solution with Greenburg Smith impingers fitted with semi-fine frits. The nitrite and nitrate ions thus formed are determined by first converting the nitrite formed during the collection to nitrate. The total nitrate is then reduced to nitrite, which is determined by a chromotropic acid indicator.

3. APPARATUS

3.1 Greenburg Smith Impingers. The impingers are fitted with semi-fine frits (70 porosity), available from Ace Glass Co. (Cat. #7201-04) or equivalent.

3.2 50 ml graduated Erlenmeyer flasks with screw caps

3.3 Two Stage Regulator with a controlling valve

3.4 Wet Test Meter (readout in liters)

3.5 Hot Plate

3.6 Spectrophotometer

3.7 Rotameter 0 to 1 liter/min range

4. REAGENTS

4.1 Absorbing Solution. Dissolve 40 g of KMnO_4 and 20 g NaOH pellets in 400 ml of distilled water and dilute to 1 liter

with distilled water.

4.2 Oxalic Acid Solution. Dissolve 80 g of oxalic acid and dilute to 1 liter with distilled water.

4.3 Sulfuric Acid (1.0 N). Add 27.8 ml of concentrated sulfuric acid to 500 ml of distilled water and dilute to 1 liter.

4.4 Nitrate Reagents. Nitra Ver III (Cat. #14065) and Nitra Ver VI (Cat. #14119) are available from Hach Chemical Co., Ames, Iowa.

5. SAMPLING PROCEDURE

5.1 The sampling train consists of 3 Greenburg Smith impingers modified with semi-fineglass frits, each containing 100 ml of absorbing solution as shown in Fig.III-12. The impingers are connected in series followed by a wet test meter and rotameter. The sampling train is connected to the standard gas cylinder by means of teflon tubing.

5.2 Record the original wet test meter reading (M_1). By means of the controlling valve on the 2 stage regulator, adjust the flow through the sampling train to approximately 0.5 liter per minute as rapidly as possible, using the rotameter as an indicator. The sample time will depend on the concentration of the nitric oxide in the cylinder. As a guide, 100 ppm of nitric oxide requires a sample size of approximately 20 liters.

5.3 After sufficient sample has been collected shut off the controlling valve. Record the final wet test meter reading (M_2), and remove the impingers from the sampling train (Fig. III-12).

5.4 At least 2 determinations are to be made and the results must agree to within $\pm 5\%$ of the mean.

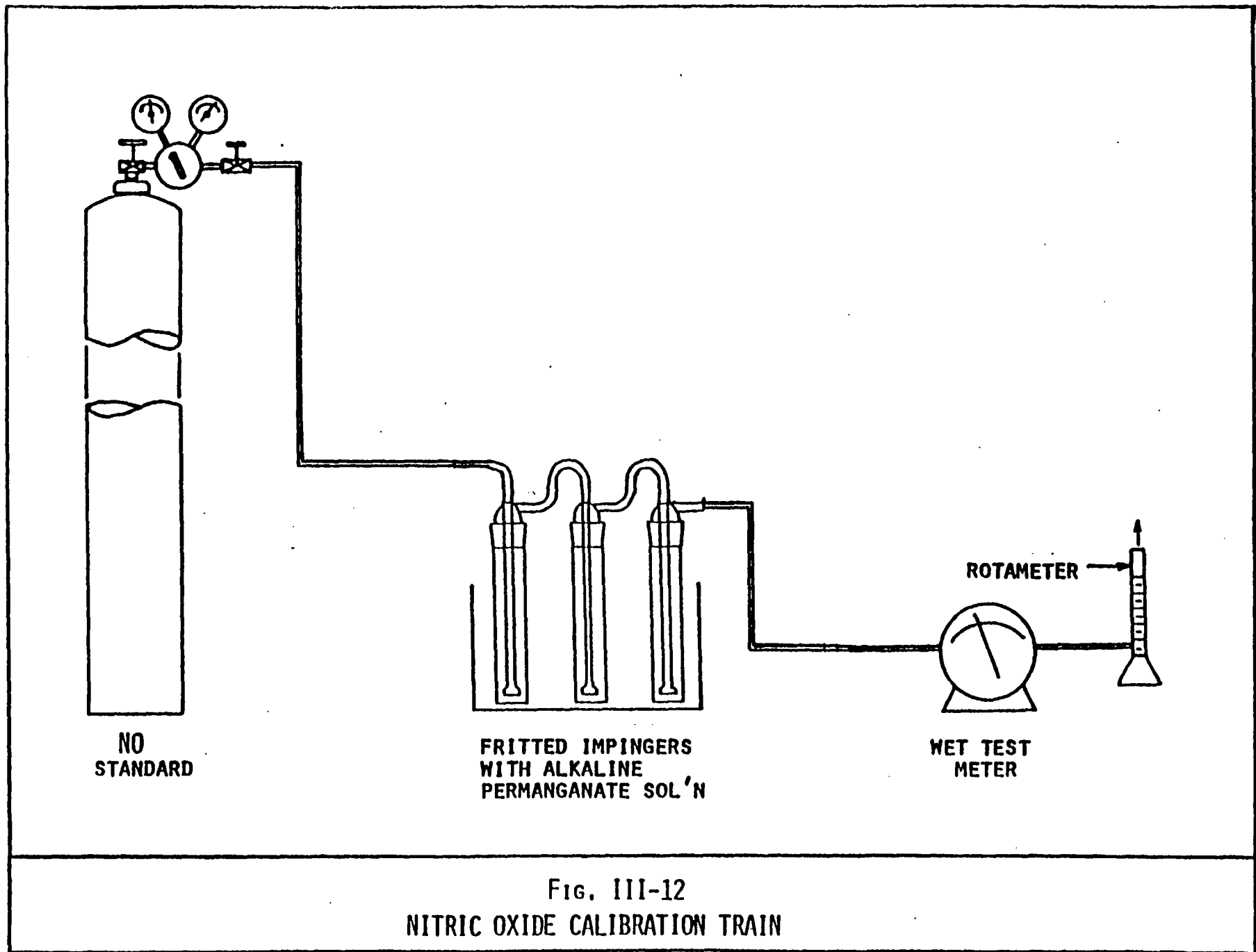
6. ANALYTICAL PROCEDURE

6.1 Measure and record the liquid volume of each impinger. Transfer an aliquot, not to exceed 3.0 ml for analysis, containing 0 to 60 μgm of nitrite. The aliquot may require dilution with unreacted absorbing solution or may be used directly. If preferred, all three impingers may be combined to form a composite sample, thereby requiring only a single analysis.

6.2 The aliquot taken is transferred to a 50 ml Erlenmeyer flask fitted with a screw cap. A reagent blank of 2.0 ml is also prepared from the absorbing solution which was used for the sampling. Acidify with 1.0 N sulfuric acid, using 1 ml of acid per ml of aliquot.

6.3 Heat the sample on a hot plate to 50° to 60°C , and add 1 ml of oxalic acid per ml of aliquot, let stand until colorless. Should more oxalic acid be required to reduce the permanganate, add dropwise so as not to have more than 3 drops in excess. Cool to room temperature and dilute to the 30 ml mark with distilled water.

6.4 Add to the sample and the blank, the content of a Nitra Ver VI pillow, cap the flask and shake for exactly 5 minutes. Allow the sample to stand for 30 seconds and transfer to a graduated test tube. Add the content of a Nitra Ver III pillow, cover the test tube with parafilm and mix for one minute. Let stand for 10 minutes and read the formed pink color at 500 nm, using a 13 mm cuvette, setting the blank at 100% transmittance. Obtain $\mu\text{gm NO}_2$ in the sample from a standard curve.



7. STANDARD CURVE

7.1 Standard Stock Nitrite Solution. Weigh and transfer 0.2198 g of potassium nitrate to a 1 liter volumetric flask containing 100 ml of distilled water. Dissolve and dilute to the mark with distilled water. This standard solution contains 100 μgm NO_2 equivalent per ml.

7.2 Working Standard Nitrite Solution. Dilute the stock standard 10:1 to make a working standard containing 10 μgm NO_2 equivalent per ml.

7.3 Prepare a series of standards containing 10 to 50 μgm of NO_2 in 50 ml Erlenmeyer flasks. Proceed as in 6.2 to 6.4 to develop the color forming reaction.

7.4 Prepare a standard curve plotting μgm NO_2 vs % transmittance on semi-log graph paper.

8. CALCULATION

$$\text{PPM NO as NO}_2 = \frac{\text{Total } \mu\text{gm NO}_2 \text{ in Impingers}}{(M_2 - M_1) (1.88)}$$

Where: 1.88 = the μgm in 1 μl of nitrogen dioxide at 25°C and 760 mm Hg

9. REFERENCE

9.1 Levaggi, D.A., et al, "An Integrated Manual Impinger Method for Simultaneous Determination of NO_x and SO_2 in Source Effluents", J. Air Poll. Cont. Assoc. 26, 783, 1976.

LAB 20

STANDARDIZATION OF SULFUR DIOXIDE CALIBRATION GAS

1. RATIONALE

Sulfur dioxide standards used for source test instrumentation must be checked periodically for accuracy and quality assurance purposes.

2. PRINCIPLE

Sulfur dioxide is absorbed in a solution of hydrogen peroxide to form sulfuric acid. The formed sulfuric acid is determined with a standard sodium hydroxide solution.

3. APPARATUS

- 3.1 Greenburg Smith Impingers
- 3.2 Dry Test Meter (readout in cubic feet)
- 3.3 Two Stage Regulator with a controlling valve
- 3.4 Rotameter, 0 to 10 liter range
- 3.5 50 ml Buret
- 3.6 Teflon tubing connections

4. REAGENTS

4.1 Bromcresol Green Indicator Solution (0.04%). Mix 0.1 g of dry powder bromcresol green in a mortar with 14.3 ml of 0.01 N NaOH. Dilute to 250 ml with distilled water.

4.2 Hydrogen peroxide 3% (sulfate free). Dilute 50 ml of 30% H₂O₂ to 500 ml with distilled water. Prepare fresh prior to use.

4.3 Sodium Hydroxide Solution (0.1 N). Dissolve 4.0 g of sodium hydroxide pellets in 150 ml of distilled water and dilute to 1 liter. Determine normality of the solution within ± 0.0005 N

by standardization against potassium acid phthalate using phenolphthalein indicator (7.1).

5. SAMPLING PROCEDURE

5.1 To each of two Greenburg impingers add 100 ml of 3% hydrogen peroxide solution. Use teflon tubing to connect the gas cylinder to the impingers with the second impinger connected to a dry test meter followed by a rotameter. Fig. III-13 details the sampling train.

5.2 Record the original wet test meter reading (M_1). By means of the controlling valve on the 2 stage cylinder regulator, adjust the flow through the sampling train to approximately 5 liters per minute as rapidly as possible, using the rotameter as an indicator. The sample time will depend on the concentration of the sulfur dioxide in the cylinder. As a guide, 200 ppm sulfur dioxide should have a sample size of approximately 7.5 ft³ (200 liters).

5.3 After sufficient sample has been collected, shut the controlling valve. Record the final wet test meter reading (M_2) and remove the impingers from the sampling train.

5.4 A minimum of two determinations are to be made and must agree to within $\pm 5\%$ of the mean.

6. ANALYTICAL PROCEDURE

6.1 Quantitatively transfer and rinse each impinger into a 500 ml Erlenmeyer flask.

6.2 Bring each to a boil, cool to room temperature and titrate with standard sodium hydroxide solution, using 4 ml of bromcresol green indicator solution. Titrate to the blue color end point, and record the volume used.

7. PREPARATION OF STANDARD ALKALI

7.1 Standardize the prepared 0.1 N sodium hydroxide with potassium acid phthalate. Run in triplicate.

$$N \text{ NaOH} = \frac{\text{Wt. of Potassium Acid Phthalate (g)}}{(0.2043) (\text{ml NaOH})}$$

Where: 0.2043 = the gms/meqv of potassium acid phthalate

8. CALCULATION

$$\text{PPM SO}_2 = \frac{\text{Vol NaOH} \times N \text{ NaOH} \times 32 \times 10^3}{(M_2 - M_1) (28.3 \text{ liters/cubic ft}) (2.6)}$$

Where: 32 = the equivalent wt. of sulfur dioxide
2.6 = the μgm in 1 μl of sulfur dioxide at 25°C and 769 mm Hg

$$\text{Total PPM SO}_2 = \text{PPM SO}_2 \text{ 1st Imp} + \text{PPM SO}_2 \text{ 2nd Imp}$$

9. REFERENCE

9.1 Jacobs, M.B. "Chemical Analysis of Pollutants."
Interscience Publishers Inc., New York, 1960.

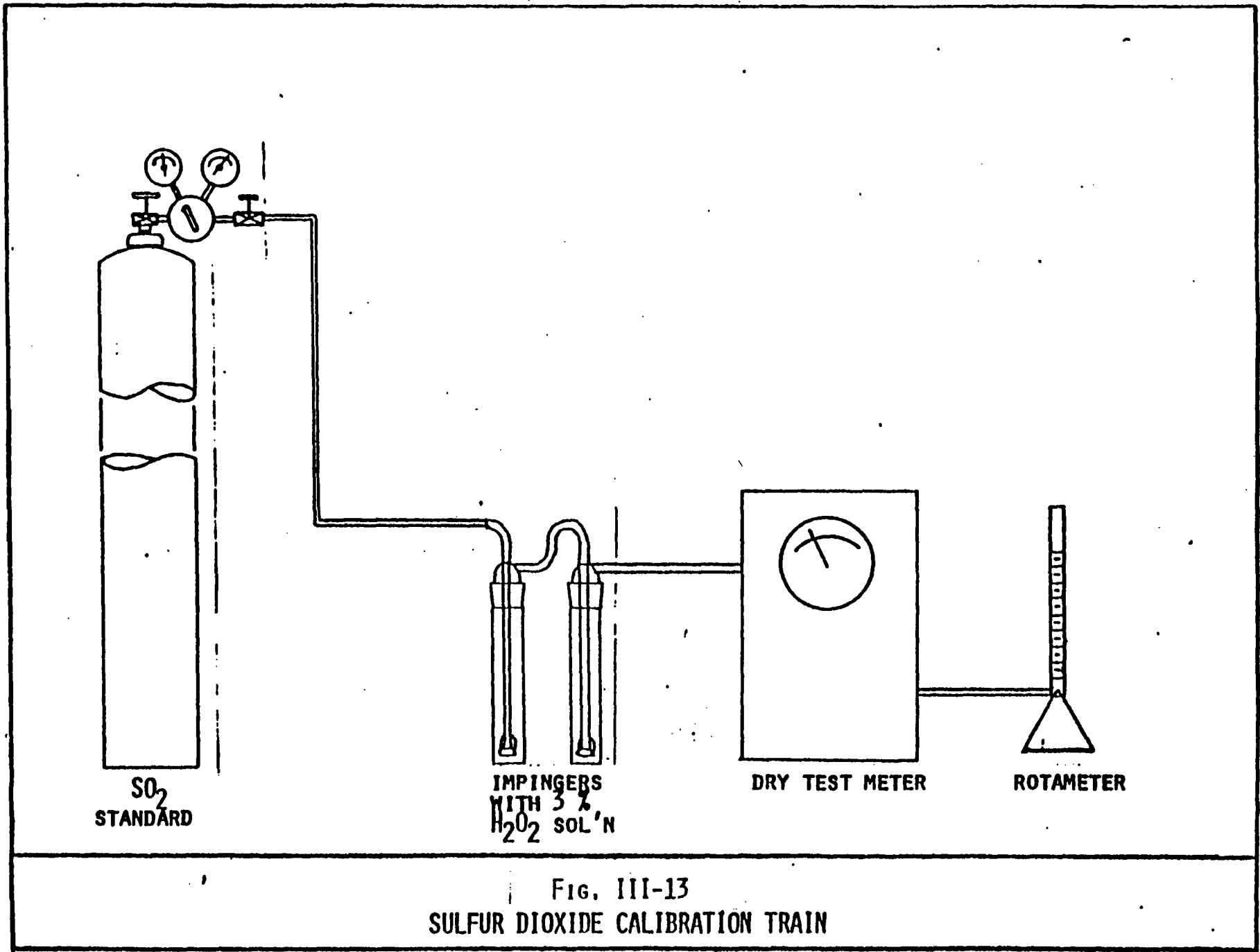


Fig. III-13
SULFUR DIOXIDE CALIBRATION TRAIN

LAB 21

REF: Regs. 8-3-301, 8-3-302

DETERMINATION OF COMPLIANCE FOR AIR-DRIED ARCHITECTURAL
WATER BASED COATINGS

1. PRINCIPLE

A weighed sample of water based architectural coating is distilled to insure complete separation of the water component from the coating. The distillate is then diluted with methanol and the water content determined by a gas chromatograph using a thermal-conductivity detector. The Poropak Q column separates water from any volatile organics present, water being eluted first from the column.

2. APPARATUS

2.1 Gas Chromatograph. This unit is equipped with a thermal conductivity detector and a glass sleeve injection port.

2.2 Analytical Column. Use a 6' x 1/4" O.D. column containing Porapak Q, 80/100 mesh.

2.3 10 μ l syringe

2.4 Simple distillation unit (see Fig. III-14)

2.5 Aluminum Foil Dish. Use a 58 mm diameter x 10 mm high dish with a flat bottom.

2.6 Drying Oven ($110^{\circ}\pm 1^{\circ}\text{C}$)

2.7 Glas-col Heater

2.8 Powerstat

2.9 Analytical Balance

2.10 Disposable Beral Pipettes. These are available from Curtin Matheson Co. (Cat. No. 376-970).

3. REAGENTS

3.1 Methanol, Anhydrous. This reagent cannot be used for this procedure if it contains >0.1% W/W water. Determine water content by gas chromatography or an equivalent method prior to use.

4. ANALYTICAL PROCEDURE

4.1 Determination of Total Volatile Content of Paints

4.1.1 Weigh accurately 0.4 to 0.6 g (± 0.0001 g) of paint in a pre-weighed aluminum dish. Disperse the paint with 2 ml of distilled water by swirling the dish until the sample is evenly distributed. Dry the sample in an oven at $110^{\circ} \pm 1^{\circ} \text{C}$ for 2 hours. Cool the sample in the desiccator and weigh. Run samples in duplicate. Results should not vary by more than 5%.

4.2 Calculations

$$4.2.1 \text{ Wt. paint} = \frac{\text{Wt. aluminum dish with paint} - \text{Wt. aluminum dish}}$$

$$4.2.2 \text{ Wt. of Nonvolatile} = \frac{\text{Wt. aluminum dish with solid} - \text{Wt. aluminum dish}}$$

$$4.2.3 \text{ Wt. \% of Nonvolatile in paint} = \frac{\text{Wt. of nonvolatile}}{\text{Wt. of paint}} \times 100$$

$$4.2.4 \text{ Wt. \% Total Volatile in paint} = 100 - \text{Wt. \% of nonvolatile}$$

4.3 Sample Preparation by Simple Distillation

4.3.1 Assemble the simple distillation apparatus as shown in Fig. III-14.

4.3.2 Take the Erlenmeyer flask and the 50 ml graduated cylinder out of the assembled apparatus and weigh them accurately.

4.3.3 To a weighed flask, add approximately 50 ml of paint. Accurately weigh the flask and reassemble the apparatus.

4.3.4 Place the Erlenmeyer flask in a Glas-col heater. Wrap the exposed Erlenmeyer flask and the connecting adapter with glass wool, to minimize the condensation of water vapor at the distilling head.

4.3.5 Connect the Glas-col heater to a powerstat. Turn the powerstat on and gradually heat the distilling flask until the head temperature is 110°C. Stop distillation when the head temperature starts to exceed 110°C. Remove glass wool and the Glas-col heater from the flask and cool to room temperature. Weigh the graduated cylinder containing the distillate. Record the weight and volume of the distillate. Weigh the flask with the nonvolatile.

4.4 Calculations of the Distillation

$$4.4.1 \text{ Wt. of paint} = \text{Wt. flask with paint} - \text{Wt. of flask}$$

$$4.4.2 \text{ Wt. Distillate} = \text{Wt. grad. cyl and distillate} - \text{Wt. grad. cyl}$$

$$4.4.3 \text{ Wt. of 1 cc of distillate} = \frac{\text{Wt. distillate}}{\text{Volume of distillate}}$$

$$4.4.4 \text{ Wt. \% distillate in paint} = \frac{\text{Wt. distillate}}{\text{Wt. of paint}} \times 100$$

$$4.4.5 \text{ Wt. Nonvolatile} = \text{Wt. flask and nonvolatile} - \text{Wt. flask}$$

$$4.4.6 \text{ Wt. \% Nonvolatile} = \frac{\text{Wt. of nonvolatile}}{\text{Wt. of paint}} \times 100$$

$$4.4.7 \text{ Wt. \% Recovery} = \text{Wt. \% distillate in paint} + \text{Wt. \% nonvolatile}$$

The distillation recovery must be 100 ±5% to be acceptable.

4.5 Determination of Water Content (% W/W) of the Distillate by Gas Chromatography.

4.5.1 General Column and Instrument Parameters:

Column: 6' x 1/4" Porapak Q, 80/100 mesh

*Injection temperature 200°C

Detector (T.C) temperature 240°C

Column temperature 150°C

He gas flow 100 cc/min

Filament current 190 ma

Sample size 2 µl

*glass insert is used in the injector port.

4.5.2 Transfer the distillate from the graduated cylinder into a capped container. Mix the distillate thoroughly. Pipet 1.0 ml of distillate into a weighed 25 ml volumetric flask. Reweigh the flask containing the distillate. Add to the distillate 10.0 ml of anhydrous methanol and reweigh the flask. Stopper the flask and mix the solution thoroughly.

4.5.3 Using a 10 µl syringe, inject 2 µl of the distillate/methanol mixture into the gas chromatograph. To determine the percentage of water in the above mixture, compare the peak height of the sample versus a standard curve (Section 6).

4.6 Calculations

4.6.1 $\text{Wt. methanol} = \frac{\text{Wt. flask with distillate and methanol} - \text{Wt. flask with distillate}}$

4.6.2 $\text{Wt. of distillate/methanol mixture} = \frac{\text{Wt. of distillate} + \text{Wt. of methanol}}$

4.6.3 Determine Wt. % of water in distillate/methanol mixture from the standard curve (4.5.3).

4.6.4 $\text{Wt. of water in mixture} = (4.6.2) \times (4.6.3)$

4.6.5 $\text{Wt. \% of water in distillate} = \frac{(4.6.4)}{(4.4.3)} \times 100$

4.6.6 Total weight of water in distillate =

$$\frac{\text{Wt. \% Water in distillate}}{100} \times \text{Wt. of distillate}$$

$$4.6.7 \text{ Wt. \% of water in paint} = \frac{\text{Total Wt. of Water in distillate}}{\text{Wt. of paint}} \times 100$$

4.7 Determination of Specific Gravity

4.7.1 Accurately weigh a 25 ml volumetric flask (W_1).

4.7.2 By means of a disposable Beral pipette transfer a well mixed sample the floating to the 25 ml volumetric flask. Fill precisely to the 25 ml graduation mark.

4.7.3 Reweigh the test tube (W_2).

4.7.4 Samples should be run in duplicate and agree to within $\pm 1\%$.

4.8 Calculation of Specific Gravity

$$\text{Specific Gravity} = \frac{W_2 - W_1}{25 \text{ cc}} = \text{density (g/cc)}$$

4.9 Alternately, the specific gravity may be determined using reference 7.3.

5. COMPLIANCE CALCULATION

5.1 Wt. of volatile organic material per liter of coating without water =

$$\frac{\left[(4.2.1 - 4.2.2) - (4.6.7)(4.2.1)(10^{-2}) \right] \times 1000 \text{ cc}}{(4.2.1) \left(\frac{1}{\text{Spec. Grav.}} - (4.6.7)(10^{-2}) \right)} \times \text{liter}$$

6. PREPARATION OF THE STANDARD CURVE

6.1 Using methanol as the diluent, make up a series of water standards in 25 ml volumetric flasks to contain: 0.5, 1.0, 5.0, 10.0 and 15.0 % W/W water.

6.2 Using a 10 μ l syringe, inject 2 μ l of each standard into the gas chromatograph. From the resulting chromatograms construct a standard curve by plotting the average recorder peak height of triplicate analyses versus % water (W/W) on a rectilinear graph paper. The curve is linear to approximately 25% W/W water.

7. REFERENCES

7.1 Hollis, O.L., "Separation of Gaseous Mixtures Using Porous Poly Aromatic Polymer Beads", Anal. Chem. 38, 309, 1966.

7.2 "Volatile Content of Paint", ASTM designation D2369-73, Book of ASTM Standards, Part 27, 444-445, 1975.

7.3 "Density of Paint, Varnish, Lacquer and Related Products", ASTM designation ASTM D1475-60, Book of ASTM Standards, Part 27, 233-235, 1975.

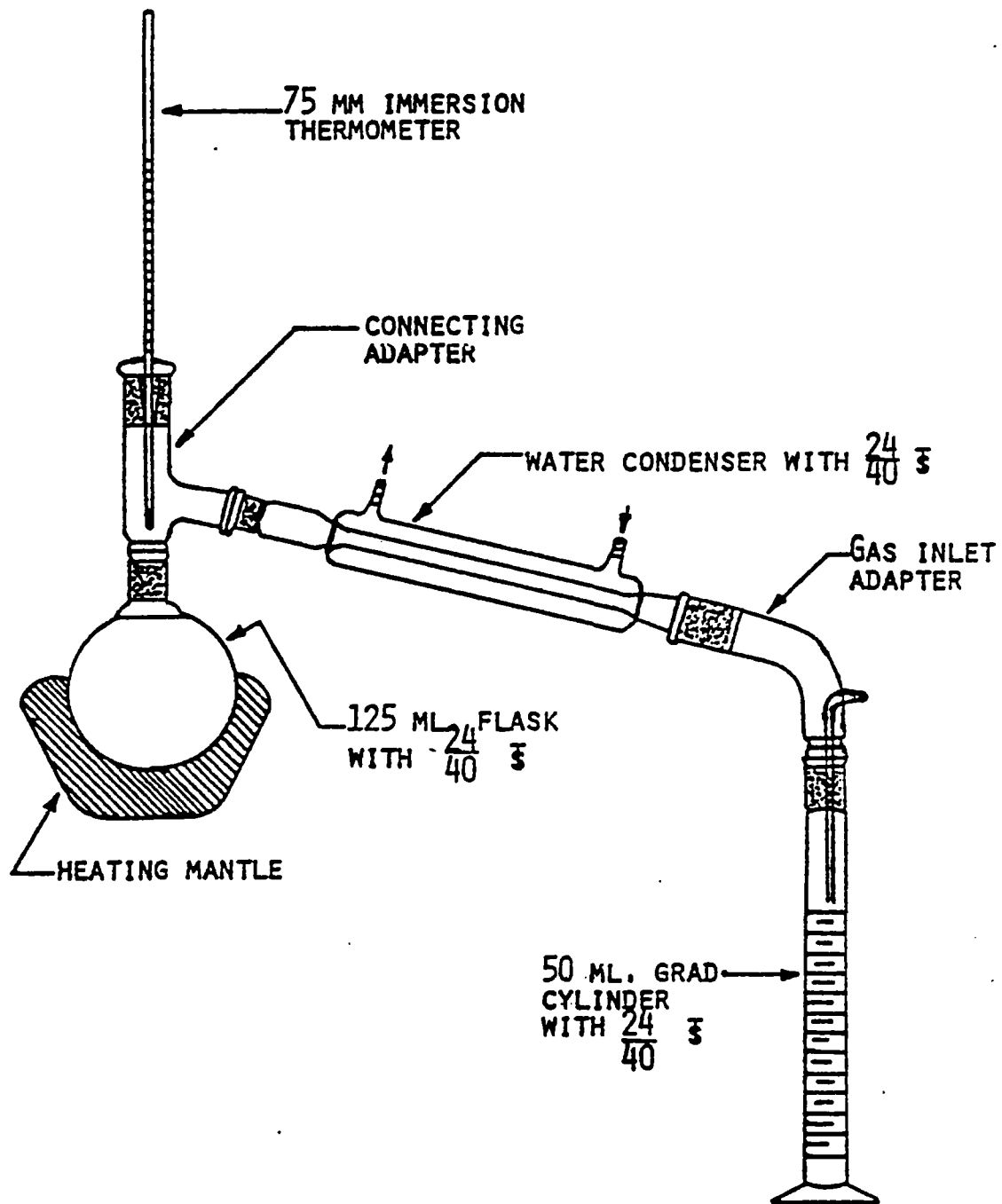


FIG. III-14
SIMPLE DISTILLATION UNIT

LAB 22

REF: Regs. 8-3-301, 8-3-302

DETERMINATION OF COMPLIANCE FOR AIR-DRIED ARCHITECTURAL OIL BASED COATINGS

1. PRINCIPLE

A weighed sample of paint or related product is refluxed with toluene to determine the water content of the sample. The apparatus consists of a glass flask, heated by suitable means and provided with a reflux condenser discharging into a trap connected to the flask. The trap serves to collect and measure the condensed water. The volatile content of the coating is determined on a separate aliquot of the sample. This method is applicable only to oil based paints containing less than 2% W/W water.

2. APPARATUS

2.1 Refluxing unit as shown in Fig. III-15

2.2 Powerstat (0 to 110 volts)

2.3 Analytical Balance

2.4 Drying Tube. A glass drying tube of the calcium chloride type.

2.5 Aluminum Foil Dish. Use a 58 mm diameter x 10 mm high dish with a flat bottom. The dish is available from Curtin Matheson Co. (Cat. No. 079-053).

2.6 Drying Oven ($110^{\circ}\pm 1^{\circ}\text{C}$)

2.7 Triple Beam Balance, ± 0.1 g capability

2.8 Disposable Beral Pipette. These are available from Curtin Matheson Co. (Cat. No. 376-970).

3. REAGENTS

3.1 Toluene

3.2 Calcium chloride

4. ANALYTICAL PROCEDURE

4.1 Determination of Total Volatile Content

4.1.1 Weigh accurately 0.4 to 0.6 g (± 0.0001 g) of paint in a weighed aluminum dish. Disperse the paint with 2 ml of toluene by swirling the dish until the sample is even distributed at the bottom of the dish. Dry the sample in the oven at $110 \pm 1^\circ\text{C}$ for two hours. Cool the sample in a desiccator and weigh. Run samples in duplicate. Results should not vary by more than 5%.

4.2 Calculations

$$4.2.1 \text{ Wt. paint} = \frac{\text{Wt. Aluminum dish with paint} - \text{Wt. Aluminum dish}}$$

$$4.2.2 \text{ Wt. of Nonvolatile in paint} = \frac{\text{Wt. Aluminum dish with solid} - \text{Wt. Aluminum dish}}$$

$$4.2.3 \text{ Wt. \% of Nonvolatile in paint} = \frac{\text{Wt. of Nonvolatile in paint}}{\text{Wt. of paint}} \times 100$$

$$4.2.4 \text{ Wt. \% Total Volatile in paint} = 100\% - \text{Wt. \% of Nonvolatile in paint}$$

4.3 Determination of Water Content

4.3.1 Add approximately 100 g of the coating to a weighed 500 ml flask. Record the weight of the sample using a triple beam balance and weigh to the nearest 0.1 g. Add 75 ml of toluene, mix thoroughly by swirling.

4.3.2 Connect the flask, trap and condenser are shown in Fig. III-15. A drying tube of calcium chloride is inserted at the top of the condenser tube to prevent condensation of atmospheric moisture in the condenser tube.

4.3.3 Apply heat to the flask by means of a heating mantle regulated by a powerstat. The condensed distillate should fall from the end of the condenser to the trap at a rate of 2 to 5 drops per second.

4.3.4 Continue the refluxing at the specified rate, until water is no longer visible on any part of the apparatus and the volume of water in the trap remains constant. Read the volume of water in the trap and record.

4.4 Calculation of Water Content

$$\% \text{ W/W water in paint} = \frac{\text{ml of H}_2\text{O in trap}}{\text{wt. of paint refluxed}} \times 100$$

4.5 Determination of Specific Gravity

4.5.1 Accurately weigh a 25 ml volumetric flask (W_1).

4.5.2 By means of a disposable Beral pipette transfer a well mixed sample of the coating to the 25 ml volumetric flask. Fill precisely to the 25 ml graduation mark.

4.5.3 Reweigh the volumetric flask (W_2).

4.5.4 Sample should be run in duplicate and agree to within $\pm 1\%$.

4.6 Calculation of Specific Gravity

$$\text{Specific Gravity} = \frac{W_2 - W_1}{25 \text{ cc}} = \text{density (g/cc)}$$

4.7 Alternately, the specific gravity may be determined using reference 6.3.

5. COMPLIANCE CALCULATION

5.1 If no water was found in the coating:

$$\begin{array}{l} \text{Wt. of volatile organic} \\ \text{material per liter of} \\ \text{coating} \end{array} = \frac{(\text{Wt. of paint} - \text{Wt. of Nonvolatile in} \\ \text{paint}) (1000) (\text{Spec. Grav.})}{\text{Wt. of paint}}$$

5.2 If water was found in the coating:

Wt. of volatile organic material per liter of coating without water =

$$\frac{\sqrt{(4.2.1 - 4.2.2) - (4.4)(4.2.1) (10^{-2})} \times 1000 \text{ cc}}{4.2.1 \left(\frac{1}{\text{Spec. Grav.}} - (4.4) (10^{-2}) \right)} \times \text{liter}$$

6. REFERENCES

6.1 "Water in Paint and Paint Related Products" (Reflux Method). Method 4081 of the Federal Test Method Standard 141a.

6.2 "Volatile Content of Paint". ASTM designation D2369-73, Book of ASTM Standards, Part 27, 444-445, 1975.

6.3 "Density of Paint, Varnish, Lacquer and Related Products". ASTM designation ASTM 4175-60. Book of ASTM Standards, Part 27, 233-235, 1975.

LAB 23

REF: Reg. 8-4-111

DETERMINATION OF VOLATILE WEIGHT LOSS OF POLYESTER RESINS

1. PRINCIPLE

A pour pan method is used, where a weighed amount of polyester resin is reacted with methyl ethyl ketone peroxide (MEKP) catalyst to form a 4" x 1/4" thick casting. The volatility loss is determined at room temperature ($75 \pm 3^{\circ}\text{F}$) over a three hour period, with samples having a gel time between 15 to 20 minutes.

This method is applicable only to polyester resins and does not simulate spray booth operations.

2. APPARATUS

2.1 Analytical balance

2.2 4" x 1/2" can lid or equivalent. The lid must be capable of containing about 100 cc volume to which an accurate amount of catalyst can be added.

2.2.1 Stirring rod, glass or metal

2.3 Clock or timer

2.4 8 oz wide mouth bottles

3. REAGENT

3.1 Polyester Resin

3.2 Methyl Ethyl Ketone Peroxide (MEKP)

4. DETERMINATION OF GEL TIME

4.1 To a tared 8 oz wide mouth bottle (2" in diameter), containing a glass or metal stirring rod, add 100 g (± 0.1 g) of polyester resin.

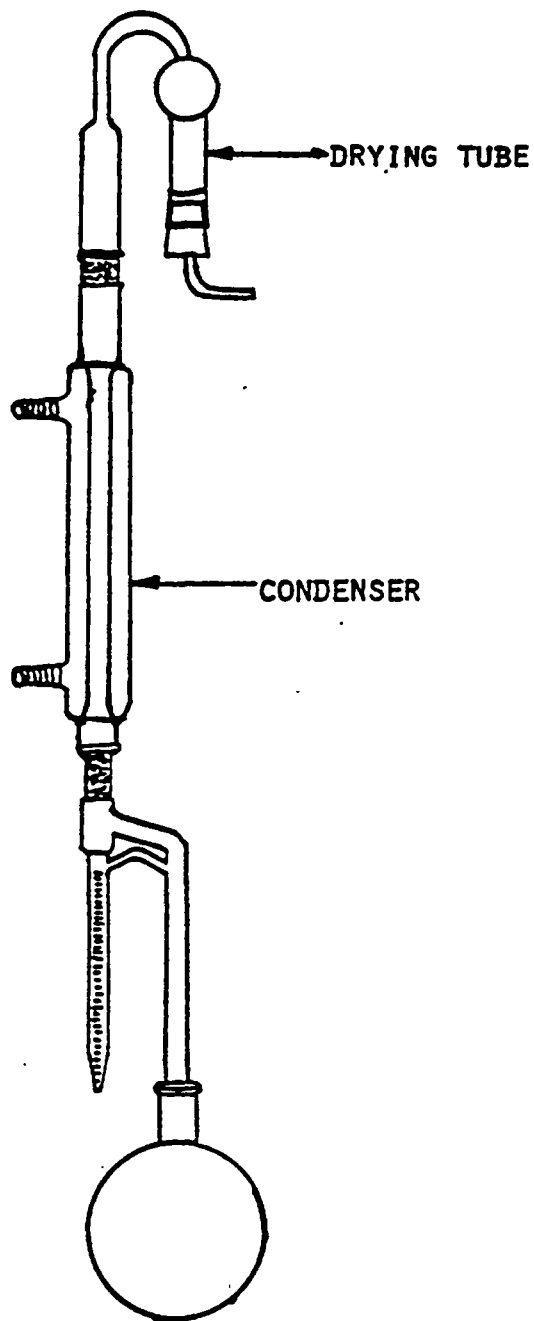


FIG. III-15
REFLUX UNIT

4.2 To the polyester resin, add 1.0 g (± 0.1 g) of MEKP. Record the time and thoroughly mix for 30 seconds.

4.3 Periodically mix the contents until it commences to thicken. When the resin thickens, dip and remove the stirrer four times a minute until the resin strings or snaps from the stirrer. This is the gel time. Record the time to the nearest minute. Note: If the gel time does not correspond to 15 to 20 minutes, a catalyst adjustment is necessary for the sample to conform to the required gel time. If the gel time is between 15 to 20 minutes proceed with Section 5.

4.4 Gel Time Adjustment. A catalyst adjustment is necessary whenever the gel time varies from the appropriate 15 to 20 minutes. Additional catalyst lowers the gel time. Variations in relative gel times with different catalyst additions are listed below and serve as a guide for obtaining the proper gel time.

<u>% MEKP Catalyst Added</u>	<u>Approximate Gel Time</u>
1.00	40 minutes
1.50	30 minutes
2.00	20 minutes

If for example a sample using 1% W/W MEKP catalyst has a gel time of 40 minutes, an additional 1.0% MEKP catalyst should reduce the gel time to approximately 20 minutes.

5. DETERMINATION OF VOLATILE ORGANICS

5.1 Tare weigh a 4" x 1/2" metal lid or equivalent, containing a stirring rod to ± 0.01 g. Record the weight as W_1 .

5.2 Add approximately 50 ml (50 g) of polyester resin to the metal lid, to form a 1/4" thick casting. Record the weight of the lid plus the polyester resin to ± 0.01 g as W_2 .

5.3 Add 0.5 g ± 0.01 g of MEKP catalyst to the polyester resin. Record weight as W_3 . If a gel time adjustment was necessary, then the MEKP used must be in the same ratio to the polyester resin as was determined in Section 4.4.

5.4 After addition of the catalyst record the time. Thoroughly mix the catalyst into the polyester resin by means of the stirring rod for 30 seconds at room temperature ($75 \pm 3^\circ\text{F}$). Note: The mixing and catalyzation volatility loss should be done in a hood or well ventilated area.

5.5 Periodically weigh the polyester resin content to determine the weight loss per unit time. At least three weighings should be made during the first 30 minutes of the test. Record all weight losses with the attendant time lapse as W_t .

5.6 Continue the weight loss determinations for 3 hours, taking periodic temperature readings and weighings every 30 minutes. After 3 hours, record the final weight as W_f .

Note: Periodic weight loss readings are taken to give an indication of the rate loss of the volatile organic compounds.

6. CALCULATIONS

6.1 To determine the percent loss of volatile organics after time t .

$$\% \text{ Volatile Organics Loss} = \frac{W_3 - W_t}{W_3 - W_1} \times 100$$

6.2 To determine the percent loss of volatile organics for compliance purposes:

$$\% \text{ Volatile Organics Loss} = \frac{W_3 - W_f}{W_3 - W_1} \times 100$$

Where W_1 = Tare weight of lid plus stirrer

W_3 = Tare weight plus the polyester and MEKP

W_t = The weight of the contents of W_3 after t minutes have elapsed in the experiment.

W_f = The weight of the contents of W_3 after the required 3 hours have elapsed in the experiment.

REF: Regs. 10-1-301,
12-5-301

DETERMINATION OF TOTAL FLUORIDE IN EFFLUENTS

1. PRINCIPLE

Gaseous and water soluble particulate fluorides are collected in a dilute alkaline solution. The absorbed fluorides are quantified by the use of a fluoride specific ion meter. A buffer solution containing a chelating agent is used to prevent possible interferences from aluminum, iron and hydroxyl ions.

2. APPARATUS

2.1 Orion Specific Ion Meter (Model 407A)

2.1.1 Sleeve-type Reference Electrode (Orion No. 90-01-00)

2.1.2 Fluoride Ion Electrode (Orion No. 94-09)

2.2 Magnetic stirrer and teflon stirring bar (2.5 cm)

2.3 Polyethylene beakers, 100 ml

2.4 Polyethylene 1 liter volumetric flask

3. REAGENTS

3.1 Sodium Fluoride

3.2 Total Ionic Strength Adjustment Buffer (TISAB)

3.2.1 Dissolve 228 ml of glacial acetic acid, 232 g of sodium chloride and 4 g of CYTA (1,2, cyclo-hexylene-dinitrilo) Tetraacetic Acid in a 4 liter beaker containing approximately 2000 ml of distilled water.

3.2.2 Slowly add, with stirring, 160 ml of 50% sodium hydroxide solution while cooling the beaker in an ice bath. Allow the solution to come to room temperature and adjust the pH to between 5.0 and 5.5 using 50% sodium hydroxide solution.

3.2.3 Transfer the solution into a 4 liter bottle and bring to volume with distilled water.

3.3 Sodium Hydroxide Solution (0.1 N). Dissolve 4.0 g of sodium hydroxide pellets in 1 liter of distilled water.

4. ANALYTICAL PROCEDURE

4.1 Measure and record the total volumes of each impinger.

4.2 Transfer a 15.0 ml aliquot of sample to a 100 ml polyethylene beaker containing a teflon stirring rod, and add 15.0 ml of the TISAB solution.

4.3 Calibrate the ion meter as described in Section 6.

4.4 Immerse the ion meter electrodes into the prepared sample and stir the solution slowly. Record the μg fluoride reading after a constant reading has been obtained.

4.5 All sample readings must be bracketed between the calibration standards. If the sample reads less than the 1.0 μg F standard, report the result as traces found.

4.5.1 Sample readings greater than 10 μg F must be diluted with a solution containing equal amounts of TISAB and 0.1 N sodium hydroxide to be in the range of the calibration standards. Alternately, a smaller aliquot of the impinger may be taken and brought to 15.0 ml with 0.1 N sodium hydroxide. Add 15.0 ml of TISAB and proceed as in 4.4.

4.6 The ion meter should be recalibrated periodically with the middle range calibration standard. Rechecking after every tenth sample has been found to be adequate.

5. STANDARD PREPARATION

5.1 Standard Stock Fluoride Solution

Weigh and transfer 0.2210 g of sodium fluoride to a 1 liter volumetric flask. Dissolve in distilled water and bring to volume. This solution contains 100 μg of fluoride ion per ml. This solution is stable for one year when stored in a plastic bottle.

5.2 Working Standard Fluoride Solutions

Three standards, respectively 1.0, 5.0 and 10.0 μg F/ml are prepared by the appropriate dilution of the standard stock fluoride solution with distilled water. These standards if stored in plastic bottles are stable for six months.

6. CALIBRATION OF THE ION METER

6.1 Prepare three calibration fluoride solutions containing 1.0, 5.0, and 10.0 μg as follows:

6.1.1 The 1.0 μg calibration standard is made by pipetting 1.0 ml of the 1.0 μg F/ml standard (5.2) into a 100 ml polyethylene beaker and adding 14.0 ml of 0.1 N sodium hydroxide.

6.1.2 The 5.0 μg calibration standard is made by pipetting 0.5 ml of the 10.1 μg F/ml standard (5.2) into a 100 ml polyethylene beaker and 14.5 ml of 0.1 N sodium hydroxide.

6.1.3 The 10.0 μg calibration standard is made by pipetting 1.0 ml of the 10.0 μg F/ml standard (5.2) into a 100 ml polyethylene beaker and adding 14.0 ml of 0.1 N sodium hydroxide.

6.2 The Ion meter is calibrated using the three calibration standards (6.1.1 - 6.1.3), each with 15.0 ml of TISAB having been added, as described in the instrument manual. It is important to maintain a constant slow stirring rate when the electrodes are

immersed in the calibration solutions. Rinse the electrodes and blot dry with clean tissue between readings to prevent solution carry over.

7. CALCULATIONS

$$7.1 \quad \frac{\text{*Total } \mu\text{g F}}{\text{Impinger}} = \frac{(\mu\text{g F, Meter Reading}) (\text{Impinger Vol. ml})}{\text{Aliquot (ml)}}$$

*If the sample was diluted to be within the calibration standards, the calculation must be multiplied by the appropriate dilution factor.

$$7.2 \quad \text{Total } \mu\text{g F} = \mu\text{g F Imp I} + \mu\text{g F Imp II}$$

8. REFERENCE

8.1 Orion Analyzer Instruction Manual for Model 407A.

Orion Research Inc., Cambridge, Mass.

8.2 40 CFR 60.275 Appendix A, Method 13B. "Determination of Total Fluoride Emissions from Stationary Sources - Specific Ion Electrode Method".

LAB 25

REF: Reg. 10-8-303

DETERMINATION OF HYDROGEN SULFIDE IN EFFLUENTS

1. PRINCIPLE

The hydrogen sulfide is absorbed in an alkaline cadmium hydroxide solution to form cadmium sulfide. The precipitated cadmium sulfide is then dissolved in hydrochloric acid and absorbed in a known volume of iodine solution. The iodine consumed is a measure of the hydrogen sulfide content of the effluent.

2. APPARATUS

- 2.1 Buret, 0 to 50 ml
- 2.2 Iodine flask, 500 ml

3. REAGENTS

3.1 Absorbing Solution. Dissolve 4.3 g cadmium sulfate hydrate $\text{CdSO}_4 \cdot 8\text{H}_2\text{O}$ and 0.3 g of sodium hydroxide in 1 liter of distilled water. Mix the cadmium hydroxide suspension thoroughly before using the absorbing solution.

3.2 Hydrochloric Acid Solution (10% W/W). Dilute 230 ml of concentrated hydrochloric acid to 1 liter with distilled water.

3.3 Iodine Solution (0.1 N). Dissolve 24 g of potassium iodide in 300 ml of distilled water in a 1 liter graduated cylinder. Weigh 12.7 g of resublimed iodine into a weighing bottle and transfer to the potassium iodide solution. Mix until the iodine is completely dissolved. Slowly dilute the solution to 1 liter with distilled water and transfer to a brown glass stoppered bottle.

3.4 Standard Iodine Solution (0.01 N). Dilute 100 ml of the 0.1 N iodine solution (3.3) in a volumetric flask to 1 liter with distilled water. Standardize before using as follows: pipette 25.0 ml of the 0.01 N iodine solution into a 125 ml flask. Titrate with standard 0.01 N thiosulfate solution to a light yellow color. Add a few drops of starch solution, and continue the titration until the blue color just disappears. From the results of this titration, calculate the exact normality of the iodine solution (5.1).

3.5 Standard Thiosulfate Solution (0.1 N). For each liter of solution, dissolve 24.8 g sodium thiosulfate hydrate ($\text{Na}_2\text{S}_2\text{O}_3 \cdot 5\text{H}_2\text{O}$) and 0.10 g sodium carbonate in distilled water. Standardize the solution as follows: weigh and transfer approximately 2 g of potassium dichromate (to the nearest .0001 g) to a 500 ml volumetric flask. Dissolve and dilute to volume with distilled water. Dissolve approximately 3 g of potassium iodide in 50 ml of distilled water contained in an iodine flask; then add 10 ml of 10% hydrochloric acid solution. Pipette 50.0 ml of the dichromate solution into the same iodine flask, swirl once gently and allow to stand in the dark for 5 minutes. Add approximately 150 ml of distilled water, swirl, and immediately titrate with the thiosulfate solution to a light yellow color. Add 2 ml of starch solution and titrate until the blue color disappears and a pale green color remains. From duplicate titrations, calculate the exact normality of the sodium thiosulfate solution (5.2).

3.6 Sodium Thiosulfate Standard (0.01 N). Pipette 100.0 ml of the standard 0.1 N thiosulfate (Par. 3.5) into a volumetric flask and dilute to 1 liter with distilled water. Calculate the exact normality of this solution by dividing the determined normality of 0.1 N thiosulfate (Par. 3.5) by 10.

3.7 Starch Indicator Solution. This solution is commercially available.

4. ANALYTICAL PROCEDURE

4.1 Transfer the contents of each Greenburg-Smith impinger into separate 500 ml iodine flasks. Pipetter 50.0 ml of the 0.01 N iodine solution into the empty impinger. Add 50 ml of 10% hydrochloric acid to the impinger and contact the sides of the impinger thoroughly. Transfer the acidified iodine solution to the iodine flask containing the sample. Give the impinger two additional rinses of 25 ml of distilled water, adding each rinse water to the iodine flask.

4.1.1 Titrate the solution in the iodine flask with 0.01 N thiosulfate to a light yellow color. Add a few drops of starch indicator solution and continue titrating till disappearance of the blue color. Record the volume of thiosulfate used.

4.1.2 Prepare a blank in an iodine flask using 100 ml of absorbing solution, 50.0 ml of 0.01 N iodine solution and 50 ml of 10% hydrochloric acid.

4.1.3 Titrate the blank in the same manner as the sample.

5. CALCULATIONS

5.1 Normality of the Iodine Solution

$$N = \frac{\text{(Normality of Thiosulfate) (Volume of Thiosulfate)}}{\text{ml of Iodine}}$$

5.2 Normality of the Standard Thiosulfate

$$N = \frac{2.04 (W)}{\text{ml of Thiosulfate}}$$

Where W = Weight of potassium dichromate (g)

$$2.04 = \frac{(6 \text{ Eq. I}_2/\text{Mole K}_2\text{Cr}_2\text{O}_7) (1000 \text{ ml/l})}{(294.2 \text{ gK}_2\text{Cr}_2\text{O}_7/\text{Mole})(10 \text{ Aliquot factor})}$$

5.3 mg H₂S in each impinger

$$\text{mg H}_2\text{S} = 17 \left[(V_I N_I - V_T N_T) \text{ Samp.} - (V_I N_I - V_T N_T) \text{ blank} \right]$$

$$\text{Where } 17 = \frac{(34.07 \text{ g/Mole H}_2\text{S})(1000 \text{ mg/g})}{(1000 \text{ ml/l}) (2 \text{ H}_2\text{S Eq./Mole})}$$

$$\text{Total mg H}_2\text{S} = \text{mg H}_2\text{S 1st Imp.} + \text{mg H}_2\text{S 2nd Imp.} \\ + \text{mg H}_2\text{S 3rd Imp.}$$

6. REFERENCE

6.1 40 CFR 60.275 Appendix A, Method 11. "Determination of Hydrogen Sulfide Emissions From Stationary Sources".

MANUAL OF PROCEDURES
VOLUME IV
SOURCE TEST POLICY AND PROCEDURES

MANUAL OF PROCEDURES
VOL. IV
SOURCE TEST POLICY AND PROCEDURES
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2. SOURCE TEST PROCEDURES

Number	Subject
ST-1A	Ammonia
ST-1B	Ammonia, Continuous Sampling
ST-2	Beryllium Sampling
ST-3	Bulk Gasoline Transfer Plants (500-20, 000 GPD)
ST-4	Bulk Gasoline Loading Terminals
ST-5	Carbon Dioxide, Continuous Sampling
ST-6	Carbon Monoxide, Continuous Sampling
ST-7	Non-Methane Organic Carbon Sampling
ST-8	Dimethylsulfide Sampling

ST-9 Lead Sampling
ST-10 Mercury Sampling
ST-11 Mercaptans, Integrated Sampling
ST-12 Collection of Odorous Samples
ST-13A Oxides of Nitrogen, Continuous Sampling
ST-13B Oxides of Nitrogen, Integrated Sampling
ST-14 Oxygen, Continuous Sampling
ST-15 Particulates Sampling
ST-16 Phenolic Compounds Sampling
ST-17 Stack Gas Velocity and Volumetric Flowrate
ST-18 Stack Traverse Point Determination
ST-19A Sulfur Dioxide, Continuous Sampling
ST-19B Sulfur Oxides, Integrated Sampling
ST-20 Sulfur Dioxide, Sulfur Trioxide and Sulfuric Acid Mist
ST-21 Total Reduced Sulfur Sampling
ST-22 Trimethylamine Sampling
ST-23 Water Vapor Sampling
ST-24 Evacuated Cylinder Sampling for Orsat Analysis
 (CO, CO₂, O₂)
ST-25 Fluoride, Integrated Sampling
ST-26 Coke Burn-Off Rate
ST-27 Pressure Drop, Phase II, Gasoline Vapor Recovery
ST-28 Hydrogen Sulfide, Integrated Sampling

1. SOURCE TEST POLICY

1.1 Introduction

The purpose of this volume of the Manual of Procedures is to advise persons subject to the Regulations of the Bay Area Air Quality Management District of the policy of the Air Pollution Control Officer relative to source testing and to promulgate procedures used to determine compliance with the regulations of this District.

Source Test methodology is a state of the art practice and therefore occasional changes will be made to this volume. A form has been provided in the front of this volume for those who wish to receive these periodic changes.

The contents of this Manual, and its subsequent changes, are subject to approval by the Board of Directors of this District, and therefore, become law as provided for in the Health and Safety Code of the State of California.

1.2 Definitions: The definitions used herein are consistent with those used in the regulations of the District. The definitions of type "A" and "B" sample points are expanded for clarification.

1.2.2 Representative Sampling: The over-riding factor for all source tests shall be that every reasonable effort must be made to obtain samples that are truly representative of the source being tested for that given set of process variables. In all cases accepted engineering practice shall be followed for all test procedures.

1.2.3 Sampling Points: The sampling point is the location on a source or its related control equipment where samples are taken. For purposes of determining compliance with District Regulations, samples taken at a sampling point shall be deemed identical to those at the point of emission to the atmosphere. The Regulations address themselves to type "A" and "B" emission points.

The primary consideration for locating a sample port shall be that the sample port location accurately represents the nature, extent, quantity and degree of the contaminant at the emissions point. Ports shall be located, if reasonably possible, at a type "A" sample point.

1.2.3.1 Sampling at type "A" emission points. A type "A" sample point shall be located in a smooth stack at least eight stack diameters downstream of any bends, inlets, constriction, flow altering device or change of area or geometry and two diameters upstream of the stack exit or other flow disturbance. For a non-circular duct, the equivalent diameter will be determined from the following equation:

$$\text{Equivalent Diameter} = 2 \frac{\text{length} \times \text{width}}{\text{length} + \text{width}}$$

1.2.3.2. Sampling at type "B" emission Points. A type "B" sample point means any sample point not qualifying as a type "A" emission point.

The quantity of emission from a type "B" emission point shall be

the quantity of emission computed by multiplying the quantity of emission from a test area by the proportion which the whole area bears to such test area. Such test area may be taken as the cross sectional area of the inlet to a sample probe. The emission from any test area of a type "B" emission point shall be deemed to be representative in every respect of the emissions from the entire area. Emissions from the test area may be measured at the place and by the procedure which result in the highest measurement of air contaminants.

1.2.4 Sampling Facilities: Section 1-410 of Regulation 1 places the burden of providing proper sampling facilities on the person responsible for the emission. The following are normally considered necessary:

1.2.4.1. Sample Ports: For circular ducts, at least two ports 90 degrees apart on a plane perpendicular to the longitudinal axis of the duct shall be installed at the sample point. For circular ducts, ten feet in diameter or greater, four ports ninety degrees apart on a plane perpendicular to the longitudinal axis shall be installed.

For non circular ducts, access shall be provided to the entire cross-sectional area of the duct.

Each port, where possible, shall be a nominal three inch diameter pipe with external tapered pipe threads.

Ports shall be installed flush with the interior stack wall.

Gate valves should be installed on sample ports only when extreme stack conditions or the presence of hazardous materials require such devices for safety considerations.

Questions concerning locations should be referred to the Chief of Source Test.

1.2.4.2 Sampling Area Clearance: There shall be sufficient clearance in the vicinity of each test port to allow the insertion of a probe equal in length to the stack diameter.

1.2.4.3 Safety: Sampling facilities, access ways and platforms shall meet all applicable OSHA requirements for industrial and personal safety and conform to any other relevant safety guidelines.

1.2.5 Quality Assurance: It is absolutely essential in any testing program that a quality assurance program be established and maintained. The provisions of Air Monitoring Quality Assurance Volume IV, Quality Assurance in the Testing of Stationary Sources, California State Air Resources Board shall apply.

1.2.5.1 Instrumental Methods: Specifications and procedures for zero and span checks on analytical instruments are in each test procedure. Where available, calibration gases shall be traceable to National Bureau of Standards reference materials. Confirmation of their values shall be made by reference procedures at intervals of not more than three months.

1.2.5.2 Recorders: Analog chart recorders must be compatible with instrument output.

1.2.5.3 Manual Methods: Sampling shall be conducted to compensate, where reasonably possible, for significant stratification and non-homogeneity in the gas stream, so that the sample of the gas stream approaches a representative sample.

All sampling lines shall be checked for the presence of condensation. If condensation has occurred, adjustments in procedure shall be made either to prevent it or to compensate for the condensed material in the sample line.

Sufficient test data and notes shall be recorded at the time of the test by the personnel conducting the sampling to permit the determination of emissions and to permit evaluation of results at a later date.

All sampling lines shall be leak-free. The distance between the sample gas inlet and the sample collection or analytical device shall be as short as feasible. The sampling lines shall be composed of inert materials. The sampling lines shall be purged thoroughly with sample gas prior to the taking of the sample.

Sampling equipment which comes in contact with the collected sample shall not alter the composition, and shall be used in such a manner that significant leaks can be detected.

1.3 Alternate Methods: EPA methods may be used alternately without prior approval. Alternate methods may be approved at the discretion of the Chief of Source Test. The burden of proof of

equivalency is on the person seeking alternate status. Such alternate status may be granted on a "one-time only" basis. All such requests and supporting documentation shall be made in writing.

1.4 NSPS and NESHAPS Testing: The Bay Area Air Quality Management District has been delegated authority by the U.S. Environmental Protection Agency (EPA) to enforce the New Source Performance Standards (NSPS) and the National Emission Standards for Hazardous Air Pollutants (NESHAPS).

EPA requires that all testing for these standards use its methods unless alternate or equivalent status to its methods has been granted. The District has been granted alternate status for the instrumental SO₂ and NO_x procedures, ST-19A and ST-13A and the integrated sulfur oxide procedure, ST-20. EPA methods are published in Title 40 Code of Federal Regulations, Part 60, and are available from the U.S. Government Printing Office.

1.5 Tests Conducted by Other Persons: Any person who conducts a source test for the purpose of furnishing data to the Air Polluting Officer is subject to the following conditions:

1.5.1 Notifications: The Chief of Source Test shall be notified at least one week prior to the date the test is to be conducted. Source Test Engineers from the District shall observe any such tests as deemed necessary.

1.5.2 Methodology: The procedures set forth in this volume shall be adhered to in any test except as provided in paragraph 1.3.

1.5.3 Data Presentation: Data shall be collected and presented in the format of the forms shown herein. All calculations shall be included and clearly identified.

1.5.4 Process Information: Where applicable, pertinent process data including rates during the test and maximum capacities shall be included in the data. Confidential information shall be clearly marked as such.

1.5.5 Test Review: Tests furnished the District shall be sent to the attention of the Source Test Section for review and disposition.

1.6 Confidentiality of Process Information:

Process information is a necessary part of any source test in that the test data represents those process conditions at the time of the test.

Source Test records are public information. However, proprietary information is not. Information of a confidential nature should be clearly labeled to insure proper treatment.

1.7 Applicability

Each test procedure is applicable to a specific regulation. The designation appears in the upper left hand corner of the procedure.

Source Test Procedure ST-1A
AMMONIA, CONTINUOUS SAMPLING

REF: Reg. 7-303

1. Applicability

1.1 This method is used to quantify emissions of ammonia. It determines compliance with Regulation 7-303.

2. Principle

2.1 A gas sample is extracted continuously from the sample point and conditioned to remove water and particulate matter. A stainless steel catalyst (at 750C) in a chemiluminescent analyzer converts ammonia (NH₃) and nitrogen dioxide (NO₂) to the analyzer. By determining the NO and NO₂ separately, the NH₃ concentration is determined by difference.

3. Range and Sensitivity

3.1 The minimum measurable concentration of NH₃ is 5% of the total oxides of nitrogen.

3.2 The minimum sensitivity of the analyzer shall be $\pm 2\%$ of full scale.

4. Interferences

4.1. Nitrogen bearing compounds (other than NO and NO₂) may cause interferences.

5. Apparatus

5.1 Chemiluminescent analyzer. Use a Thermo Electron Corp. Model 10A analyzer equipped with a stainless steel catalyst or its equivalent.

5.2 Chart recorder. The recorder monitors and records the continuous output from the analyzer.

5.3 Sample conditioning, zero air, and span gas system. The assembly of this system is shown in Fig. IV-1. The sample conditioning system provides a dry, particulate free gas flow to the instrument. The zero air system provides clean dry atmospheric air for instrument calibration. The span gas system provides a known concentration of nitric oxide for use in calibrating the analyzer. Except as specified, all materials which come in contact with either the sample or span gases must be constructed of Teflon or stainless steel.

5.4 Sample probe. Use a borosilicate glass tube of sufficient length to traverse the stack being tested. If the stack temperature exceeds 425C (800F), use a quartz probe. Other probes are acceptable subject to approval by the Source Test Section.

5.5 Condensers. Use modified Greenberg-Smith Impingers with the Impaction plates removed and the inlet tube shortened to a length of 10cm (4 inches), or equivalent.

5.6 Cooling system. Immerse the Impingers in an ice bath during the test.

5.7 Particulate filter. Use a Balston type 95 holder with a grade B filter, or equivalent, in the sample system.

5.8 Pumps. Use leak-free, Teflon-lined, diaphragm pumps in the sample and zero air systems. The pumps must have a capacity of at least 40 liters/min (1.5 CFM) to 28 liters/min (1.0 CFM).

5.9 Back-pressure regulator. Use a back-pressure regulator to maintain the sample and zero gas sample pressures to the Instrument at five psig.

5.10 Gas scrubber. Use a bed of silica gel, Ascarite (or soda-lime), and charcoal to remove moisture, carbon dioxide, and hydrocarbons from the zero air system.

5.11 Span gas. Use a high-pressure cylinder containing a known concentration of NO in nitrogen. The span gas concentration must be in the same range as the source being tested.

6. Pre-Test Procedures

6.1 Warm-up the Instrument according to manufacturer's instructions.

6.2 Assemble the sampling system and analyzer as shown in Figs IV-1 and IV-2.

6.3 Leak-test the sampling system by starting the pump, plugging the probe, and determining that the pressure to the analyzer falls to zero. Other leak-tests are acceptable subject to the approval of the Source Test Section.

6.4 Introduce zero air, into the analyzer and zero the Instrument according to manufacturer's instructions.

6.5 Introduce span gas into the analyzer and calibrate the Instrument according to manufacturer's instructions.

6.6 Conduct a preliminary concentration traverse (according to ST-18) to determine if stratification of stack gases exists. If the NH₃ concentration at any point differs from the average

concentration by more than 10%, traverse the stack during the test. If not, sample at any single point.

6.7 Set-up the chart recorder according to manufacturer's instructions.

7. Sampling

7.1 Each test run shall be of thirty minute duration when testing emissions from continuous operations. Each test run at batch process operations shall be for 90% of the batch time or thirty minutes, whichever is less.

7.2 Introduce sample gas into the analyzer at the same flow rate used to calibrate the analyzer.

7.3 Maintain ice in the cooling system throughout the test.

7.4 Calibrate the analyzer before and after each test run. Record each step of the process clearly on the chart recording.

7.5 Conduct three test runs.

8. Calculations

8.1 From the chart recording determine the time-averaged concentration of NH_3 on a dry basis for each run.

9. Reporting

9.1 Report the results indicated on Figure IV-3.

9.2 These values are also.....(see 11.1 of ST-24).

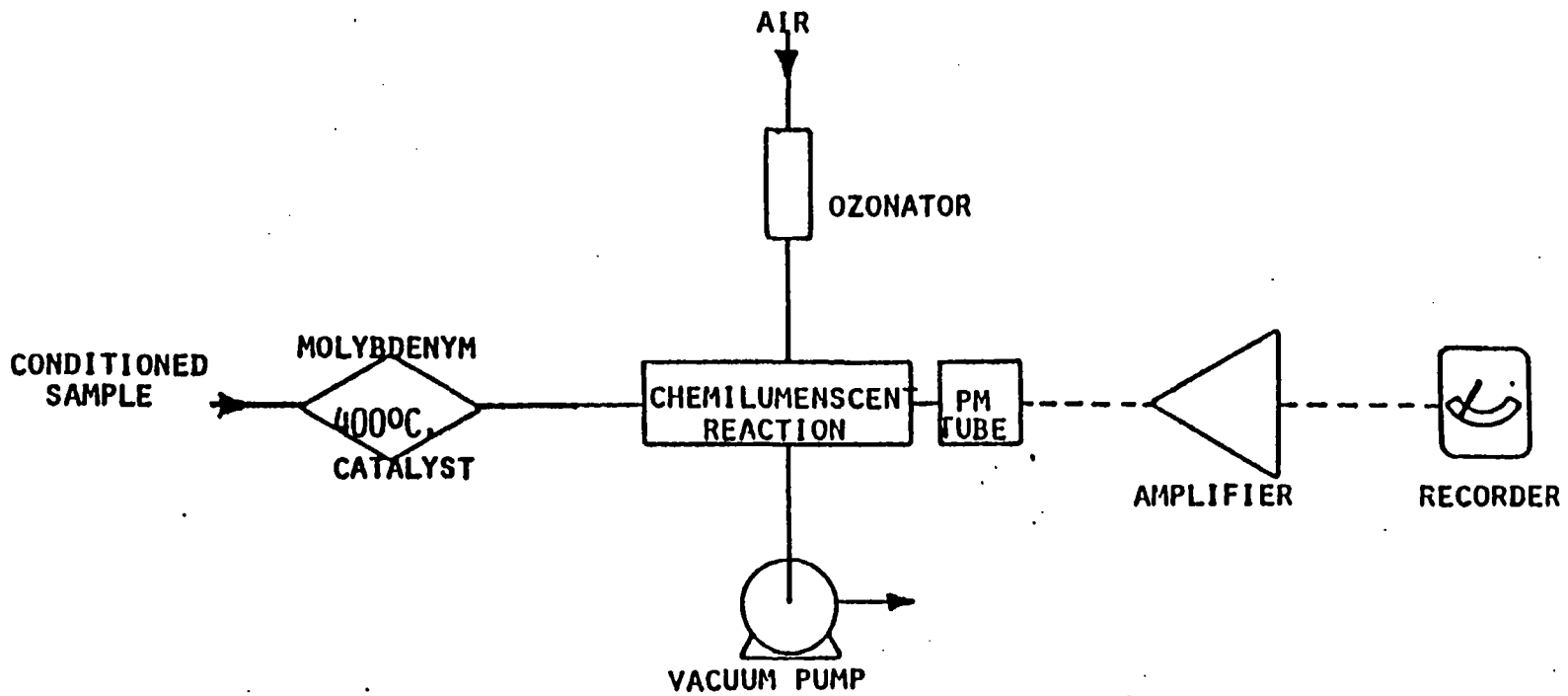


Fig. IV - 2

INSTRUMENTAL ANALYSIS OF AMMONIA

NOTE: SPAN-GAS SYSTEM NOT APPLICABLE TO ST-14

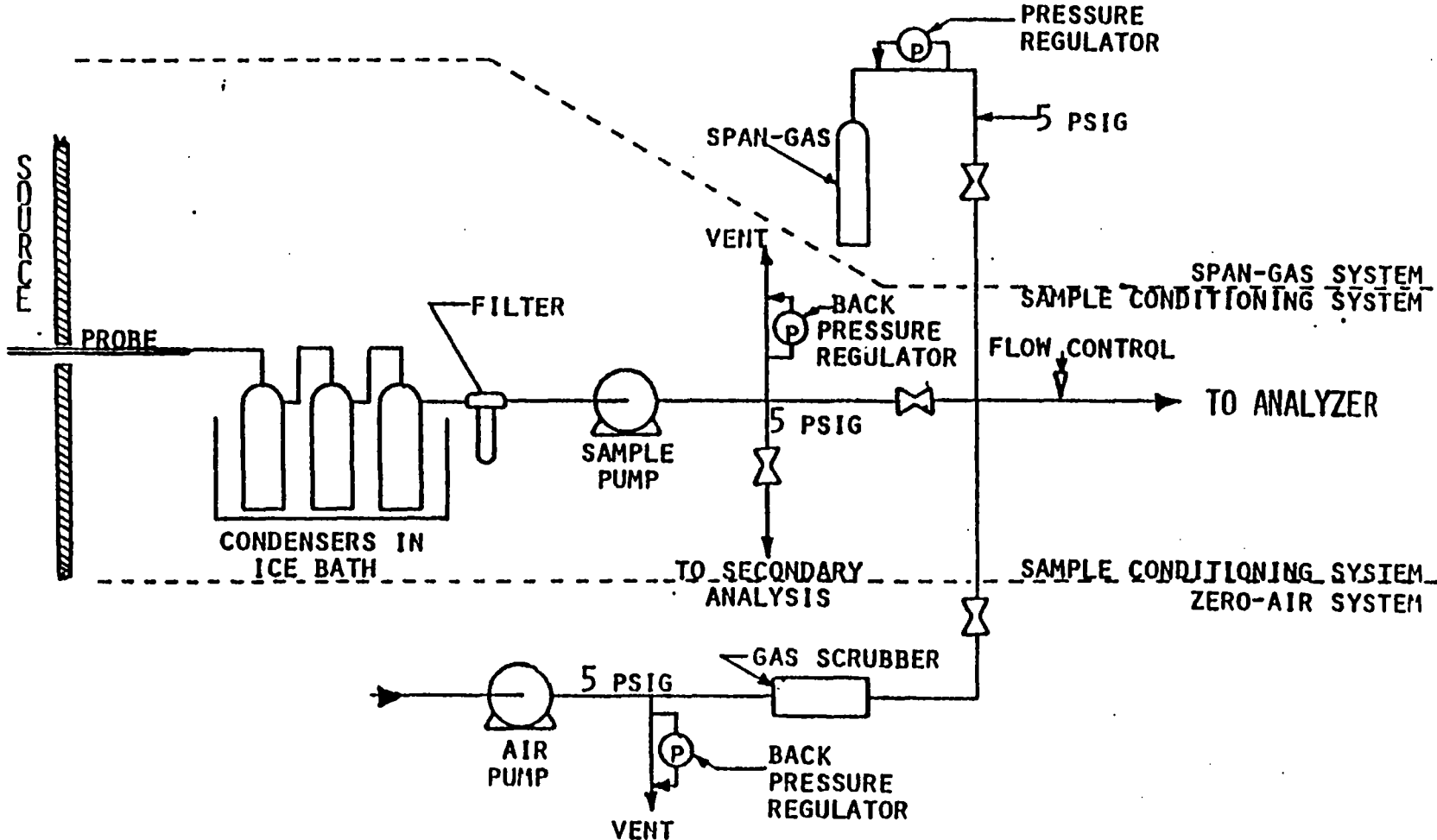


Fig. IV - 1

SAMPLE CONDITIONING, ZERO-AIR AND SPAN-GAS SYSTEMS

SUMMARY OF SOURCE TEST RESULTS

SOURCE INFORMATION		
Firm Name and Address	Firm Representative and Title	
Conditions During Tests	Phone No.	
	Source:	
Operating Parameters	Operates	hr/day & days/yr

Report No. _____
 Test Date: _____
 Test Times:
 Run A: _____
 Run B: _____
 Run C: _____

Test Results and Comments

<u>METHOD</u>	<u>TEST</u>	<u>RUN A</u>	<u>RUN B</u>	<u>RUN C</u>	<u>AVG.</u>
-1A	Run time, minutes Stack gas Temperature, °F. Ammonia, ppm				

Source Test Procedure ST-1B
AMMONIA, INTEGRATED SAMPLING

REF: Reg. 7-303

1. Applicability

1.1 This method is used to quantify emissions of ammonia. It determines compliance with Reg. 7-303.

2. Principle

2.1 Sample gas is drawn through a solution of 0.1 normal (0.1N) hydrochloric acid which absorbs the ammonia. The ammonia is then analyzed according to Analytical Procedure Lab-1.

3. Range

3.1 The minimum measurable concentration of ammonia is 1 ppm at the sample volume specified in this procedure.

3.2 Elevated concentrations of ammonia may be determined by increasing the concentration of the absorbing reagent, hydrochloric acid solution. The concentration of reagent to be used may be determined by stoichiometry, allowing a 50% excess.

4. Interference

None Known.

5. Apparatus

5.1 Probe. The probe is constructed of borosilicate glass tubing fitted with a glass wool filter in the nozzle.

5.2 Condensers. Use three Greenberg-Smith Impingers as absorber/condensers. The final impinger has a thermometer attached to the inlet stem.

5.3 Cooling system. Use an ice bath to contain the impingers.

5.4 Sample pump. Use a leak-free vacuum pump capable of maintaining a 14.3 liter/min (0.5 CFM) flow rate at 15 inches of mercury. The pump must have a flow control valve and vacuum gauge attached to the inlet.

5.5 Silica gel tube. Use approximately 500cc of silica gel (with a Drierite indicator) to insure that the gas entering the dry test meter is dry.

5.6 Dry test meter. Use a dry gas test meter accurate within $\pm 2\%$ of the true volume and equipped with a thermometer to measure the outlet temperature.

5.7 Connections. Use Teflon tubing in making all connections that come in contact with the sample. Vinyl tubing is acceptable for all other connections.

5.8 Barometer. Use a barometer that is accurate to within ± 0.2 inches of mercury.

5.9 Rotameter. Use a calibrated rotameter to measure the sampling rate.

6. Reagents

6.1 Hydrochloric acid, 0.1N. Dissolve 7.30 ml concentrated HCl in sufficient water to make a 1.0 liter solution.

7. Pre-Test Procedures

7.1 Add 100 ml of the HCl solution to each of two impingers.

7.2 Stopper the impingers.

7.3 Retain 100 ml of the HCl solution to analyze as a blank.

7.4 Assemble the sampling train as shown in Figure

7.5 Leak-test the sampling train by starting the pump, plugging the probe, and adjusting the pump inlet vacuum to 10 inches Hg. The leak rate must not exceed 0.6 liter/min (0.02 CFM) through the dry test meter. Before stopping the pump, carefully release the plug in the sample probe to avoid backflow of the impinger solution.

7.6 Record the initial dry test meter reading and barometric pressure on the sampling data sheet, Figure

7.7 If there is evidence of concentration stratification, select the sampling traverse points according to ST-18. Otherwise, sample at a single point.

8. Sampling

8.1 Each test run shall be of thirty minute duration when testing emissions from continuous operations. Each test run at batch process operation shall be for 90% of the batch time or thirty minutes, whichever is less.

8.2 Position the probe at the sampling point and start the pump.

8.3 Sample at a constant rate of 14.3 liter/min (0.5 CFM) during the test as determined by the rotameter. Use the rotameter only to establish the initial sampling rate. Then remove it from the system.

8.4 Record the following information at five-minute intervals.

Dry test meter temperature
Impinger outlet temperature
Dry test meter volume

8.5 Add ice as necessary to maintain impinger temperatures at 7°C (45°F) or less.

8.6 At the conclusion of each run, stop the pump, remove the probe from the stack, record the final meter reading. Point the probe upward and purge the sample train with ambient air.

8.7 Take three consecutive samplers.

9. Post-Test Procedures

9.1 Stopper the impingers until they are analyzed.

9.2 Individually analyze the hydrochloric acid solutions and blank for total ammonia content according to analytical procedure Lab 1.

10. Calculations

10.1 Standard sample volume:

$$V_o = \frac{17.71 V_m P_b}{T_m}$$

Where:

V_o = Corrected sample volume, SDCF at 70°F and 29.92 inches Hg.
 V_m = Uncorrected meter volume, ft³
 T_m = Average run meter temperature, °R
 P_b = Barometric pressure, inches Hg.
17.71 = A constant correcting to 70°F and 29.92 inches Hg

10.2 Ammonia concentration:

$$C = \frac{5.02 \times 10^4 W}{V_o}$$

Where:

- C = ammonia concentration, ppm by volume on a dry basis.
- W = total weight of ammonia in the impinger catch, for each run, grams.
- 5.02×10^4 = a constant derived from the molecular weight and correcting to 70F and 29.92 inches Hg

11. Reporting

11.1 Report the data indicated on Figure IV-6 .

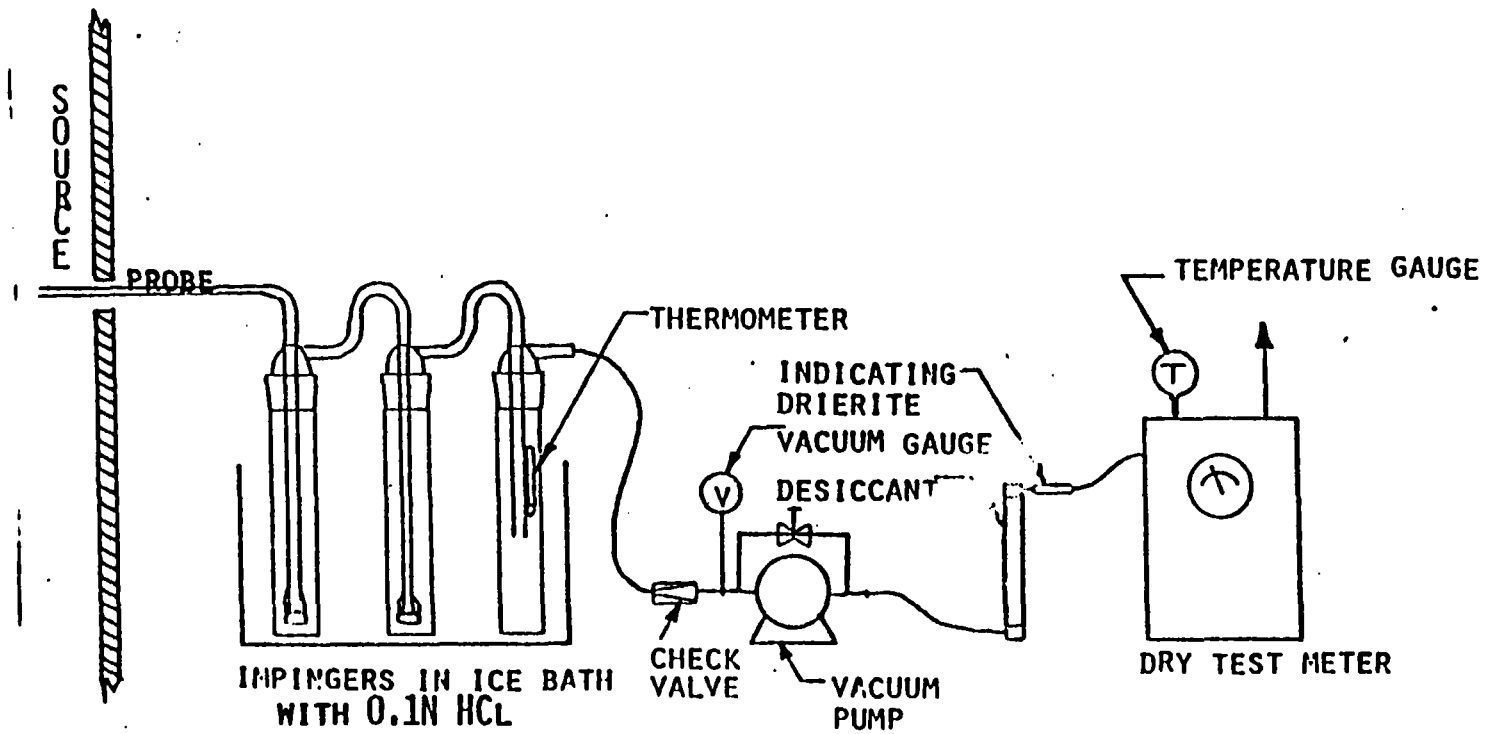


Fig. IV - 4

AMMONIA SAMPLING TRAIN

SUMMARY OF SOURCE TEST RESULTS

SOURCE INFORMATION		
Firm Name and Address	Firm Representative and Title	Report No. Test Date: Test Times: Run A: Run B: Run C:
	Phone No.	
Conditions During Tests	Source:	
Operating Parameters	Operates hr/day & days/yr	

Test Results and Comments

<u>METHOD</u>	<u>TEST</u>	<u>RUN A</u>	<u>RUN B</u>	<u>RUN C</u>	<u>AVG.</u>
ST-1B	Run time, minutes Stack gas Temperature, °F. Ammonia, ppm				

Source Test Procedure ST-2

BERYLLIUM

REF:Reg. 11-3-301

1. Applicability

1.1 This procedure is used to quantify emissions of beryllium. It determines compliance with Regulation 11-3-301.

2. Principle

2.1 Particulate matter (including Beryllium) is withdrawn isokinetically from the stack gas stream and collected on filters in the stack. The weight of the beryllium collected is measured by atomic absorption spectrophotometry according to Analytical Procedure lab 2.

3. Range

3.1 The minimum measurable emission of beryllium is .001 gr/SDCF.

4. Interferences

None Known

5. Apparatus

5.1 Probe nozzle. The sampling train and its components are shown in Figure IV-7. The probe nozzle shall be constructed of borosilicate glass, quartz, or stainless steel.

5.2 Filter medium. Use Millipore Type "A" glass fiber disc type or equivalent.

5.3 Connections. The connection between the filters and the first impinger must be able to withstand stack temperatures. Vinyl tubing is acceptable in making all other connections.

5.4 Pitot tube. Use a Stauscheibe (Type-S), or equivalent, with a known coefficient which is constant within $\pm 5\%$ over the entire working range. The pitot tube coefficient is determined by placing both the S-type and the standard pitot tube in a gas stream and measuring the pressure head with both over the entire velocity range of interest. Calculate the coefficient of the Type-S pitot tube as follows:

$$C_{P_s} = C_{P_{std}} \left[\frac{\Delta P_{std}}{\Delta P_s} \right]^{\frac{1}{2}}$$

where:

- C_{P_s} = Type-S pitot tube coefficient
- ΔP_s = Pressure head, Type-S pitot tube
- ΔP_{std} = Pressure head, standard pitot tube
- $C_{P_{std}}$ = Standard pitot tube coefficient

5.5 Temperature measuring device. Use a Chromel-Alumel thermocouple accurate to $\pm 150^\circ F$, connected to a temperature compensated null type potentiometer, or equivalent, to measure stack temperatures.

5.6 Condensers. Use three Greenberg-Smith impingers. The third impinger shall be modified by removing the impaction plate and attaching a thermometer to the inlet stem.

5.7 Cooling system. Use an ice bath to contain the impingers.

5.8 Sample pump. Use a leak-free vacuum pump capable of maintaining a 1.0 CFM flow rate at 15 inches of mercury. The pump must have a sample rate control valve and a vacuum gauge attached to the inlet.

5.9 Silica gel tube. Use approximately 500cc of silica gel, followed by a Drierite indicator, to insure that the gas entering the dry test meter is free of H_2O .

5.10 Dry test meter. Use a 175 CFH dry test meter accurate within $\pm 2\%$ of the true volume and equipped with a thermometer to measure the outlet temperature. The working pressure across the meter shall not exceed a one inch water column.

5.11 Rotameter. Use a calibrated rotameter to measure the sampling rate.

5.12 Pressure gauge. Use a Magnehelic differential pressure gauge, or equivalent, in the same range as the velocity and static pressures being measured in the stack.

5.13 Analytical balance. An analytical balance capable of measuring condensate weights to the nearest 0.1 gram is acceptable.

5.14 Barometer. Use a barometer that is accurate to within ± 0.2 inches of mercury.

6. Pre-Test Procedures

6.1 Impinger preparation. Fill each of two unmodified Greenberg-Smith Impingers with approximately 100ml of distilled water. Weigh and record the weights on the data sheet as shown in figure IV-8.

6.2 Nozzle size determination. (Same as Section 6.3 in ST-15).

6.3 Assemble the sampling train as shown in Figure IV-7

6.4 The entire sampling train must be leak-checked before each test run. Plug the sampling probe, start the pump, and adjust the pump vacuum to 380mm Hg(15" Hg). A leak rate through the meter which exceeds 0.57 lpm (0.02 CFM) is unacceptable.

7. Sampling

7.1 Each test run shall be of 50 minute duration when testing emissions from continuous operations. Each test run at batch process operations shall be for 90% of the batch time or 50 minutes, whichever is less.

7.2 When inserting the probe into the stack rotate the nozzle so it points down stream to avoid a particulate collection prior to sampling. Immediately before sampling rotate the probe so the nozzle points upstream.

7.3 Sample at the traverse points determined in accordance with ST-18.

7.4 Record the following information at five-minute intervals or whenever changing sampling locations on a field data sheet as shown in figure IV-9.

- stack velocity head
- Sample time
- isokinetic sample rate
- Cumulative sample volume
- Impinger saturation temperature
- Stack gas temperature
- Impinger vacuum
- Dry test meter temperature

7.6 Add ice as necessary to maintain impinger temperatures at 7°C (45°F) or less.

7.7. At the conclusion of each run, stop the pump, remove the probe from the stack and record the final meter reading. Point the probe upward and purge the sample train with ambient air.

7.8 Conduct three consecutive test runs.

8. Post-Test Procedures

8-1 Analyze the filters and any material in the nozzle for beryllium according to Analytical Procedure Lab 2.

9. Auxiliary Tests

9.1 Determine the CO₂, O₂ and CO concentrations simultaneously with each particulate run in accordance with ST-5, ST-14, and ST-6. An Orsat analysis (ST-24) is also acceptable.

10. Calculations

10.1 Standard Dry Sample Volume

$$V_o = \frac{17.71 V_m P_b}{T_m}$$

Where:

- V_o = standard dry sample volume, SDCF at 70°F and 29.92 inches Hg.
- V_m = actual metered volume, ft³
- P_b = barometric pressure, inches Hg.
- T_m = Average Meter temperature OR
- 17.71 = constant correcting to 70°F 29.92 inches H₂O.

10.2 Water Vapor Content

$$H_2O = \frac{(.0474 W_c) + \frac{V_o P_{sat}}{P_b - P_i - P_{sat}}}{V_o + (.0474 W_c) + \frac{V_o P_{sat}}{P_b - P_i - P_{sat}}} \times 100$$

Where:

- W_c = total condensate weight, all impingers, grams
- P_{sat} = water saturation pressure, in
- P_b = barometric pressure, inches Hg.
- P_i = pump inlet vacuum, inches Hg.
- H_2O = per cent water vapor
- .0474 = cubic feet of vapor resulting from 1 cubic centimeter of liquid H₂O.

10.3 Stack Gas Molecular Weight -

$$MW = 0.44 (\%CO_2) + 0.32 (\%O_2) + 0.28 (\%N_2 + \%100) + 0.18 (\%H_2O)$$

- MW = molecular weight
 $\%CO_2$ = percent carbon dioxide by volume (dry basis)
 $\%O_2$ = percent oxygen by volume (dry basis)
 $\%CO$ = percent carbon monoxide by volume (dry basis)
 $\%H_2O$ = percent moisture by volume
 $\%N_2$ = percent nitrogen by volume (dry basis - determine by difference)

10.4 Stack Gas Flow Rate - Determine in accordance with ST-17.

10.5 Isokinetic Ratio. Calculate for each traverse point as:

$$R_i = \frac{T_{si} Q_{mi}}{60 (100-H) A V_{si} T_i T_{mi}} \times 100\%$$

where:

- R_i = isokinetic ratio at given point
 t_i = time, at point i, minutes
 A = nozzle area, ft²
 V_{si} = stack velocity, point i, FPS
 T_{mi} = meter temperature, point i, OR
 T_{si} = stack temperature, point i, OR
 Q_{mi} = metered volume, point i
 60 = minutes/hr.

overall isokinetic ratio for each run:

$$R = \frac{Q_{mi}}{60(100-H) A T_m V_{si} T_{si}} \times 100\%$$

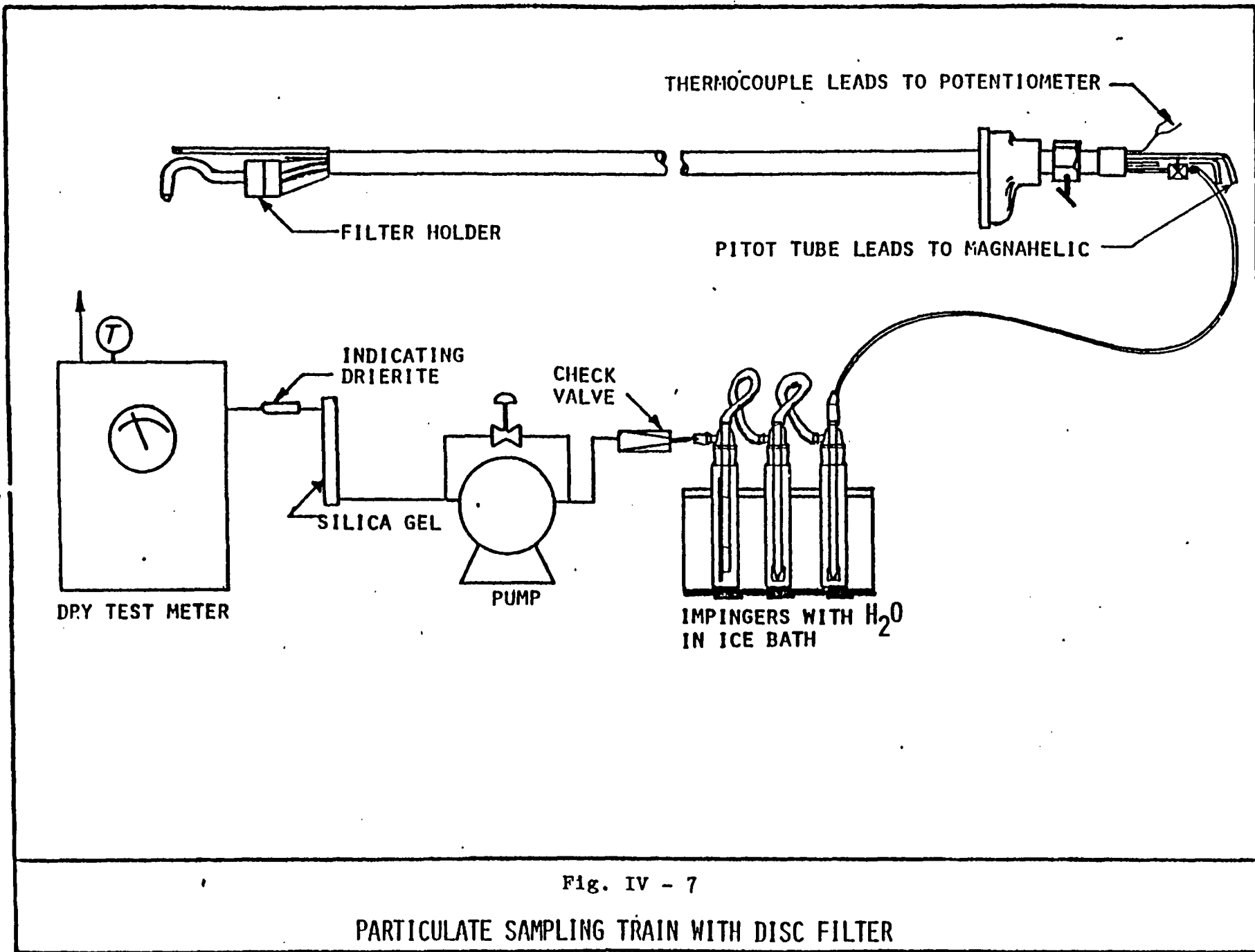
10.6 Mass emissions. The emission rate of beryllium shall be calculated as:

$$M = \frac{W \times Q_o \times 60 \times T}{V_o}$$

- where: M = mass emission rate, gr/day
 W = total weight of BE in filter and nozzle, grams.
 Q_o = stack gas flowrate, SDCFM
 V = sample volume, SDCF
 T_o = plant operation, hr/day
 60 = minutes/hor

11. Reporting

11.1 The data and information indicated Figure IV-10 shall be reported.



SUMMARY OF SOURCE TEST RESULTS

SOURCE INFORMATION		
Firm Name and Address	Firm Representative and Title	Report No. _____ Test Date: _____ Test Times: Run A: _____ Run B: _____ Run C: _____
	Phone No. _____ Source: _____	
Conditions During Tests	Operates hr/day & days/yr	
Operating Parameters		
Test Results and Comments		

<u>METHOD</u>	<u>TEST</u>	<u>RUN A</u>	<u>RUN B</u>	<u>RUN C</u>	<u>AVG.</u>
	Run time, minutes				
	Stack gas Temperature, °F.				
	Stack flowrate, SDCFM				
FT-17	O ₂ conc, dry basis, %				
ST-5	CO ₂ conc, dry basis, %				
ST-6	CO conc, dry basis, %				
ST-23	H ₂ O conc, actual, %				
	Mass emission, gm/day				
	Isokinetic ratio				

Source Test Procedure ST-3

BULK PLANTS

REF: Regs. 8-6-301
8-7-301

1. Applicability

1.1 This procedure is used to determine compliance with Regs. 8-6-301 and 8-7-301.

2. Principle

2.1 The efficiency of vapor recovery at bulk plants is determined by comparing the volume of gasoline pumped into the tank with the volume of hydrocarbon vapors emitted from the pressure-vacuum (P-V) relief valve. The vapor volume is measured with a dry test meter.

3. Range and Sensitivity

3.1 Not applicable

4. Interferences

4.1 The procedure cannot be used if the vapor balance system has any leaks.

5. Apparatus

5.1 Combustible gas detector. Use a Johnson-Williams Type SS-P, or equivalent.

5.2 Dry test meter. Use a dry test meter which will operate at the valve leak rate and is fitted with a thermometer in the outlet. The pressure differential across the meter shall be less than 0.1 inch H₂O.

5.3 Hose. Use tubing of sufficient length and diameter to connect pressure-vacuum valve and the dry test meter.

6. Pre-Test Procedures

6.1 The overall condition of the facilities, especially the absence of leaks, shall be evaluated visually and with the combustible gas detector at the locations listed in 6.2 and 6.3.

6.2 Storage tanks. Check the P-V valve to insure proper operation.

6.2.1 Check piping at all joints.

6.2.2 Check the general storage tank area.

6.2.3 Unintended openings (leaks)

6.3 Loading facilities.

6.3.1 Check the transfer pump packing gland.

6.3.2 Check the hoses and valves.

6.3.3 Check the connection between the tank truck and the loading rack.

6.4 Any leak over 50 ppm as C_6 is unacceptable.

7. Testing

7.1 Test during a truck-to-tank transfer of fuel.

7.2 Measure the tank truck fuel temperature.

7.3 Connect the dry test meter to the pressure side of the P-V valve.

7.4 During the transfer, check the inspection points in 6.2 and 6.3 with the combustible gas detector.

7.5 Record the total fuel delivery volume.

7.6 Record the total volume recorded by the dry test meter and the temperature of the meter during the test.

8. Calculations

8.1 The vapor volume from the P-V valve shall be corrected to the truck fuel temperature as:

$$V_T = \frac{(V_M)(T_T)7.48}{T_M}$$

where: V_T = vapor volume at truck temperature, gal.
 T_T = truck fuel temperature, °R
 T_M = meter temperature, °R
 V_M = meter volume, ft³
7.48 = gallons/cubic ft.

8.2 The vapor recovery efficiency shall be calculated as

$$n = \left(1 - \frac{V_T}{V_L}\right) 100$$

where: n = efficiency, %
 V_L = liquid delivery volume, gal.

9. Reporting

9.1 Results shall be reported as shown in Figure IV-11.

SUMMARY OF SOURCE TEST RESULTS

SOURCE INFORMATION

Firm Name and Address	Firm Representative and Title	Report No. _____ Test Date: _____ Test Times: Run A: _____ Run B: _____ Run C: _____
Conditions During Tests	Phone No.	
	Source:	
Operating Parameters	Operates hr/day & days/yr	

Test Results and Comments

<u>METHOD</u>	<u>TEST</u>	<u>RUN A</u>	<u>RUN B</u>	<u>RUN C</u>	<u>AVG.</u>
	Truck tank temperature, °F.				
	Delivery volume, gal.				
	Vapor volume, gal				
	Efficiency, %				

FIG IV-11

Source Test Procedure ST-4

BULK TERMINALS

REF: Reg. 8-6-301

1. Applicability

1.1 This procedure is used to quantify hydrocarbon emissions from bulk terminals having a yearly through-put of 6,000,000 gallons or more. It is applicable for determining compliance with Regs. 8-6-301.

2. Principle

2.1 The exhaust gas volume and hydrocarbon concentration are measured at the vapor recovery system (VRS) outlet. From these parameters and the total volume of gasoline delivered, the emission factor is calculated.

3. Range and Sensitivity

3.1 The minimum and maximum measurable concentrations, as C_4 , with the NDIR analyzer are 0.5% and 60% respectively.

3.2 The sensitivity of the NDIR analyzer is 1% of full scale.

4. Interferences

4.1 The presence of liquid or gas leaks in the delivery or vapor recovery systems preclude the use of this procedure.

5. Apparatus

5.1 NDIR Hydrocarbon Analyzer. Use an Infrared Industries Inc. Model 203, or equivalent, to measure hydrocarbon concentrations at the VRS outlet.

5.2 Chart Recorder. The recorder monitors and records the continuous output from the NDIR analyzer.

5.3 Dry test meter. Use a dry test meter capable of operating at the VRS absorber outlet.

5.4 Combustible gas detector. Use a Johnson-Williams type SS-P or equivalent.

5.5 Sample conditioning and delivery systems. The assembly of this system is shown in Figure IV-12.

5.6 Zero air system. This system provides clean, dry atmospheric air for analyzer calibration and is assembled as shown in Figure IV-12.

5.7 Span gas system. This system provides a high-pressure mixture of hydrocarbon gas in nitrogen with a concentration in the same range as the concentration being monitored.

5.8 Condensers. Use modified Greenburg-Smith impingers with the impact plates removed and the inlet tube shortened to 3 or 4 inches. This condenser removes entrained liquid hydrocarbons from the gas sample.

5.9 Particulate filter. Use a Balston type 95 holder, with grade B filter, or equivalent on the sample system.

5.10 Connections. All sample lines shall be Teflon tubing.

5.11 Sample pump. Use a leak free Teflon-lined diaphragm pump with a free-flow rating of 1.5 SCFM.

5.12 Back pressure regulator. A back pressure regulator capable of maintaining sample pressure to the analyzer at 5 psig while venting unused sample.

5.13 Dryer/deodorizer. Use beds of silica gel and activated charcoal to remove moisture and hydrocarbons from the zero air stream.

6. Pre-Test Procedures

6.1 Using the combustible gas detector, inspect the gasoline loading racks, holding tank and vapor recovery unit for liquid and gaseous leaks.

6.1.1 If a leak is detected the rest of the test shall be aborted until the leaks have been repaired.

6.2 The test equipment is set up as shown in Figure IV-13

6.3 Zero and span the NDIR hydrocarbon analyzer according to manufacturer's instructions.

7. Sampling

7.1 Conduct the test for a minimum of 6 hours during the busiest part of the operating day. The Hydrocarbon content at the VRS shall be measured continuously with the NDIR.

7.2 Start the test when the vapor processing unit is off.

7.3 Record the following:

7.3.1 Initial outlet meter volume.

7.3.2 Holding tank diaphragm height.

7.3.3 Initial readings from gasoline pumps at loading racks from those pumps which are linked to the vapor recovery system.

7.3.4 Outlet temperature each time the unit is operating.

7.4 Check the pressure relief valve on the holding tank with the combustible gas detector every half hour. If the relief valve opens during the test, the test results shall be invalidated.

7.5 The test shall end with the holding tank diaphragm height at the same level as when the test was started.

8. Post-Test Procedures

8-1 Record the following:

8:1:1 The final outlet volume meter reading

8:1:2 The final meter readings from gasoline pump meters at the loading rack.

9. Calculations

9.1 The mass of hydrocarbons emitted

$$M_o = \frac{(0.796) (V_o) (C_o)}{T_o}$$

where: V_o = uncorrected meter volume, ft³
 C_o = hydrocarbon concentration as C₄, %
 M_o = lbs, as C₄
 T_o = average outlet temperature, °R.
0.796 = a constant derived to convert a concentration to a mass, correcting to 70°F.

9.2 The VRS outlet emission factor shall be calculated as:

$$E = \frac{M_o}{G} \times 100$$

where: E = emission factor, lbs of hydrocarbon emissions per 1000 gallons of gasoline delivered

G = Total gallons of gasoline delivered.

10. Reporting

10.1 Results shall be reported as in Figure IV-14

NOTE: SPAN-GAS SYSTEM NOT APPLICABLE TO ST-14

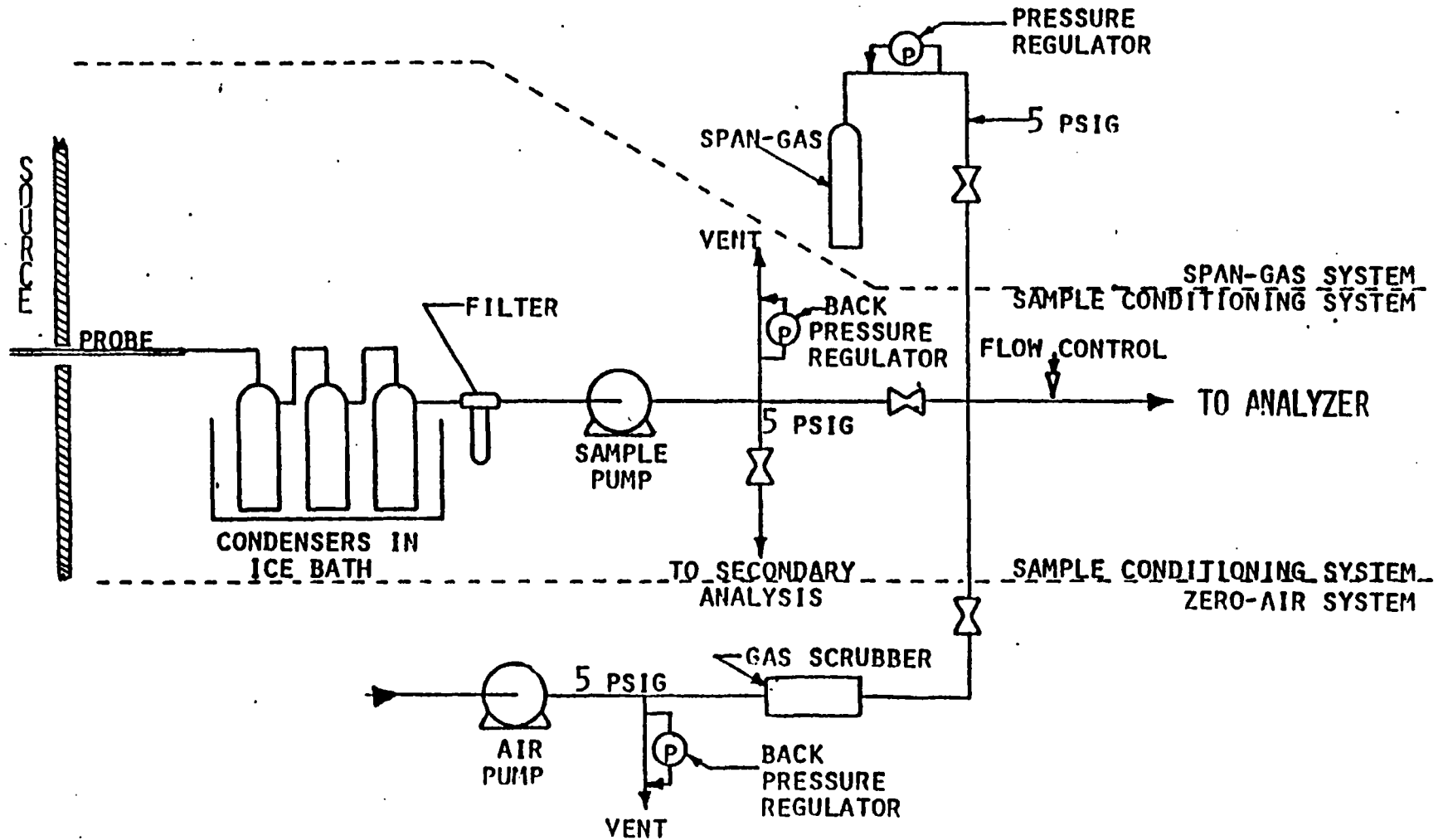


Fig. IV - 12

SAMPLE CONDITIONING, ZERO-AIR AND SPAN-GAS SYSTEMS

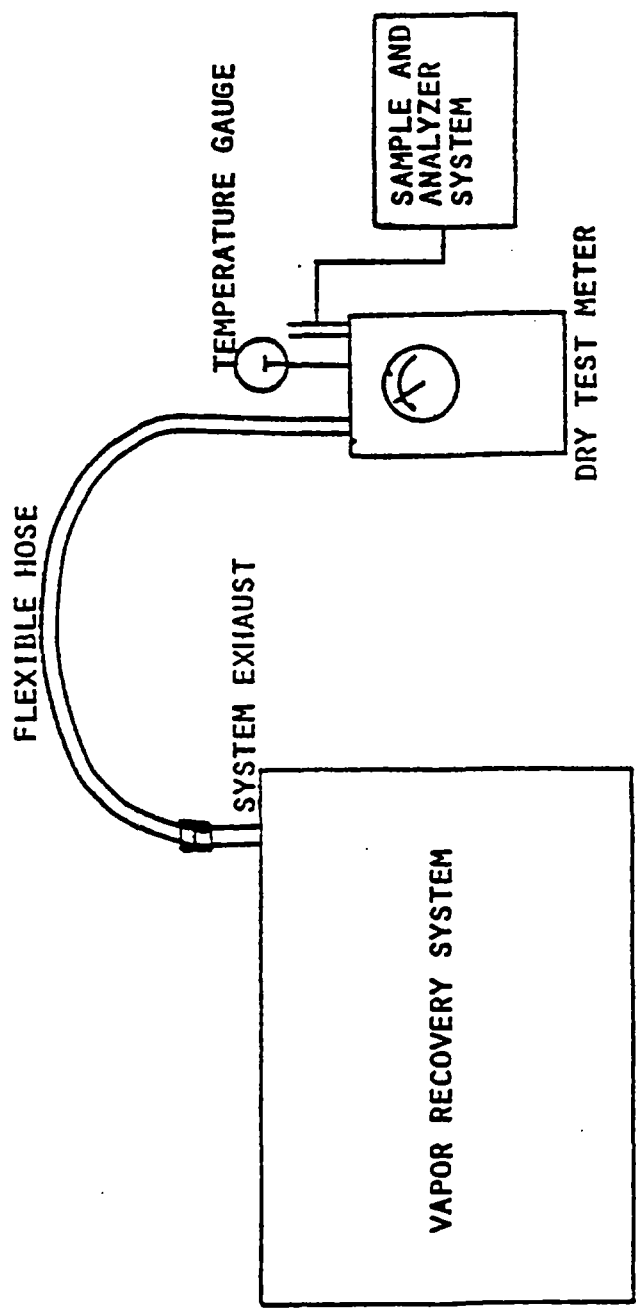


Fig. IV - 13

GASOLINE VAPOR RECOVERY SAMPLING SYSTEM

SUMMARY OF SOURCE TEST RESULTS

SOURCE INFORMATION

Firm Name and Address	Firm Representative and Title	
	Phone No.	Report No.
	Source:	Test Date:
Conditions During Tests	Operates hr/day & days/yr	Test Times: Run A:
Operating Parameters		Run B:
		Run C:

Test Results and Comments

Outlet temperature, °F
 Delivery volume, gal
 Hydrocarbon emissions, lb
 Emission factor, %

Source Test Procedure ST-5

CARBON DIOXIDE, CONTINUOUS SAMPLING

REF: Reg. 6.310.1

1. Applicability

1.1 This method is used to quantify emissions of carbon dioxide. It determines compliance with Reg. 6.310.1.

2. Principle

2.1 A continuous representative gas sample is extracted from the sampling point and conditioned to remove water and particulate material. The carbon dioxide concentration is determined by passing a small portion of the sample through a non-dispersive infrared analyzer (NDIR) tuned to a frequency at which carbon dioxide absorbs infrared radiation.

3. Range and Sensitivity

3.1 The minimum and maximum measurable concentrations of CO₂ depend on the sample cell length in the analyzer.

3.2 The minimum sensitivity of the NDIR analyzer shall be $\pm 2\%$ of full scale.

4. Interferences

4.1 Possible interferences include methanol, ethanol and water.

5. Apparatus

5.1 Carbon dioxide analyzer. Use an Infrared Industries Inc., Model 703 analyzer or its equivalent.

5.2 Chart recorder. The recorder monitors and records the continuous output from the analyzer.

5.3 Sample conditioning, zero air, and span gas system. The assembly of this system is shown in Figure IV-15. The sample conditioning system provides a dry, particulate free gas flow to the instrument. The zero air system provides clean dry atmospheric air for instrument calibration. The span gas system provides a known concentration of CO₂ for use in calibrating the analyzer. Except as specified, all materials which come in contact with either the sample or span gases must be constructed of Teflon or stainless steel.

5.4 Sample probe. Use a borosilicate glass tube of sufficient length to traverse the stack being tested. If the stack temperature exceeds 425C (800F), use a quartz probe. Other probes are acceptable subject to approval by the Source Test Section.

5.5 Condensers. Use modified Greenberg-Smith impingers with the impaction plates removed and the inlet tube shortened to a length of 10cm (4 inches), or equivalent.

5.6 Cooling system. Immerse the impingers in an ice bath during the test.

5.7 Particulate filter. Use a Balston type 95 holder with a grade B filter, or equivalent, in the sample system.

5.8 Pumps. Use leak-free, Teflon-lined, diaphragm pumps in the sample and zero air systems. The pumps must have a capacity of at least 28 liters/min (1.0 CFM).

5.9 Back-pressure regulator. Use a back-pressure regulator to maintain the sample and zero gas sample pressures to the instrument at five psig.

5.10 Gas scrubber. Use a bed of silica gel, Ascarite (or soda-lime), and charcoal to remove moisture, carbon dioxide, and hydrocarbons from the zero air system.

5.11 Span gas. Use a high-pressure cylinder containing a known concentration of CO₂ in air or nitrogen. The span gas concentration must be in the same range as the source being tested.

6. Pre-Test Procedures

6.1 Warm-up the instrument according to manufacturer's instructions.

6.2 Assemble the sampling system as shown in Figure JV-15.

6.3 Leak-test the sampling system by starting the pump, plugging the probe, and determining that the pressure to the analyzer falls to zero. Other leak-tests are acceptable subject to the approval of the Source Test Section.

6.4 Introduce zero air, into the analyzer and zero the instrument according to manufacturer's instructions.

6.5 Introduce span gas into the analyzer and calibrate the instrument according to manufacturer's instructions.

6.6 Conduct a preliminary concentration traverse (according to ST-18) to determine if stratification of the stack gases exists.

If the CO₂ concentration at any point differs from the average concentration by more than 10%, traverse the stack during the test. If not, sample at any single point.

6.7 Set-up the chart recorder according to manufacturer's instructions.

7. Sampling

7.1 Each test run shall be of thirty minute duration when testing emissions from continuous operations. Each test run at a batch process operation shall be for 90% of the batch time or thirty minutes, whichever is less.

7.2 Introduce sample gas into the analyzer at the same flow rate used to calibrate the analyzer.

7.3 Maintain ice in the cooling system throughout the test.

7.4 Calibrate the analyzer before and after each test run. Record each step of the process clearly on the chart recording.

7.5 Conduct three test runs.

8. Calculations

8.1 From the chart recording determine the time-averaged concentration of CO₂ on a dry basis for each run.

9. Reporting

9.1 These values are determined as auxiliary data for other procedures and shall be reported with those test results.

NOTE: SPAN-GAS SYSTEM NOT APPLICABLE TO ST-14

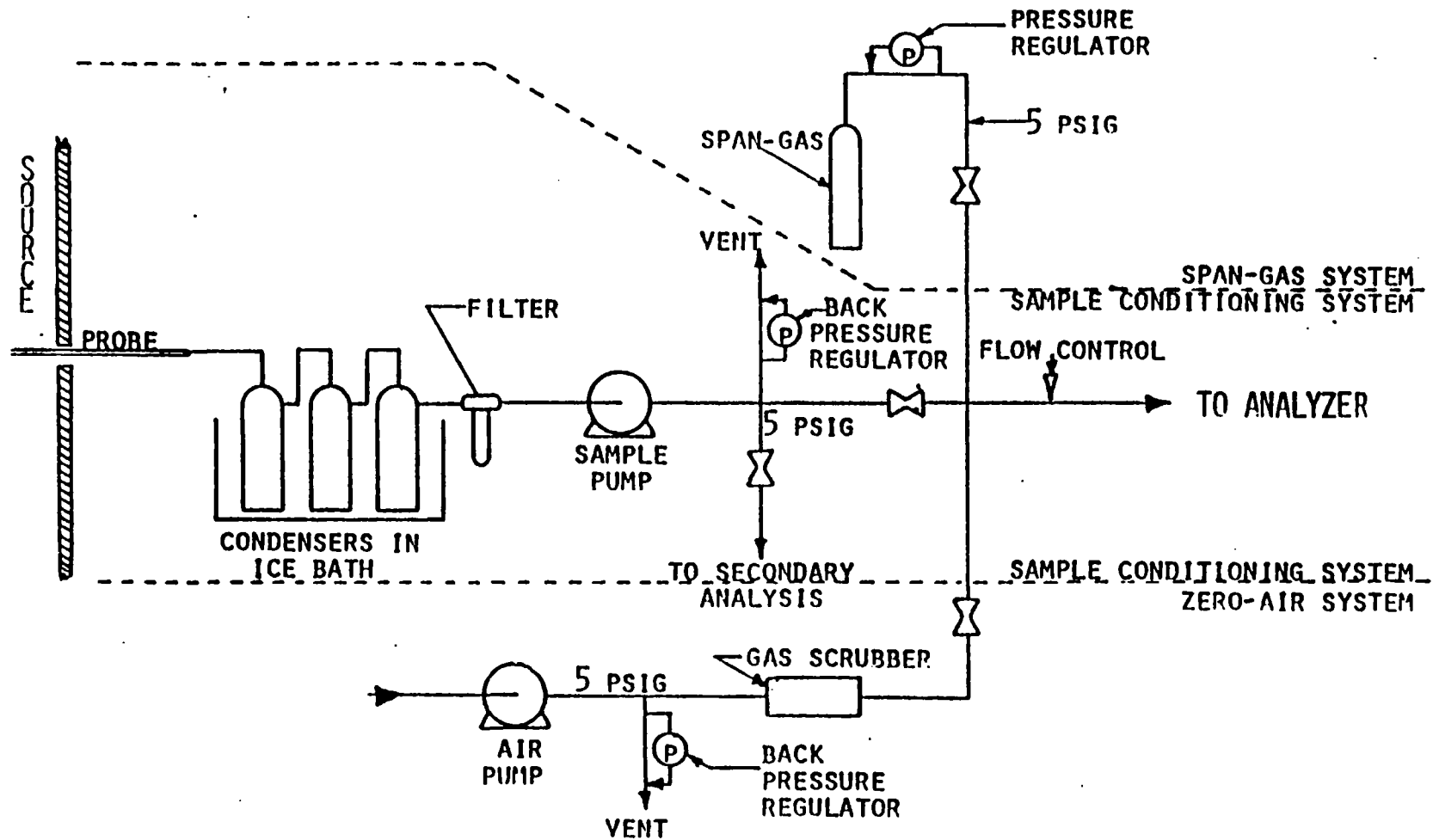


Fig. IV - 15

SAMPLE CONDITIONING, ZERO-AIR AND SPAN-GAS SYSTEMS

Source Test Procedure ST-6

CARBON MONOXIDE CONTINUOUS SAMPLING

REF: Reg. 8-1-110.3, 10-8-301.

1. Applicability

1.1 This method is used to quantify emissions of carbon monoxide. It determines compliance with Reg. 8-1-110.3.

2. Principle

2.1 A continuous representative gas sample is extracted from the sampling point and conditioned to remove water and particulate material. The carbon monoxide concentration is determined by passing a small portion of the sample through a non-dispersive infrared analyzer (NDIR) tuned to a frequency at which carbon monoxide absorbs infrared radiation.

3. Range and Sensitivity

3.1 The minimum and maximum measurable concentrations of CO depend on the sample cell length in the analyzer.

3.2 The minimum sensitivity of the NDIR analyzer shall be $\pm 2\%$ of full scale.

4. Interferences

4.1 Cyanogen and methyl azide are possible interfering species.

5. Apparatus

5.1 Carbon monoxide analyzer. Use a Mine Safety Appliance Co. LIRA Model 202 analyzer or its equivalent.

5.2 Chart recorder. The recorder monitors and records the continuous output from the analyzer.

5.3 Sample conditioning, zero air, and span gas system. The assembly of this system is shown in Figure IV-16. The sample conditioning system provides a dry, particulate free gas flow to the instrument. The zero air system provides clean dry atmospheric air for instrument calibration. The span gas system provides a known concentration of CO for use in calibrating the analyzer. Except as specified, all materials which come in contact with either the sample or span contacting surfaces must be constructed of Teflon or stainless steel.

5.4 Sample probe. Use a borosilicate glass tube of sufficient length to traverse the stack being tested. If the stack temperature exceeds 425C (800F), use a quartz probe. Other probes are acceptable subject to approval by the Source Test Section.

5.5 Condensers. Use modified Greenberg-Smith impingers with the impaction plates removed and the inlet tube shortened to a length of 10cm (4 inches), or equivalent.

5.6 Cooling system. Immerse the impingers in an ice bath during the test.

5.7 Particulate filter. Use a Belston type 95 holder with grade B filter, or equivalent, in the sample system.

5.8 Pumps. Use leak-free, Teflon-lined, diaphragm pumps in the sample and zero air system. The pumps must have a capacity of at least 28 liters/min (1.0 CFM).

5.9 Back-pressure regulator. Use a back-pressure regulator to maintain the sample and zero gas sample pressures to the instrument at five psig.

5.10 Gas scrubber. Use a bed of silica gel, Ascarite (or soda-lime), and charcoal to remove moisture, carbon dioxide, and hydrocarbons from the zero air system.

5.11 Span gas. Use a high-pressure cylinder containing a known concentration of CO in air or nitrogen. The span gas concentration must be in the same range as the source being tested.

6. Pre-Test Procedures

6.1 Warm-up the instrument according to manufacturer's instructions.

6.2 Assemble the sampling system as shown in Figure 1.

6.3 Leak-test the sampling system by starting the pump, plugging the probe, and determining that the pressure to the analyzer falls to zero. Other leak-tests are acceptable subject to the approval of the Source Test Section.

6.4 Introduce zero air, into the analyzer and zero the instrument according to manufacturer's instructions.

6.5 Introduce span gas into the analyzer and calibrate the instrument according to manufacturer's instructions.

6.6 Conduct a preliminary concentration traverse (according to ST-18) to determine if stratification of the stack gases exists. If the CO concentration at any point differs from the average concentration by more than 10% traverse the stack during the test. If not, sample at any single point.

6.7 Set-up the chart recorder according to manufacturer's instructions.

7. Sampling

7.1 Each test run shall be of thirty minute duration when testing emissions from continuous operations. Each test run at a batch process operation shall be for 90% of the batch time or thirty minutes, whichever is less.

7.2 Introduce sample gas into the analyzer at the same flow rate used to calibrate the analyzer.

7.3 Maintain ice in the cooling system throughout the test.

7.4 Calibrate the analyzer before and after each test run. Record each step of the process clearly on the chart recording.

7.5 Conduct three test runs.

8. Calculations

8.1 From the chart recording determine the time-averaged concentration of CO on a dry basis for each run.

9. Reporting

9.1 Report the results indicated on Figure IV-17.

9.2 These values are also determined as auxiliary data for other procedures and shall be reported with those test results.

NOTE: SPAN-GAS SYSTEM NOT APPLICABLE TO ST-14

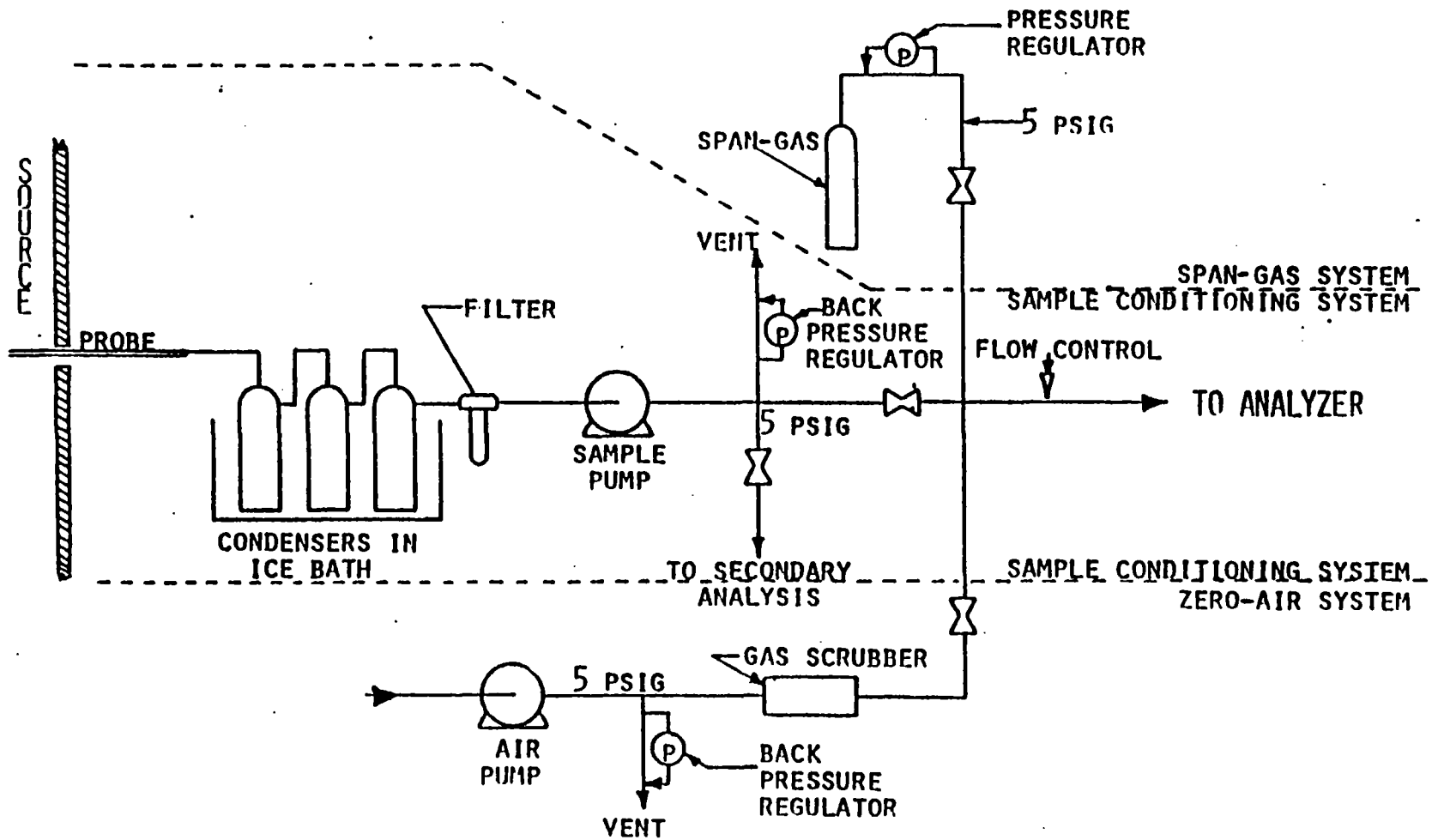


Fig. IV - 16

SAMPLE CONDITIONING, ZERO-AIR AND SPAN-GAS SYSTEMS

SUMMARY OF SOURCE TEST RESULTS

SOURCE INFORMATION		
Firm Name and Address	Firm Representative and Title	Report No. _____ Test Date: _____ Test Times: Run A: _____ Run B: _____ Run C: _____
	Phone No. _____ Source: _____	
Conditions During Tests	Operates hr/day & days/yr	
Operating Parameters		

Test Results and Comments

<u>METHOD</u>	<u>TEST</u>	<u>RUN A</u>	<u>RUN B</u>	<u>RUN C</u>	<u>AVG.</u>
-6	Run time, minutes Stack gas temperature, °F. Carbon monoxide, ppm				

Source Test Procedure ST-7

NON-METHANE ORGANIC CARBON

REF: 8-2-301
8-4-301
8-4-302.303

1. Applicability

1.1 This method is used to quantify emissions of non-methane organic carbon for determining compliance with Reg. 8-2-301, 8-4-302,303. This method is also used to quantify emissions of total oxidizable carbon (organic carbon plus carbon monoxide), hereafter referred to as "TOC" for determining compliance of afterburners.

1.2 Use method A (below) when carbon dioxide constitutes over 85%, on a molar basis, of the total carbon (organic plus inorganic, as C_1) in the sample; otherwise use Method B.

2. Principle

2.1 A continuous sample of effluent is conditioned to remove water and particulate material. A small portion of the conditioned effluent is continuously analyzed by either method A or B.

2.1.1. Method A. The Sample is passed through a bed of soda-lime to remove carbon dioxide, and then through a combustion tube to oxidize all organic carbon and carbon monoxide to carbon dioxide. The carbon dioxide concentration is continuously monitored with a non-dispersive infrared analyzer (NDIR) to indicate the TOC concentration in the sample.

2.1.2 Method B. The sample is divided into two equal volume streams, one of which passes through the combustion tube. The streams are alternately analyzed with the NDIR for carbon dioxide. The difference in analyses between the streams represents the total oxidizable carbon (TOC) concentration of the sample.

2.2 The methane content of the sample is determined either (A) by filling an evacuated cylinder with sample for subsequent gas chromatographic analysis or (B) by directing a portion of the conditioned sample through a bed of activated carbon to remove non-methane organics and then into a flame ionization detector. Subtraction of the methane concentration from TOC yields non-methane TOC.

2.3 If organic carbon alone is measured a separate continuous analysis for carbon monoxide with an NDIR is subtracted from the TOC.

3. Range and Sensitivity

3.1 The minimum measurable concentration of TOC is 10 ppm if the appropriate NDIR cell is used.

3.2 The maximum concentration of TOC for which this procedure is applicable is 5% when the appropriate NDIR cell and sample dilution are used.

3.3 Use of this procedure requires a molar concentration ratio of oxygen to TOC of 10:1 or greater. Sample dilution may be used to achieve the 10:1 ratio.

3.4 The sensitivity of the NDIR is $\pm 2\%$ of full scale.

4. Interferences

4.1 Negative bias may occur due to reaction of highly reactive organics (e.g. aldehydes or acids) with internal surfaces or if the condensation point of the sample is above the condenser temperature.

4.2 Additional negative bias may occur in Method A due to absorption of alcohols, acids and aldehydes by the carbon dioxide scrubbing medium.

4.3 High concentrations of carbon monoxide may preclude the use of this procedure for the measurement of only the organic portion of the TOC.

5. Apparatus

5.1 Carbon dioxide analyzer. Use an Infrared Industries Inc. Gas Analyzer Model 703, or its equivalent.

5.2 Carbon monoxide analyzer. Use an Mine Safety Appliance Co. LIRA Model 202, or its equivalent.

5.3 Flame ionization detector (only if needed for methane analysis). Use a Beckman Model 400, or equivalent, if necessary for methane analysis.

5.4 Chart recorder. Record the continuous output from the analyzer.

5.5 Sample conditioning, zero air, and span gas system. Assemble this system as shown in Figure IV-18. Sample conditioning system shall provide a dry, particulate-free gas flow to the instrument. The zero-air system shall provide clean dry atmospheric air for instrument calibration. The span-gas system shall provide known concentrations of the appropriate gas for use in calibrating the analyzers. Except as specified, all materials which come in contact with either the sample or span gases must be constructed of Teflon or stainless steel.

5.6 Sample probe. Use a borosilicate glass tube of sufficient length to traverse the stack being tested. If the stack temperature exceeds 425C (800F), use a quartz probe. Other probes are acceptable subject to approval by the Source Test Section.

5.7 Condensers. Use modified Greenberg-Smith Impingers with the impaction plates removed and the inlet tubes shortened to a length of 10cm (4 inches). Equivalent condensers may be used.

5.8 Cooling system. Immerse the impingers in an ice bath during the test.

5.9 Particulate filter. Use a Balston type 95 holder with a grade B filter, or equivalent, in the sample system.

5.10 Pumps. Use leak-free, Teflon-lined, diaphragm pumps in the sample and zero air system. The pumps must have a free-flow capacity of at least 28 liters/min (1.0 CFM).

5.11 Back-pressure regulator. Use a back-pressure regulator to maintain the sample and zero gas sample pressures to the instrument at five psig.

5.12 Gas scrubber. Use a bed of silica gel, Ascarite (or soda-lime), and charcoal to remove moisture, carbon dioxide, and hydrocarbons from the zero air system.

5.13. Span gas. Use a high-pressure cylinder containing a known concentration of propane in air or nitrogen. A cylinder containing a known concentration of solvent, where applicable, may also be used. This option may only be used with prior approval of the Source Test Section.

5.14 Soda-lime bed. Use a bed of sufficient capacity to remove carbon dioxide from the sample for at least a thirty minute sampling period.

5.15 Quartz combustor. Use a system to oxidize all organics in the sample including methane. Examples of acceptable combustion tubes found adequate by the BAAPCD are described in Figures IV-19 and 20.

6. Pre-Test Procedures

6.1 Warm-up the instrument according to manufacturer's instructions.

6.2 Assemble the sampling system as shown in Figure IV-21.

6.3 Leak-test the sampling system by starting the pump, plugging the probe, and assuring that the pressure to the analyzer falls to zero.

6.4 Introduce zero-air into the analyzer and calibrate the instrument according to manufacturer's instructions.

6.5 Introduce span-gas into the analyzer and calibrate the instrument according to manufacturer's instructions.

6.6 Conduct a preliminary concentration traverse (in accordance with ST-18) to determine if stratification of the stack gases exists. If the hydrocarbon concentration at any point differs from the average concentration by more than 10% traverse the stack during the test; if not, sample at any single point.

6.7 Prepare the chart recorder according to manufacturer's instructions.

6.8 Figure IV-22 shows an acceptable sample dilution system. Equivalent dilution systems are acceptable.

6.9 Set the voltage to the combustor at least 14 volts A.C. for the combustor in Figure IV-19 & 32 volts A.C. for the combustor in Fig. IV-20. All voltages will be combustor specific and efficiency data will be requested by the Source Test Section.

7. Sampling

7.1 Each test run shall be of 30 minute duration when testing from continuous operations. Each test run of a batch operation shall be for 90% of the batch time or thirty minutes, whichever is less.

7.2 At sources requiring both inlet and outlet tests on a control device (e.g. afterburners), the test times may be adjusted to aid in obtaining representative results.

7.3 Adjust the dilution system (if required) to obtain a known dilution ratio.

7.4 Method A. Introduce sample gas into the Method A analytical system at the same flow rate used to calibrate the analyzer.

7.4.1 Adjust the sample system to achieve flow through the soda-lime scrubber and the combustion tube.

7.4.2 Periodically pass CO₂ span gas through the system and ascertain that the NDIR analyzer reads zero; if it does not, replace the scrubber medium.

7.5 Method B. Introduce sample gas into the Method B TOC analytical system at the same flow rate used to calibrate the analyzer.

7.5.1 By-pass the soda-lime scrubber and pass the sample stream through the combustion tube.

7.5.2 (At approximately ten minute intervals). By-pass the combustion tube to measure the background CO₂ in the sample stream.

7.6 Maintain ice in the cooling system throughout the test.

7.7 Calibrate the analyzer before and after each test run.
Record each step of the process on the chart recording.

7.8 If a sample dilution system is being used, check the dilution ratio before and after each test run.

7.9 Determine the methane concentration by passing a portion of the sample stream through an activated carbon scrubber to remove non-methane hydrocarbon and then through a flame ionization detector.

8. Auxiliary Tests

8.1 Stack gas flow rate. Use ST-17 to determine the stack gas flow rate after each test run.

8.2 Moisture content. Use ST-23 to determine the moisture content of the stack gases.

8.3 Carbon monoxide concentration. Simultaneously with each test run, use ST-6 to determine the CO concentration.

9. Calculations

9.1 Determine the time-averaged uncorrected TOC concentration (including CH₄ and CO).

$$\text{Method A.....} \quad C_{\text{TOC}} = C_{\text{CO}_2}$$

$$\text{Method B.....} \quad C_{\text{TOC}} = \Delta C_{\text{CO}_2}$$

where: C_{TOC} = average uncorrected total oxidizable carbon (as C₁), ppm

C_{CO_2} = average carbon dioxide concentration, stream 1, ppm

ΔC_{CO_2} = average difference in concentration, combusted - noncombusted, ppm

9.2 Non-methane TOC concentration:

$$C'_{\text{TOC}} = C_{\text{TOC}} - C_m$$

where: C_m = methane concentration, ppm

C'_{TOC} = Total oxidizable carbon excluding methane (as C₁) ppm

9.3 Non-methane organic concentration of the TOC:

$$C_{\text{ORG}} = C'_{\text{TOC}} - C_{\text{CO}}$$

where: C_{ORG} = organic carbon concentration, as C₁, ppm

C_{CO} = average carbon monoxide concentration, ppm

9.4 Mass flow rate of the organic portion of the TOC, as Carbon.

$$M_{\text{ORG}} = 1.86 \times 10^{-6} Q_0 C_{\text{ORG}}$$

where: M_{ORG} = mass flow of organic carbon, as C_1 ,
lb/hr.

Q_o = gas flow rate, SDCFM

1.86 = constant derived to convert concentration
to mass at 70F and 29.92 inches Hg.

9.5 Mass flow rate of the carbon monoxide:

$$M_{CO} = 4.34 \times 10^{-6} Q_o C_{CO}$$

where: M_{CO} = mass flow rate of CO, lb/hr.

4.34 = constant derived to convert concentration to
mass at 70F and 29.92 inches Hg.

9.6 If organic emissions are controlled by incineration,
the abatement efficiency of oxidation to carbon dioxide (for
determination of exemption) shall be calculated as in Table A.
"in" and "out" refer to control device inlet and outlet,
respectively.

TABLE A

<u>Situation</u>		<u>Efficiency</u>
$(M_{CO})_{out}$	$(M_{CO})_{in}$	$N_1 = 100 \times \frac{(M_{TOC})_{in} - (M_{TOC})_{out}}{(M_{ORG})_{in}}$
$(M_{CO})_{out}$	$(M_{CO})_{in}$	$N_2 = 100 \times \frac{(M_{ORG})_{in} - (M_{ORG})_{out}}{(M_{ORG})_{in}}$

$$M_{TOC} = 1.86 \times 10^{-6} A_o C_{TOC}$$

9.7 If organic emissions are controlled by means other than
incineration, the mass efficiency of organics abatement shall
be calculated as

$$\text{Efficiency} = \frac{(M_{ORG})_{in} - (M_{ORG})_{out}}{(M_{ORG})_{in}} \times 100$$

10. Reporting

10.1 The data and information indicated in Figure IV-23
shall be reported.

NOTE: SPAN-GAS SYSTEM NOT APPLICABLE TO ST-14

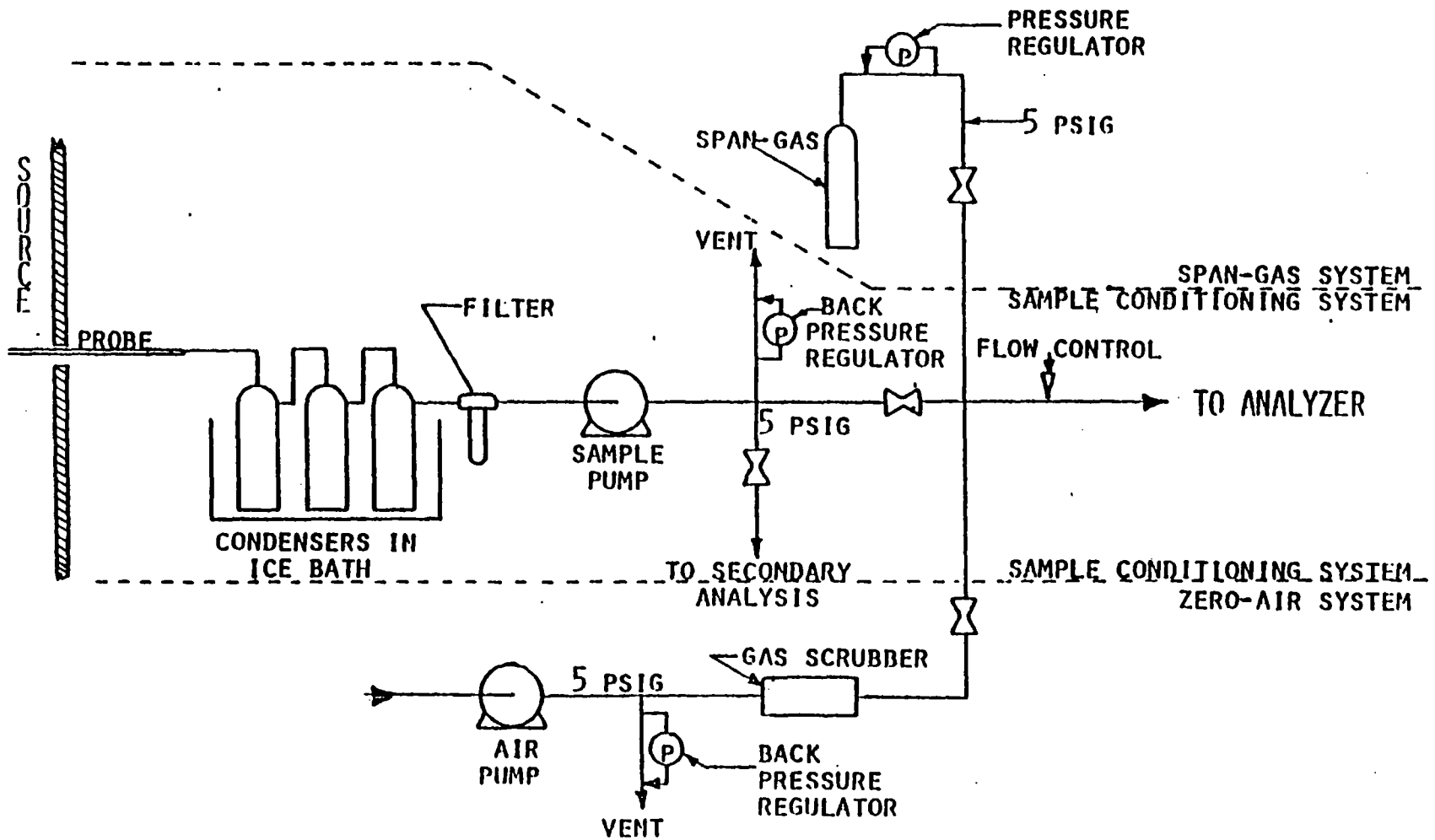


Fig. IV - 18

SAMPLE CONDITIONING, ZERO-AIR AND SPAN-GAS SYSTEMS

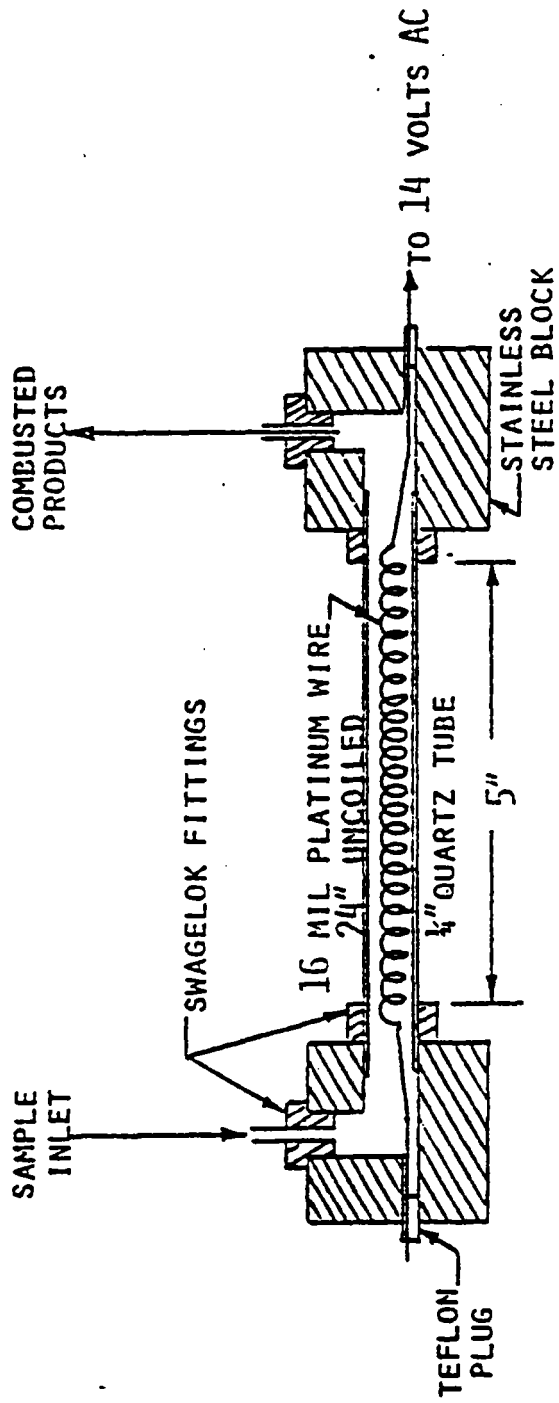
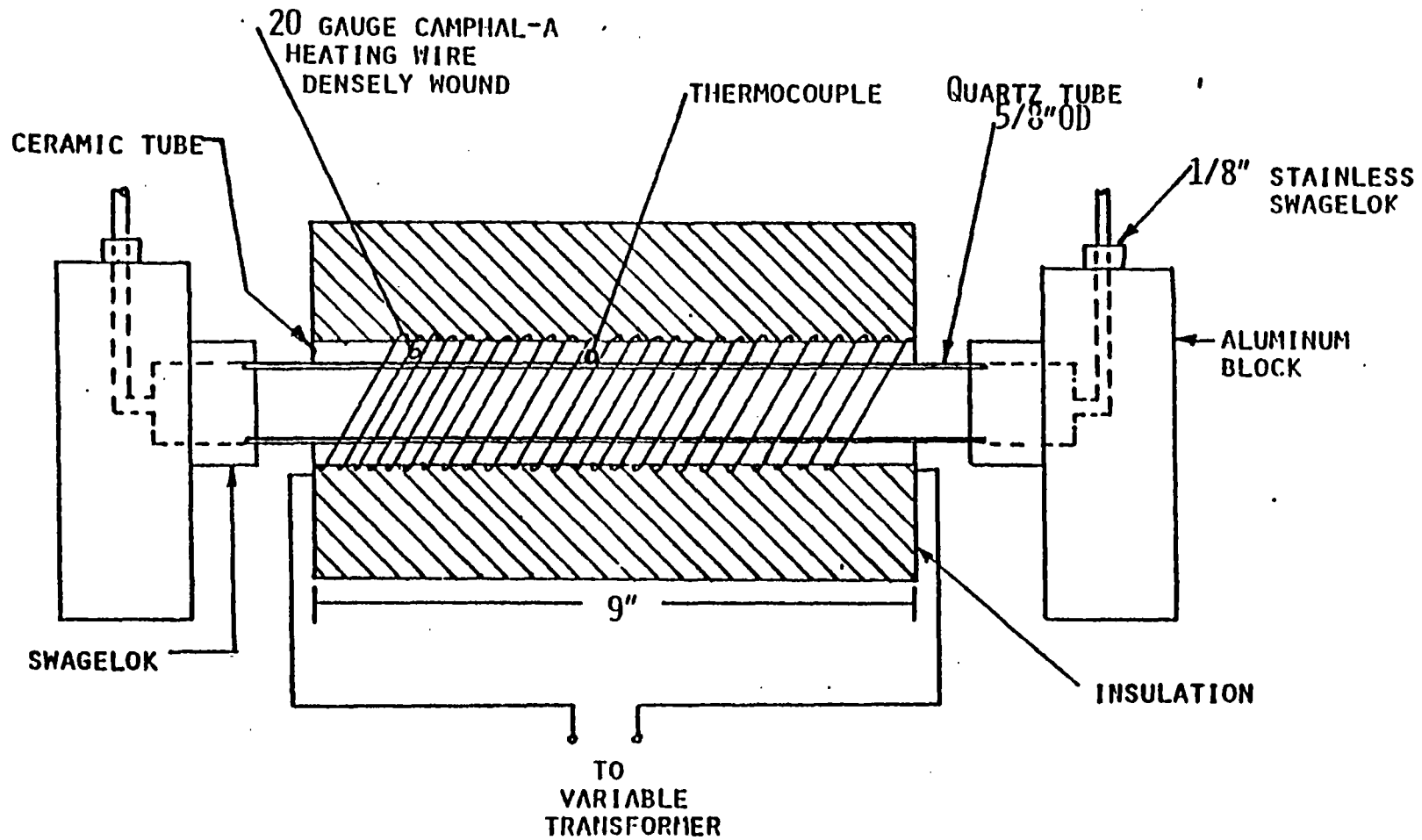


Fig. IV - 19

INTERNALLY HEATED COMBUSTION TUBE



NOTE: FURNACE OPERABLE TO 1100C

Fig. IV - 20
EXTERNALLY HEATED COMBUSTION TUBE

Source Test Method ST-8

DIMETHYLSULFIDE

REF: Reg. 7-303

1. Applicability

1.1 This method is used to determine emissions of dimethylsulfide (DMS). It is applicable to the determination of compliance with Regulation 7-303

2. Principle

2.1 A sample is collected in a clean Tedlar bag. The sample is analyzed for DMS by chromatography with flame photometric detection.

3. Range and Sensitivity

3.1 The minimum measurable concentration of DMS is 15 ppb.

3.2 Non-linear response by the flame photometric detector occurs for DMS concentrations over 10ppm. However, appropriate dilution of the sample will allow concentrations up to 50 ppm to be analyzed.

4. Interferences - none known

5. Apparatus

5.1 Sampling probe. Use a borosilicate glass tube fitted at the downstream end with an appropriate tubing connector.

5.2 Sample bag. Use a Tedlar bag equipped with a capacity of at least 10 liters and equipped with two stainless steel valves.

5.3 Sampling pump. Use a leak-free Teflon-lined diaphragm pump, or equivalent, capable of at least 0.5CFM.

5.4 Sample lines, Use Teflon.

5.5. Drier/deodorizer. Use three glass cartridges fitted with ball joints. The first contains Drierite (calcium chloride); the others contain activated carbon and shall be followed by a Pyrex wool filter.

6. Pre-Test Procedures

6.1 Before going to the test site, assemble the train as shown in Figure IV-24. Purge the entire train, including the Tedlar bag, until the discharge is clean. The Tedlar bag is considered clean when the laboratory analysis determines the DMS concentration to be undetectable.

SUMMARY OF SOURCE TEST RESULTS

SOURCE INFORMATION		
Firm Name and Address	Firm Representative and Title	Report No. Test Date: Test Times: Run A: Run B: Run C:
Conditions During Tests	Phone No.	
	Source:	
Operating Parameters	Operates hr/day & days/yr	

Test Results and Comments

<u>METHOD</u>	<u>TEST</u>	<u>RUN A</u> <u>IN* OUT**</u>	<u>RUN B</u> <u>IN OUT</u>	<u>RUN C</u> <u>IN OUT</u>	<u>AVG.</u> <u>IN OUT</u>
	Run time, minutes				
	sample point temp., °F.				
ST-17	Flow rate, SDCFM				
ST-14	O ₂ , dry basis, %				
ST-5	CO ₂ , dry basis, %				
ST-6	CO, dry basis, %				
ST-23	H ₂ O, actual basis, %				
ST-7	Non-methane organic carbon, as C ₁				
	a) ppm (dry)				
	b) lb/hr				
ST-6	Carbon monoxide				
	a) ppm (dry)				
	b) lb/hr.				
	Abatement efficiency, %				

FIG. IV-23

* control device inlet
** control device outlet

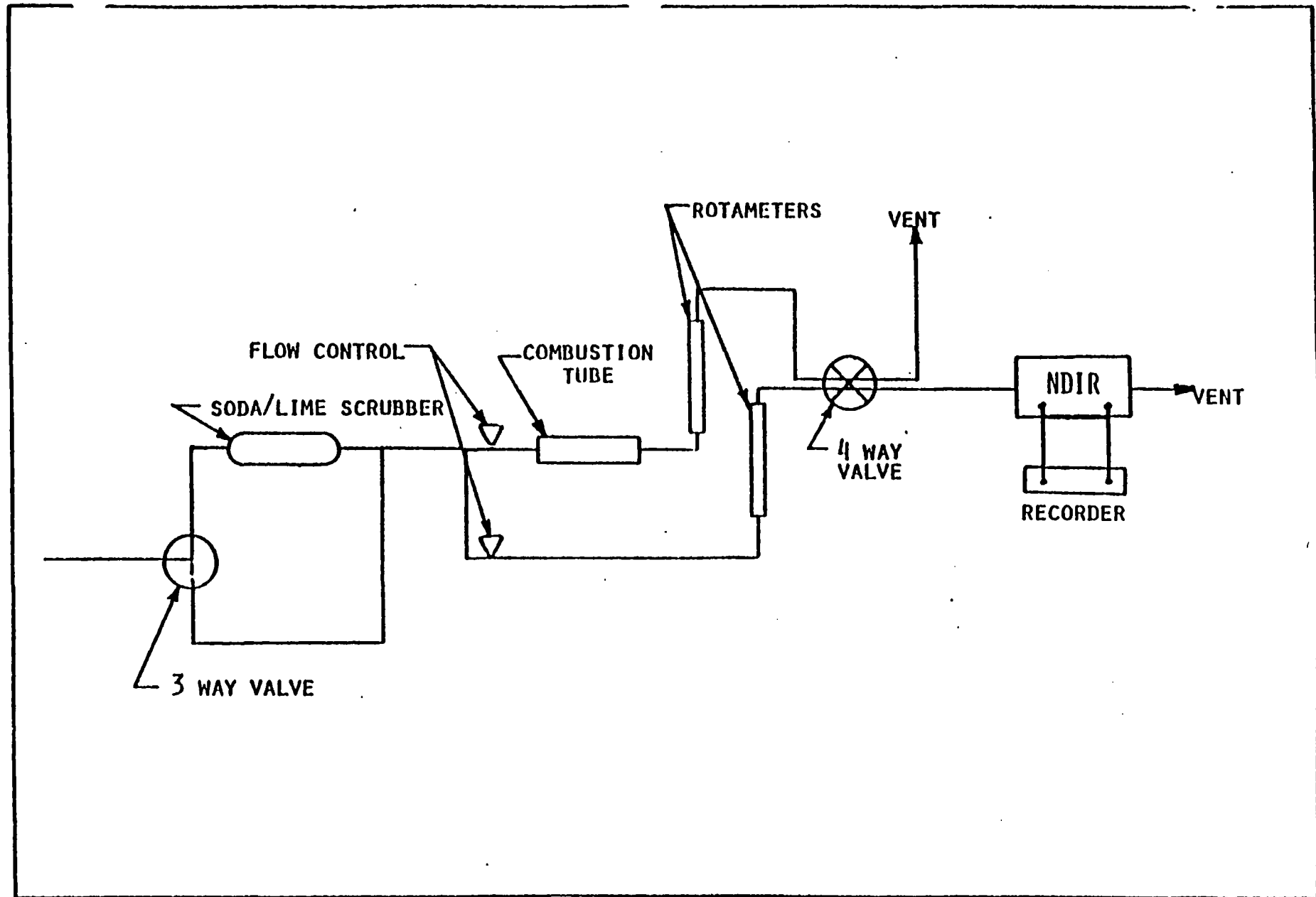


Fig. IV - 21

TOC ANALYTIC SYSTEM

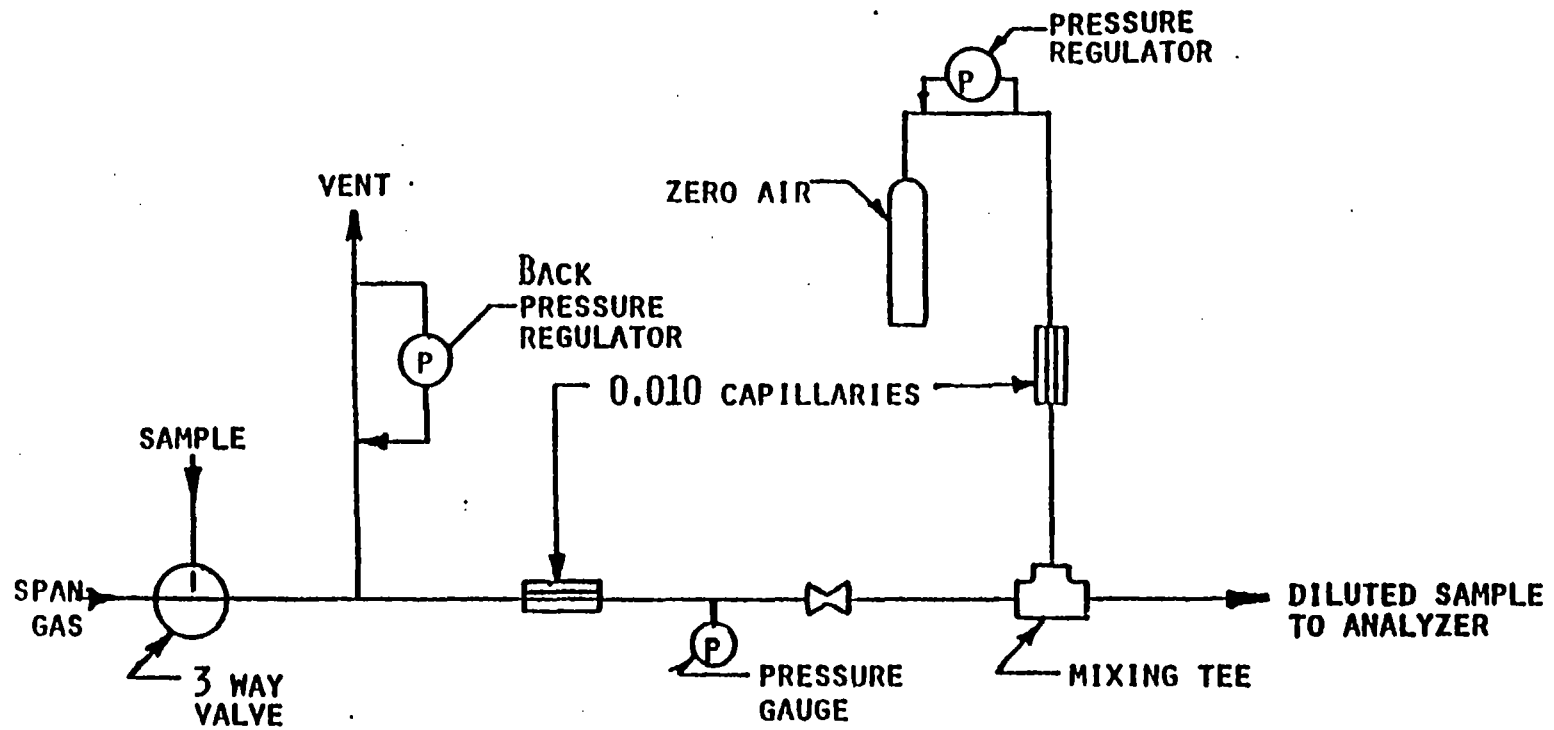


Fig. IV - 22

DILUTION SYSTEM

6.2 Evacuate the Tedlar bag.

6.3 At the sampling site, assemble the train as shown in Figure IV-24 leaving out the drier-deodorizer.

7. Sampling

7.1 For stack sources, insert the probe into the stack.

7.2 For ambient sample, sample where the odor appears to be strongest.

7.3 Start the pump and purge the gas to be sampled through the pump and bag for five minutes.

7.4 Then close the outlet valve on the Tedlar bag and fill the bag over a period of not less than three minutes.

7.5 Three bags filled as in 7.3 and 7.4 shall constitute a test.

8. Post-Test Procedures

8.1 The bags must be analyzed for DMS within four hours of collection. Refer to Analytical Procedure Lab-3.

9. Reporting

9.1 The result of each test is reported as shown in Figure IV-25.

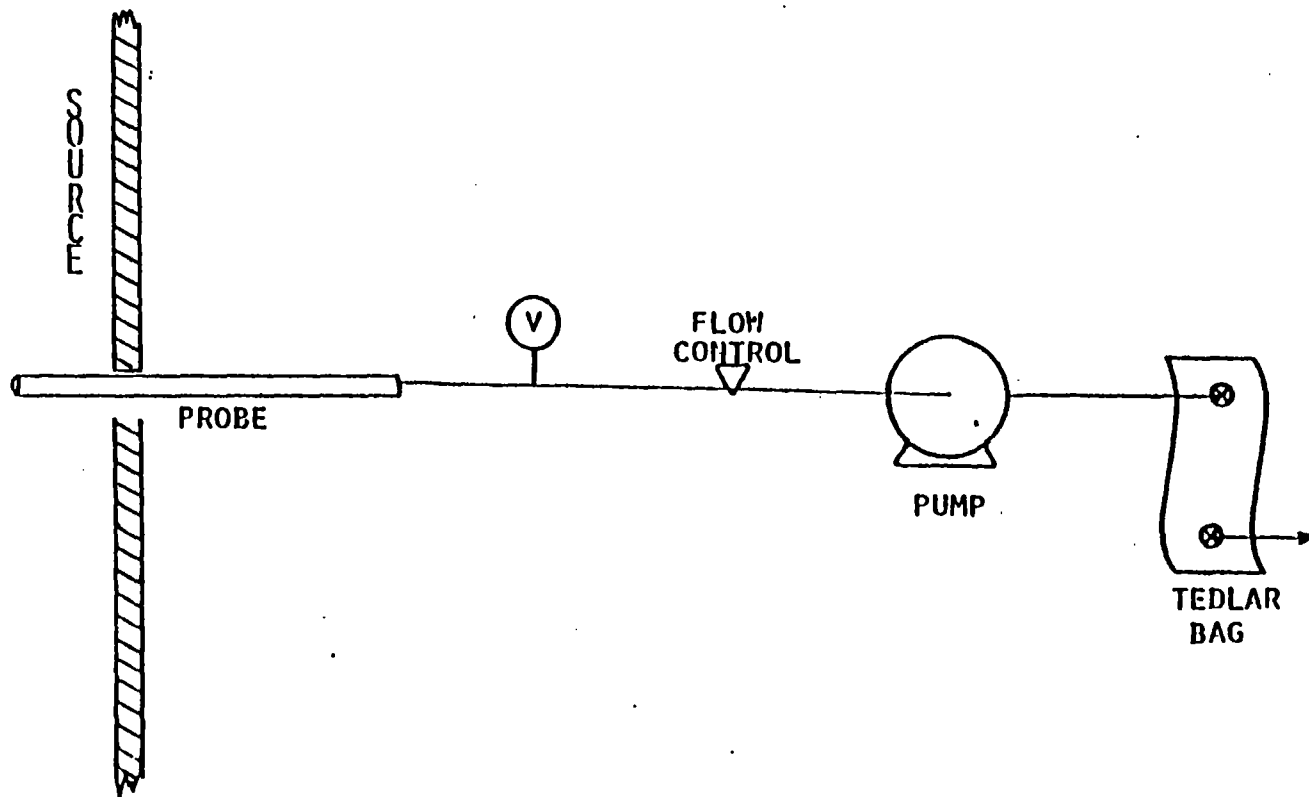


Fig. IV - 21

COLLECTION OF ORGANIC SULFIDE SAMPLES

Source Test Procedure ST-9
LEAD

REF Regs. 10-1-301, 11-1-301

1. Applicability

1.1 This procedure is used to quantify emissions of Lead. It determines compliance with Regs. 10-1-301 and 11-1-301.

2. Principle

2.1 The stack gases are withdrawn isokinetically and passed through a glass fiber filter and impingers containing iodine monochloride. The filter and impinger catches are then measured for lead content according to Analytical Procedure Lab 4b.

3. Range

3.1 The minimum measurable emission of particulate lead is 7×10^{-5} grain/SDCF and gaseous lead is 2×10^{-5} gr/SDCF.

4. Interferences. None known.

5. Apparatus

5.1 Probe nozzle. The sampling train and its components are shown in Figure IV-26. The probe nozzle shall be constructed of borosilicate glass, quartz, or stainless steel.

5.2 Filter medium. Use a Gelman, Type "A" glass fiber disc type filter or equivalent.

5.3 Connection. The connection between the filter and the first impinger must be able to withstand stack temperatures. Vinyl tubing is acceptable in making all other connections.

5.4 Pitot tube. Use a Stauscheibe (Type-S), or equivalent, with a known coefficient which is constant within $\pm 5\%$ over the entire working range. The pitot tube coefficient is determined by placing both the S-type and the standard pitot tube in a gas stream and measuring the pressure head with both over the entire velocity range of interest. Calculate the coefficient of the Type-S pitot tube as follows:

$$C_{P_s} = C_{P_{std}} \left[\frac{\Delta P_{std}}{\Delta P_s} \right]^{\frac{1}{2}}$$

where: C_p = Type-S pitot tube coefficient
 ΔP_s = Pressure head, Type-S pitot tube
 ΔP_{std} = Pressure head, standard pitot tube
 $C_{P_{std}}$ = Standard pitot tube coefficient.

SUMMARY OF SOURCE TEST RESULTS

SOURCE INFORMATION

Firm Name and Address	Firm Representative and Title	
	Phone No. _____	Report No. _____
Conditions During Tests	Source: _____	Test Date: _____
	Operates hr/day & days/yr	Test Times: _____
Operating Parameters		Run A: _____
		Run B: _____
		Run C: _____

Test Results and Comments

<u>METHOD</u>	<u>TEST</u>	<u>RUN A</u>	<u>RUN B</u>	<u>RUN C</u>	<u>AVG.</u>
ST-8	Dimethylsulfide, ppm				

5.5 Temperature measuring device. Use a Chromel-Alumel thermocouple accurate to $\pm 15^{\circ}\text{F}$., connected to a temperature compensated null type potentiometer, or equivalent, to measure stack temperatures.

5.6 Absorbers. Use three Greenberg-Smith impingers. The third impinger shall be modified by removing the impaction plate and attaching a thermometer to the inlet stem.

5.7 Cooling system. Use an ice bath to contain the impingers.

5.8 Sample pump. Use a leak-free vacuum pump capable of maintaining a 1.0 CFM flow rate at 15 inches of mercury. The pump must have a sample rate control valve and a vacuum gauge attached to the inlet.

5.9 Silica gel tube. Use approximately 500cc of silica gel followed by Drierite indicator to insure that the gas entering the dry test meter is free of H_2O .

5.10 Dry test meter. Use a 175 CFH dry test meter accurate within $\pm 2\%$ of the true volume and equipped with a thermometer to measure the outlet temperature. The working pressure across the meter shall not exceed a one inch water column.

5.11 Rotameter. Use a calibrated rotameter to measure the sampling rate.

5.12 Pressure gauge. Use a Magnehelic differential pressure gauge, or equivalent, in the same range as the velocity and static pressures being measured in the stack.

5.13 Analytical Balance. An analytical balance capable of measuring condensate weights to the nearest 0.1 gram is acceptable.

5.14 Barometer. Use a barometer that is accurate to within ± 0.2 inches of mercury.

6. Reagents

6.1 0.1M Iodine Monochloride - Refer to Analytical procedure Lab-6.

7. Pre-Test Procedures

7.1 Impinger preparation. Fill each of two unmodified Greenberg-Smith impingers with approximately 100ml of iodine monochloride. Weigh and record the weights on the data as shown in Figure IV-27.

7.2 Nozzle size determination. Do the preliminary tests outlined below to determine the correct nozzle size to aid in isokinetic sampling.

7.2.1 Determine the number and location of the stack traverse points in accordance with ST-18.

7.2.2 Conduct a velocity traverse in accordance with ST-17 and measure the stack gas temperature.

7.2.3 Determine the moisture content of the stack gases in accordance with ST-23.

7.2.4 Nozzle diameter.

$$D_n = 13.7 \left[\frac{T_s}{V_s(100 - \% H_2O)} \right]^{1/2}$$

- D_n = nozzle diameter, mm
- T_s = stack gas temperature, °R
- H_2O = stack gas moisture concentration, %
- 13.7 = a constant based on an assumed meter rate of 0.5 CFM, meter temperature of 70F, and a molecular weight of 28.8.
- V_s = stack gas velocity fps as calculated in Section 8.2 of ST-17.

7.3 Assemble the sampling train as shown in Figure IV-26.

7.4 The entire sampling train must be leak-checked before each test run. Plug the sampling probe, start the pump, and adjust the pump vacuum to 380mm Hg (15"hg). A leak rate through the meter which exceeds 0.57 lpm (0.02 CFM) is unacceptable.

8. Sampling

8.1 Each test run shall be of 50 minute duration when testing emissions from continuous operations. Each test run at batch process operations shall be for 90% of the batch time or 50 minutes, whichever is less.

8.2 Sample at the traverse points determined in accordance with ST-18.

8.3 The sampling rate at each traverse point must be isokinetic. Measure the stack velocity and stack temperature at each sample point and adjust the meter flow rate according to the following equation:

$$Q_m = \frac{2.638 \times 10^{-3} (100 - H_2O) D_n^2 V_s}{T_s}$$

- where:
- Q_m = isokinetic sampling rate, ACFM
 - T_s = meter temperature, °R
 - H_2O = stack gas moisture content (from 6.3.3)
 - 2.638×10^{-3} = constant derived from 60 sec/min, 70°F, 29.92 in. Hg and molecular weight.

8.4 When inserting the probe into the stack rotate the nozzle so it points down stream to avoid particulate collection prior to sampling. Immediately before sampling rotate the probe so the nozzle points upstream.

8.5 Record the following information at five-minute intervals or whenever changing sampling locations on a field data sheet as shown in Figure IV-28.

Stack velocity head
Sample time
Sample rate
Cumulative sample volume
Impinger saturation temperature
Stack gas temperature
Impinger vacuum
Dry test meter temperature.

8.6 Add ice as necessary to maintain impinger temperatures at 70°C (45°F) or less.

8.7 At the conclusion of each run, stop the pump, remove the probe from the stack and record the final meter reading. Point the probe upward and purge the sample train with ambient air.

8.8 Take three consecutive samples.

9. Post-Test Procedures

9.1 Rinse the nozzles with approximately 50ml of 6 normal nitric acid.

9.2 Analyze the filter, any material in the nozzle and the ICI solutions for lead according to Analytical Procedure Lab 4b.

10. Auxiliary Tests

10.1 Determine the CO₂, O₂ and CO concentrations simultaneous with each particulate run in accordance with ST-5, ST-14, and ST-6. An Orsat analysis (ST-2) is also acceptable.

11. Calculations

11.1 Standard Dry Sample Volume

$$V_o = \frac{17.71 V_m P_b}{T_m}$$

where: V_o = standard dry sample volume, SDCF @ 70°F and 29.92 inches Hg.
 V_m = actual metered volume, ft³
 P_b = barometric pressure, inches Hg.
 T_m = Average meter temperature, OR
17.71 = constant correcting to 70°F and 29.92 inches Hg.

11.2 Water Vapor Content

$$H_2O = \frac{(.0474 W_C) + \frac{V_o P_{sat}}{P_b - P_i - P_{sat}}}{V_o + (.0474 W_C) + \frac{V_o P_{sat}}{P_b - P_i - P_{sat}}} \times 100$$

where: W_C = total condensate weight, all impingers, grams
 P_{sat} = water saturation pressure in impingers, inches
 P_b = barometric pressure, inches Hg.
 P_i = pump inlet vacuum, inches Hg.
 H_2O = percent water vapor
 $.0474$ = cubic ft of vapor resulting from 1 cubic centimeter of liquid H_2O .

11.3 Stack Gas Molecular Weight.

$$MW = 0.44(\% CO_2) + 0.32(\% O_2) + 0.28(\% N_2 + \% CO) + 0.18(\% H_2O)$$

MW = molecular weight
 $\% CO_2$ = percent carbon dioxide by volume (dry basis)
 $\% O_2$ = percent oxygen by volume (dry basis)
 $\% CO$ = percent carbon monoxide by volume (dry basis)
 $\% H_2O$ = percent moisture by volume
 $\% N_2$ = percent nitrogen by volume (dry basis - determine by difference)

11.4 Stack Gas Flow Rate - Determine in accordance with ST-17

11.5 Mass Emission Rate

$$M = \frac{W \times 60 \times Q_o}{454 \times 10^{-6} \times V_o} \times T$$

where: M = mass emission rate, lbs/day
 W = total wt. of lead collected in filter and impingers, μ grams
 Q_o = stack gas flowrate, SDCFM
 V_o = sample volume, SDCF
 T = plant operation, hr/day
 60 = minutes/hour
 $.454$ = grams/pound

11.6 Isokinetic Ratio. Calculate for each traverse point as:

$$R_i = \frac{T_{si} Q_{mi}}{60 (100-H) A V_{si} t_i T_{mi}} \times 100\%$$

where:

- R_i = isokinetic ratio at given point
 - t_i = time, at point i, minutes
 - A = nozzle area, ft²
 - V_{si} = stack velocity, point i, FOS
 - T_{mi} = meter temperature, point i, OR
 - T_{si} = stack temperature, point i, OR
 - Q_{mi} = metered volume, point i
 - 60 = seconds/minute
- overall isokinetic ratio for each run:

$$R = \frac{Q_{mi}}{0.6(100-H) A T_m V_{si} t_i T_{si}}$$

12. Reporting

11.1 The data and information indicated in Figure IV-29 shall be reported.

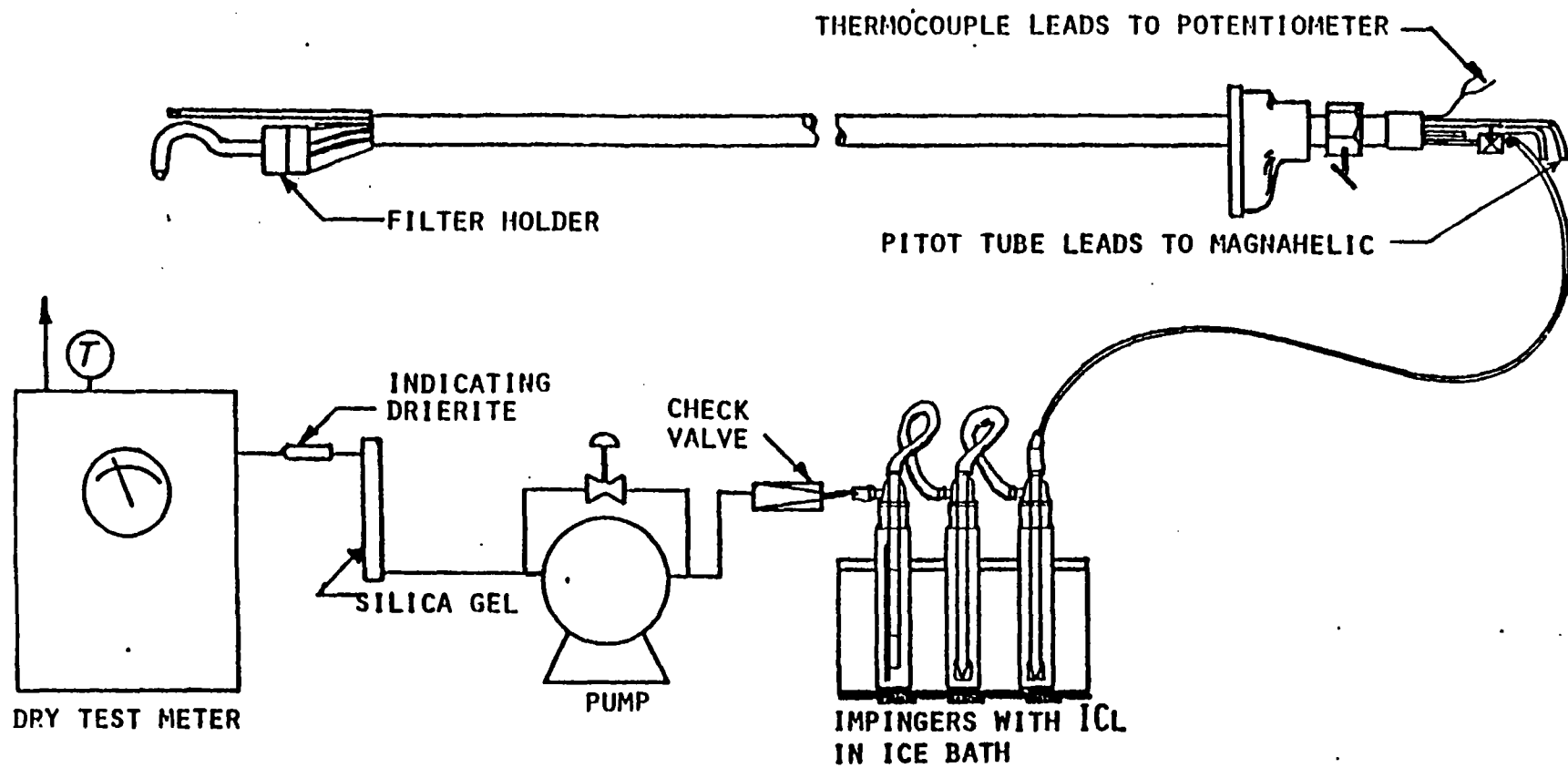


Fig. IV - 26

PARTICULATE SAMPLING TRAIN WITH DISC FILTER

SOURCE TEST LAB DATA SHEET

PLANT _____ PAGE _____ OF _____
SOURCE OPERATION _____ INITIAL _____
SOURCE TEST NO. _____ TEST DATE _____
FILTER MEDIA _____

DRYING PROCEDURE: 105°C for 24 hours before and after test, desiccated

STUBBIES

NO.	TARE	PACKED WT				PARTICULATE

NOZZLES

NO.	TARE			PARTICULATE

IMPINGERS

SOLN.	NO.	a TARE WT	b FILLED WT	c FINAL WT	c-a SAMPLE WT	c-b COND

COMMENTS:

Source Test Data Sheet

Source Operation _____
 Plant _____
 Sample Type _____
 Process Cycle _____
 Duct Size _____
 Duct Pressure _____

Source Test No. _____
 Run No. _____
 Date: _____

 Nozzle Diameter

 Pitot Tube

 Gas Collector No.

 Barometric Pressure

 Leak Rate @ 15"Hg

Sampling Train:

Traverse Point	Dist. From Inches	INITIAL TRAVERSE			SAMPLING										REMARKS	
		Duct Temp °F	h H ₂ O	h	Traverse Point	h H ₂ O	V _g FPS	Time	METER			Vac "Hg	Sat'd Gas Temp °F	T _g Duct Temp °F		
									Rate CFH	Temp °F	Volume Ft ³					

$$D_n = 13.7 \left[\frac{T_g + 460}{K_p V_g (100 - \%H_2O)} \right]^{1/2}$$

$$Q_m = \left[(2.638 \times 10^{-3}) K_p (100 - \%H_2O) D_{nm}^2 \right] \frac{V_g}{T_g}$$

Condensate _____ gm.
 V_o _____
 %H₂O _____
 %CO₂ _____
 %CO _____
 %O₂ _____

Source Test Team

SUMMARY OF SOURCE TEST RESULTS

SOURCE INFORMATION	
Firm Name and Address	Firm Representative and Title
Conditions During Tests	Phone No. _____
	Source: _____
Operating Parameters	Operates hr/day & days/yr
	Report No. _____
	Test Date: _____
	Test Times:
	Run A: _____
	Run B: _____
	Run C: _____

Test Results and Comments

<u>METHOD</u>	<u>TEST</u>	<u>RUN A</u>	<u>RUN B</u>	<u>RUN C</u>	<u>AVG.</u>
	Run time, minutes				
	Stack gas temp., °F.				
ST-17	Stack flowrate, SDCFM				
-14	O ₂ conc, dry basis, %				
-5	CO ₂ conc, dry basis, %				
ST-6	CO conc, dry basis, %				
ST-23	H ₂ O conc, actual, %				
	Mass emission, lb/day				
	Isokinetic ratio				

Source Test Procedure ST-10

MERCURY

Ref: Reg. 11-5-301

1. Applicability

1.1 This method is used to quantify emissions of gaseous and particulate mercury. It determines compliance with Regulation 11-5-301

2. Principle

2.1 The sample stream is drawn through a solution of iodine monochloride which collects the mercury in the gas stream. The mercury compounds in the iodine monochloride (ICL) are reduced to elemental mercury and analyzed according to Analytical Procedure Lab-6. If high concentrations of particulate are expected, use particulate filters as prescribed in ST-15.

3. Range

3.1 The minimum measurable emission of mercury is 2×10^{-5} grains/SDCF.

3.2 Elevated concentrations of mercury may be determined by increasing the concentration of the iodine monochloride in the absorbing reagent. The concentration of reagent to be used may be determined by stoichiometry, allowing a 50% excess.

4. Interferences - None known.

5. Apparatus

5.1 Probe nozzle. The probe nozzle shall be equivalent to the nozzle shown in Figure IV-30. The probe nozzle shall be constructed of borosilicate glass, quartz, or stainless steel.

5.2 Filter holder. Use filter tubes equivalent to the one shown in Figure IV-30 and constructed of borosilicate glass or quartz.

5.3 Filter tube holder. Use a filter tube holder which will contain three filter tubes and the probe nozzle in a leak-free manner. Figure IV-31 shows an acceptable filter tube holder configuration.

5.4 Filter medium. Use borosilicate glass wool, or equivalent. Corning Glass Works, Catalogue#3950 is acceptable.

5.5. Connections. The connection between the filters and the first Impinger must be able to withstand stack temperatures. Vinyl tubing is acceptable in making all other connections.

5.6 Pitot tube. Use a Stauschelbe (Type-S), or equivalent, with a known coefficient which is constant within $\pm 5\%$ over the entire working range. The pitot type coefficient is determined by placing both the S-type and the standard pitot tube in a gas stream and measuring the pressure head with both over the entire velocity range of interest. Calculate the coefficient of the Type-S pitot tube as follows:

$$C_{P_s} = C_{P_{std}} \left[\frac{\Delta P_{std}}{\Delta P_s} \right]^{\frac{1}{2}}$$

where: C_{P_s} = Type-S pitot tube coefficient
 ΔP_s = Pressure head, Type-S pitot tube
 ΔP_{std} = Pressure head, standard pitot tube
 $C_{P_{std}}$ = Standard pitot tube coefficient

5.7 Temperature measuring device. Use a Chromel-Alumel thermocouple accurate to $\pm 15^\circ\text{F}$., connected to a temperature compensated null type potentiometer, or equivalent, to measure stack temperatures.

5.8 Encasement tube. Assemble the items in 5.5, 5.6 and 5.7 in a pipe as shown in Figure IV-32 to facilitate handling. To prevent the pitot tube from interfering with the gas flow stream-lines approaching the sample nozzle, position the pitot tube and sample nozzle not closer together than 0.75 inches.

5.9 Absorber. Use four Greenberg-Smith Impingers. The fourth Impinger shall be modified by removing the impaction plate and attaching a thermometer to the inlet stem.

5.10 Cooling system. Use an ice bath to contain the Impingers.

5.11 Sample pump. Use a leak-free vacuum pump capable of maintaining a 1.0 CFM flow rate at 15 inches of mercury. The pump must have a sample rate control valve and a vacuum gauge attached to the inlet.

5.12 Silica gel tube. Use approximately 500cc of silica gel followed by a Drierite Indicator to insure that the gas entering the dry test meter is free of H_2O .

5.13 Dry test meter. Use a 175 CFH dry test meter accurate within $\pm 2\%$ of the true volume and equipped with a thermometer to measure the outlet temperature. The working pressure across the meter shall not exceed one inch water column.

5.14 Rotameter. Use a calibrated rotameter to measure the sampling rate.

5.15 Pressure gauge. Use a Magnehelic differential pressure gauge, or equivalent, in the same range as the velocity and static pressures being measured in the stack.

5.16 Analytical balance. An analytical balance capable of measuring condensate weights to the nearest 0.1 gram is acceptable.

5.17 Barometer. Use a barometer that is accurate to within ± 0.2 inches of mercury.

6. Reagents

6.1 0.1M Iodine Monochloride - Refer to Analytical Procedure Lab-6.

7. Pre-Test Procedures

7.1 Impinger preparation. 100 ml of the 0.1 M ICL shall be placed in the first three impingers which shall then be weighed. Record the data on the data sheet shown in Figure IV-33.

7.2 Nozzle size determination. Do the preliminary tests outlined below to determine the correct nozzle size to aid in isokinetic sampling.

7.2.1 Determine the number and location of the stack traverse points in accordance with ST-18.

7.2.2 Conduct a velocity traverse in accordance with ST-17 and measure the stack gas temperature.

7.2.3 Determine the moisture content of the stack gases in accordance with ST-23.

7.2.4 Nozzle diameter

$$D_n = 13.7 \left[\frac{T_s}{V_s (100 - \%H_2O)} \right]^{\frac{1}{2}}$$

D_n = nozzle diameter, mm

T_s = stack gas temperature, $^{\circ}R$

H_2O = Stack gas moisture concentration, %

13.7 = A constant based on an assumed meter rate of 0.5 CFM, meter temperature of 70F, and a molecular weight of 28.8

V_s = stack gas velocity fps as calculated in Section 8.2 of ST-17.

7.3 Assemble the sampling train as shown in Figures IV-31 and 34.

7.4 The entire sampling train must be leak-checked before each test run. Plug the sampling probe, start the pump, and adjust the pump vacuum to 380mm Hg (15" Hg). A leak rate through the meter which exceeds 0.57 ipm (0.02 CFM) is unacceptable.

8. Sampling

8.1 Each test run shall be of 50 minute duration when testing emissions from continuous operations. Each test run at batch process operations shall be for 90% of the batch time or 50 minutes, whichever is less.

8.2 Sample at the traverse points determined in accordance with ST-18.

8.3 The sampling rate at each traverse point must be isokinetic. Measure the stack velocity and stack temperature at each sample point and adjust the meter flow rate according to the following equation:

$$Q_m = \frac{2.638 \times 10^{-3} (100 - \%H_2O) D_n^2 V_s}{T_s}$$

where: Q_m = isokinetic sampling rate, ACFM
 T_m = meter temperature, °R
 H_2O = stack gas moisture content (from 6.3.3)
 2.638×10^{-3} = constant derived from 60 sec/min, 70°F, 29.92 in. Hg and the molecular weight

8.4 When inserting the probe into the stack rotate the nozzle so it points down stream to avoid particulate collection prior to sampling. Immediately before sampling rotate the probe so that the nozzle points upstream.

8.5 Record the following information at five-minute intervals or whenever changing sampling locations on a field data form as shown in Figure IV-35.

Stack velocity head
Sample time
Sample rate
Cumulative sample volume
Impinger saturation temperature
Stack gas temperature
Impinger vacuum
Dry test meter temperature.

8.6 See ST-1B Section 8.5

8.7 See ST-1B Section 8.6

8.8 See ST-1B Section 8.7

9. Post-Test Procedures

9.1 Stopper the impingers to minimize sample losses.

9.2 Weigh each impinger to the nearest 0.1g

10. Auxiliary Tests

10.1 Determine the CO₂, O₂, and CO concentrations simultaneously with each run in accordance with ST-5, ST-14 and ST-16. An Orsat analysis (ST-2) is also acceptable.

11. Calculations

11.1 Standard Dry Sample Volume

$$V_o = \frac{17.71 V_m P_b}{T_m}$$

where V_o = standard dry sample volume, SDCF @ 70°F and 29.92 inches Hg.
 V_m = actual metered volume, ft³
 P_b = barometric pressure, inches Hg.
 T_m = Average meter temperature, °R
17.71 = constant correcting to 70°F & 29.92 inches Hg.

11.2 Water Vapor Content

$$H_2O = \frac{(.0474 W_c) + \frac{V_o P_{sat}}{P_b - P_i - P_{sat}}}{V_o + (.0474 W_c) + \frac{V_o P_{sat}}{P_b - P_i - P_{sat}}} \times 100$$

where: W_c = total condensate weight, all impingers, grams
 P_{sat} = water saturation pressure in the impingers, inches Hg.
 P_b = barometric pressure, inches Hg.
 P_i = pump inlet vacuum, inches Hg.
 H_2O = per cent water vapor
.0474 = cubic ft of vapor resulting from 1 cubic centimeter of liquid H₂O.

11.3 Stack Gas Molecular Weight -

$$MW = \frac{0.44 (\%CO_2) + 0.32 (\%O_2) + 0.28 (\%N_2 + \%CO) + 0.18 (\%H_2O)}{100}$$

MW = molecular weight
%CO₂ = percent carbon dioxide by volume (dry basis)
%O₂ = percent oxygen by volume (dry basis)
%CO = percent carbon monoxide by volume (dry basis)
%H₂O = percent moisture by volume
%N₂ = percent nitrogen by volume (dry basis - determine by difference)

11.4 Stack Gas Flow Rate - Determine in accordance with ST-17.

11.5 Total mercury emissions. The emission rate of mercury shall be calculated as

$$M = \frac{W \times 10^6 \times Q_o \times 60 \times T}{V_o}$$

where: M = mass emission rate, gr/day
W = total weight of mercury collected, u grams.
Q_o = stack gas flowrate, SDCFM
V_o = sample volume, SDCF
T = plant operation, hr/day

11.6 Isokinetic Ratio. Calculate for each traverse point as:

$$R_i = \frac{T_{si} Q_{mi}}{60(100-H) A V_{si} t_i T_{mi}} \times 100\%$$

where: R_i = isokinetic ratio at given point
t_i = time, at point i, minutes
A = nozzle area, ft²
V_{si} = stack velocity, point i, FPS
T_{mi} = meter temperature, point i, OR
T_{si} = stack temperature, point i, OR
Q_{mi} = metered volume, point i
60 = seconds/minute
overall isokinetic ratio for each run:

$$R = \frac{Q_{mi}}{60 (100-H) A T_m V_{si} t_i T_{si}} \times 100\%$$

12. Reporting

12.1 The data and information indicated in Figure IV-35 shall be reported.

All joints 35/25, spherical ground

- I.D. as required

max. O.D. 1.74" (Select or grind to fit)

Glass Screen

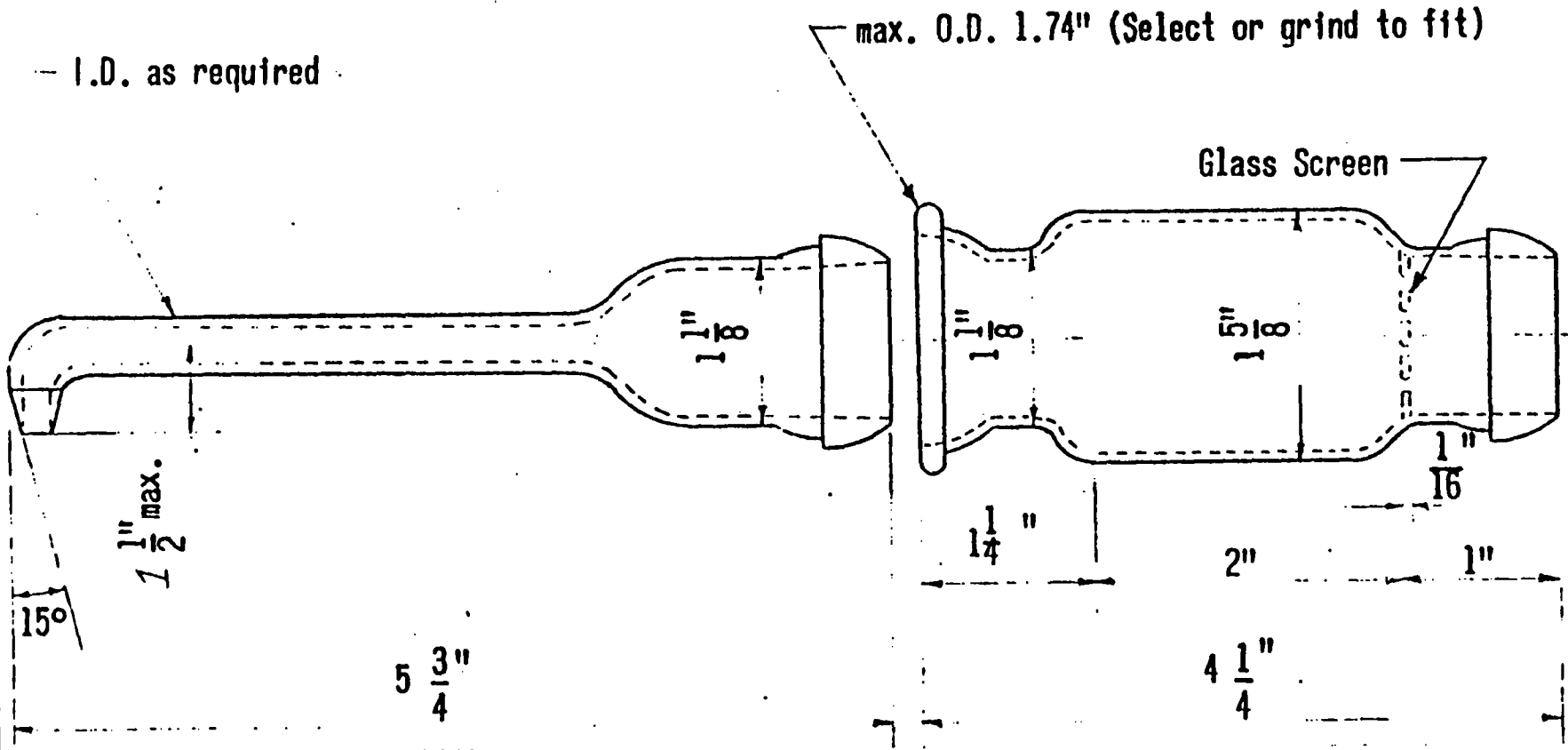


Fig. IV - 30

NOZZLE AND FILTER TUBE DETAILS

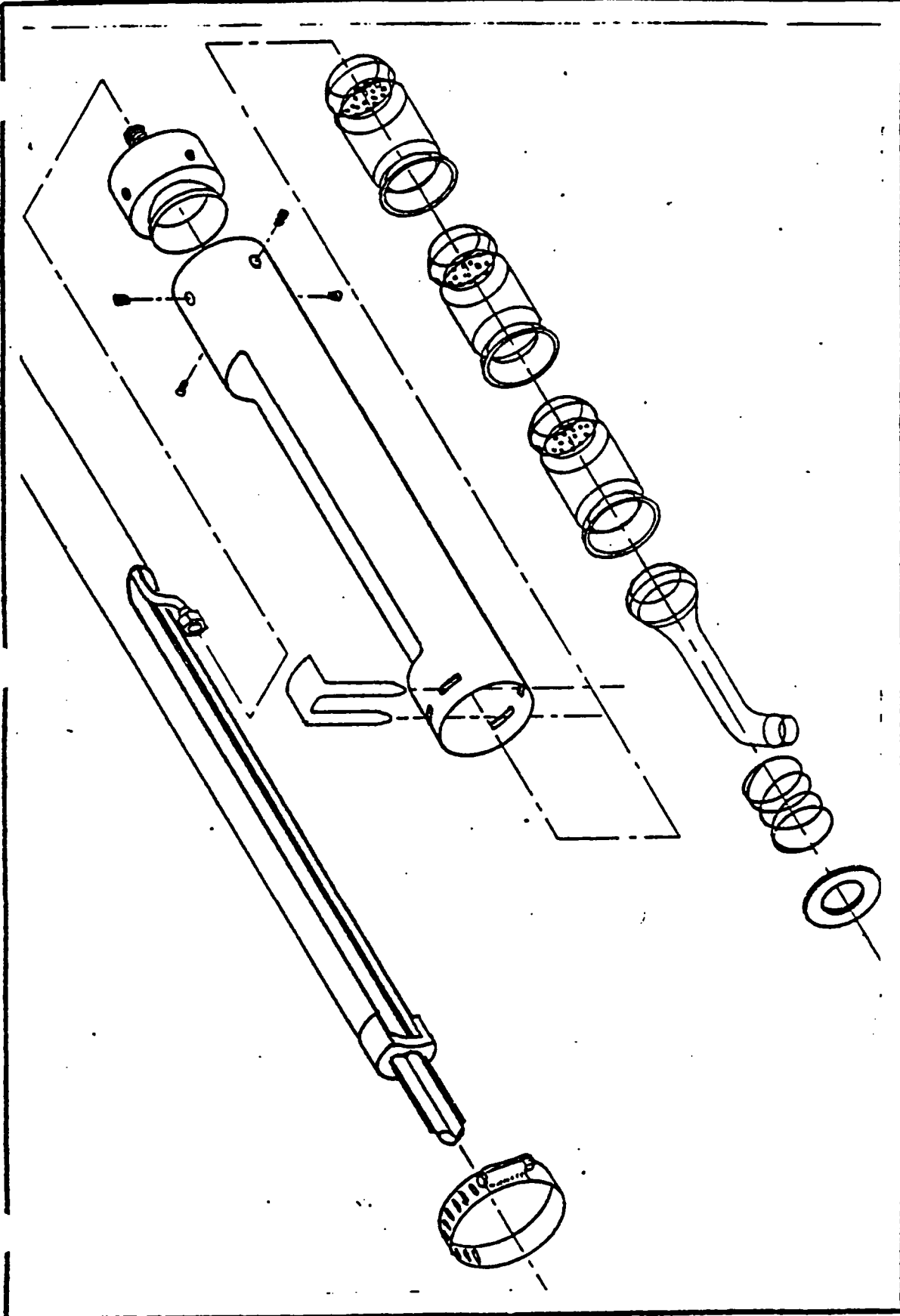


FIG. IV - 31

PROBEHOLDER ASSEMBLY

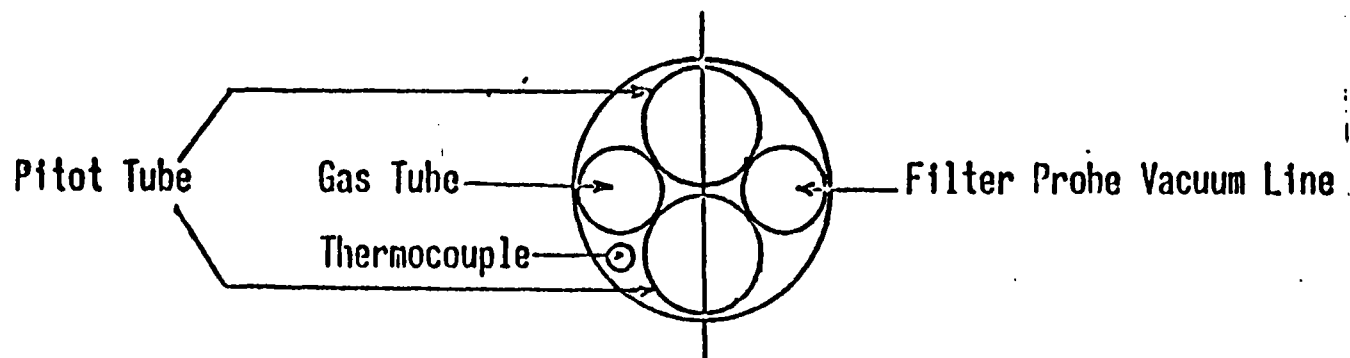
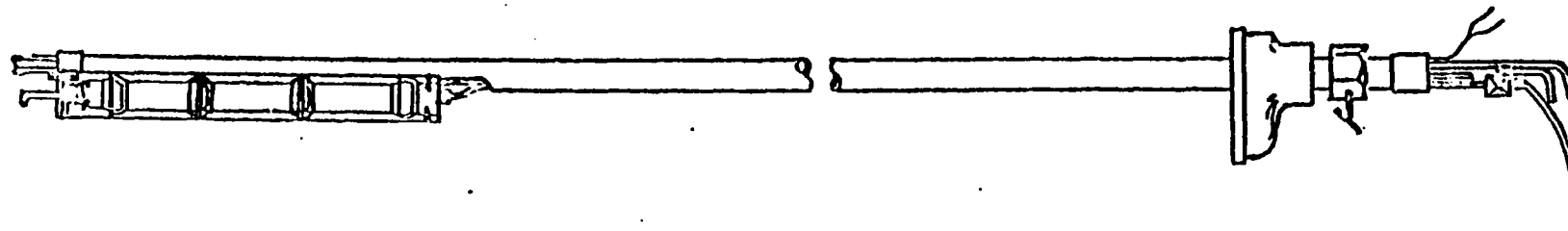


FIG. IV - 32

PROBE ENCASUREMENT TUBE

SOURCE TEST LAB DATA SHEET

PLANT _____
SOURCE OPERATION _____
SOURCE TEST NO. _____
FILTER MEDIA _____
DRYING PROCEDURE: 105°C for 24 hours before and after test, desicated

PAGE _____ OF _____
INITIAL _____
TEST DATE _____

STUBBIES

NO.	TARE	PACKED WT				PARTICULATE

NOZZLES

NO.	TARE			PARTICULATE

IMPINGERS

SOLN.	NO.	a TARE WT	b FILLED WT	c FINAL WT	c-a SAMPLE WT	c-b COND WT

COMMENTS:

NOTE: FILTERS REQUIRED ONLY IF HIGH
CONCENTRATIONS OF PARTICULATE
MATTER IS PRESENT

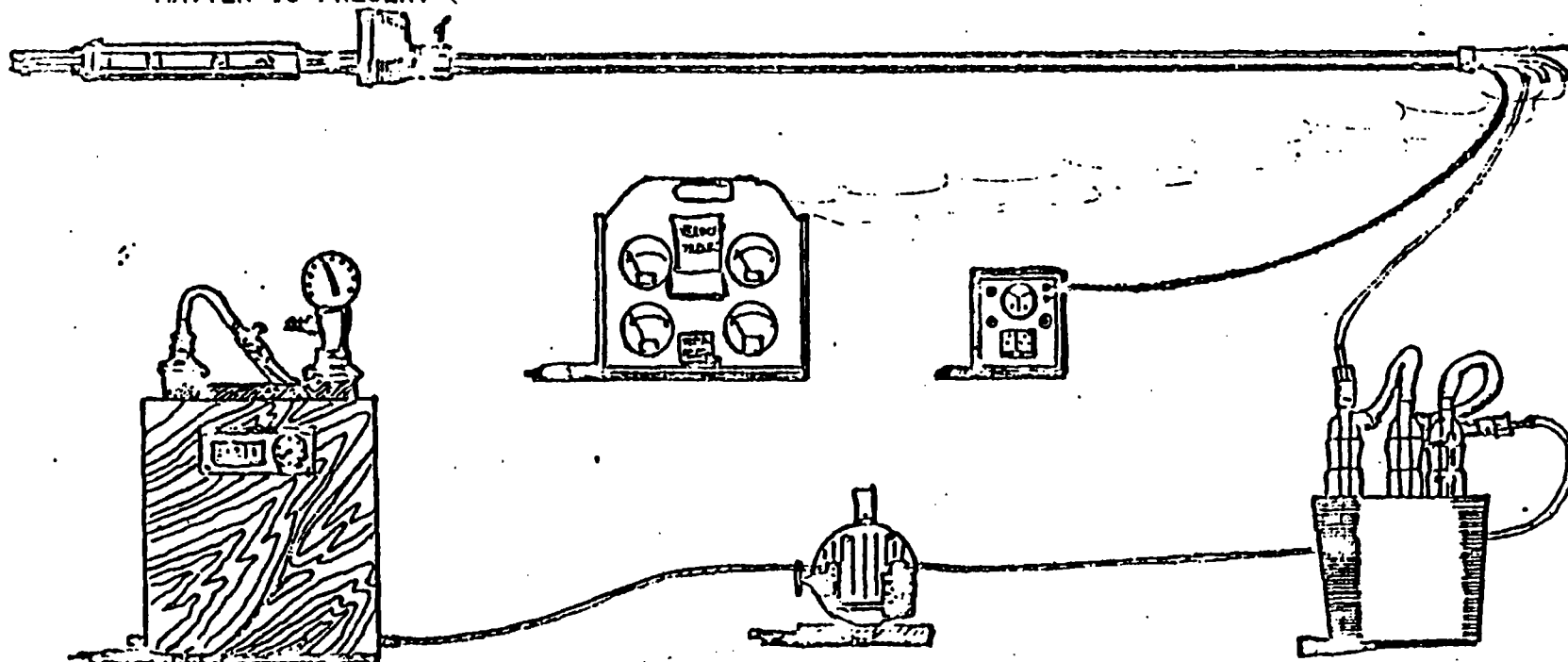


Fig. IV - 34

PARTICULATE SAMPLING TRAIN

SUMMARY OF SOURCE TEST RESULTS

SOURCE INFORMATION	
Firm Name and Address	Firm Representative and Title
Conditions During Tests	Phone No.
	Source:
Operating Parameters	Operates hr/day & days/yr
Report No.	
Test Date:	
Test Times:	
Run A:	
Run B:	
Run C:	

Test Results and Comments

<u>METHOD</u>	<u>TEST</u>	<u>RUN A</u>	<u>RUN B</u>	<u>RUN C</u>	<u>AVG.</u>
	Run time, minutes				
	Stack gas temp., °F.				
ST-17	Stack flowrate, SDCFM				
ST-14	O ₂ conc, dry basis, %				
ST-5	CO ₂ conc, dry basis, %				
ST-6	CO conc, dry basis, %				
ST-23	H ₂ O conc, actual, %				
	Mass emission, gr/day				
	Isokinetic ratio				

Source Test Procedure ST-11

MERCAPTANS

REF: Reg. 7-303

1. Applicability

1.1. This method is used to determine emissions of mercaptans. It is applicable to the determination of compliance with Reg. 7-303

2. Principle

2.1 A sample is collected in a clean Tedlar bag. The sample is analyzed for mercaptans by chromatography with flame photometric detection.

3. Range and Sensitivity

3.1 The minimum measurable concentration of mercaptans is 20 ppb.

3.2 Non-linear response by the flame photometric detector occurs for mercaptans concentrations over 10ppm. However, appropriate dilution of the sample will allow concentrations up to 50 ppm to be analyzed.

4. Interferences

None Known

5. Apparatus

5.1 Sampling probe. Use a borosilicate glass tube fitted at the downstream end with an appropriate tubing connector.

5.2 Sampling bag. Use a Tedlar bag with a capacity of at least 10 liters and equipped with two stainless steel valves.

5.3 Sampling pump. Use a Teak-free Teflon-lined diaphragm pump, or equivalent, capable of at least 0.5 CFM.

5.4 Sample lines. Use Teflon because of its non-reactive properties.

5.5 Drier/deodorizer. Use three glass cartridges fitted with ball joints. The first contains Drierite (calcium chloride); the others contain activated carbon and shall be followed by a Pyrex wool filter.

6. Pre-Test Procedures

6-1 Before going to the test site, assemble the train as shown in Figure IV-37. Purge the entire train, including the Tedlar bag, until the discharge is clean. The tedlar bag is considered clean when the lab determines the mercaptan concentration to be undetectable.

6.2 Evacuate the Tedlar bag.

6.3 At the sampling site, assemble the train as shown in Figure 1, leaving out the drier-deodorizer.

7. Sampling

7.1 For stack sources, insert the probe into the stack.

7.2 For ambient sample, sample where the odor appears to be the strongest.

7.3 Start the pump and purge the gas to be sampled through the pump and bag for five minutes.

7.4 Then close the outlet valve on the Tedlar bag and fill the bag over a period of not less than three minutes.

7.5 Three bags filled as in 7.3 and 7.4 shall constitute a test.

8. Post-Test Procedures

8.1 The bags must be analyzed for mercaptans within four hours of collection. Refer to Analytical Procedure Lab-3.

9. Reporting

9.1 The mercaptan concentration of each bag is reported as in Figure IV-38.

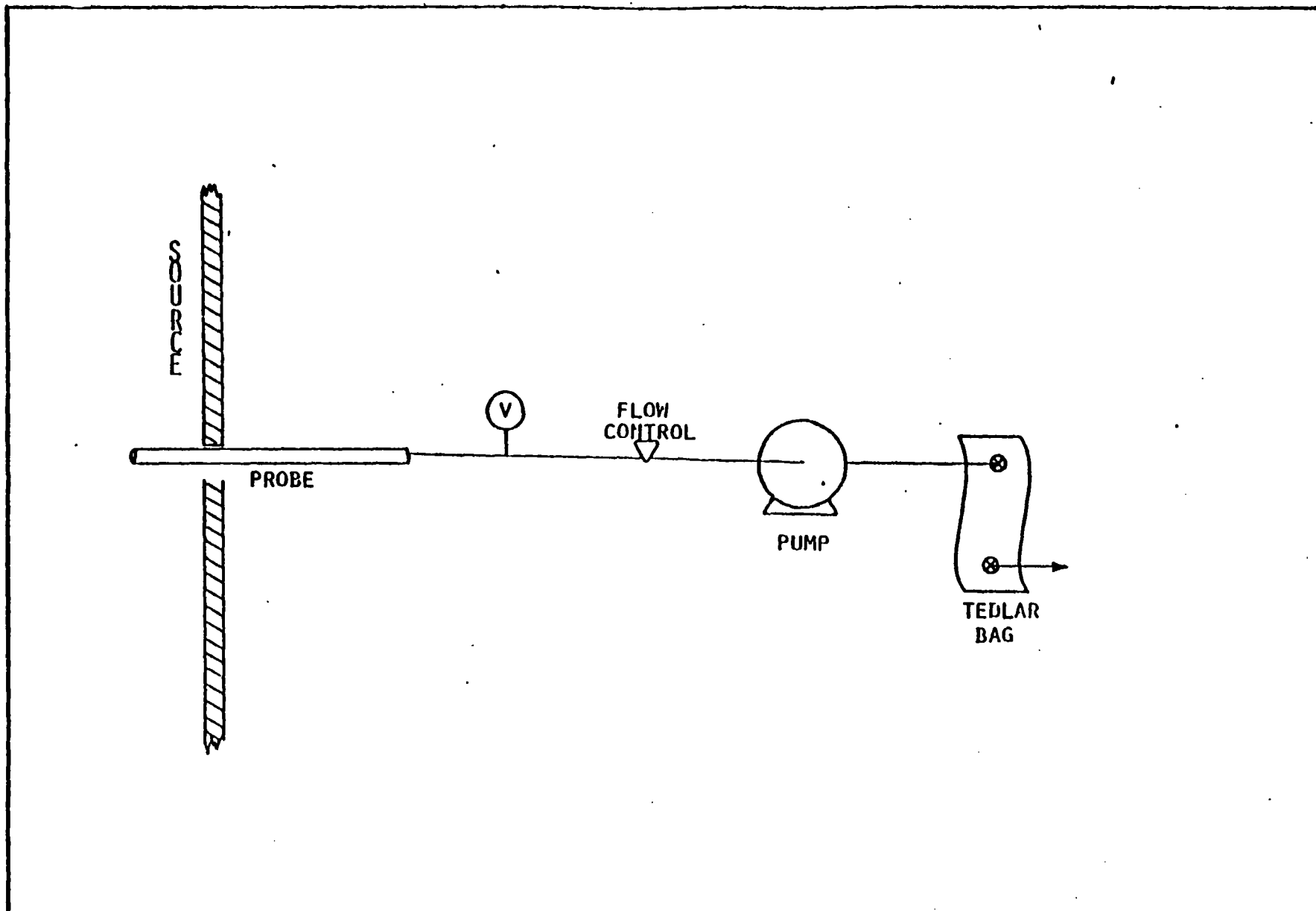


Fig. IV - 37

COLLECTION OF MERCAPTAN SAMPLES

SUMMARY OF SOURCE TEST RESULTS

SOURCE INFORMATION

Firm Name and Address	Firm Representative and Title	Report No. _____ Test Date: _____ Test Times: Run A: _____ Run B: _____ Run C: _____
Conditions During Tests	Phone No. _____	
	Source: _____	
Operating Parameters	Operates hr/day & days/yr	

Test Results and Comments

<u>METHOD</u>	<u>TEST</u>	<u>RUN A</u>	<u>RUN B</u>	<u>RUN C</u>	<u>AVG.</u>
ST-11	Mercaptans, as CH ₃ SH; ppm				

Source Test Procedure ST-12
COLLECTION OF ODOROUS SAMPLES

REF: Reg. 7-401

1. Applicability

1.1. This procedure is used for the collection of odorous samples to be evaluated according to Regulation 7-401.

2. Principle

2.1 Sample gas is drawn into a clean Tedlar bag at stack temperature. When condensation is expected the sample is diluted with clean dry air at stack temperature. If condensation is not expected the gas sample is drawn directly into a Tedlar bag.

2.2 The sample probe uses critical orifices for both the dilution air and the gas sample. The two are mixed at the same temperature to assure a constant dilution.

3. Range and Sensitivity - not applicable

4. Interferences

4.1 Particulate material will plug the critical orifice in the dilution probe.

4.2 Sample dilution must be sufficient to prevent condensation in the bag or probe.

5. Apparatus

5.1 Dilution probe. The dilution probe is constructed as shown in Figure IV-39.

5.1.1. All surfaces which contact the sample shall be Teflon, borosilicate glass or type 316 stainless steel.

5.1.2 The critical orifices shall be sized to provide a dilution sufficient to prevent condensation in the sample gas. The dilution shall be at least 10:1.

5.2 Pump. Use a Teflon-lined diaphragm pump or equivalent capable of at least 20 inches Hg vacuum. The pump shall be fitted with an inlet vacuum gauge and an inlet flow control valve.

5.3 Sample bag. A Tedlar bag with two stainless steel valves and a 10 liter capacity.

5.4 Drier/deodorizer. Use three glass cartridges fitted with ball joints. The first contains Drierite; the others contain activated carbon and shall be followed by a Pyrex wool filter.

5.5 Sampling lines. All sample contacting tubing shall be Teflon.

5.6 Rotameter. Use a calibrated rotameter capable of measuring the total (diluted) and undiluted sample.

6. Pre-Sampling Procedures

6.1 Purge the sample pump and Tedlar bag with clean, dry air for a minimum of 12 hours prior to sample collection.

6.2 Use the pump to be used for the test and fill the Tedlar sample bag with clean dry air and close both valves.

6.2.1 Evaluate the bag according to Section 7-400 of Regulation 7 within three hours prior to testing.

6.2.2 Two or more positive responses will disqualify the bag from being used.

6.3 Assemble the train as shown in Figure IV-40.

6.4 Start the pump, block the sample and air inlets and check that the flow out of the pump falls to zero.

6.5 Start the pump and purge the stack gas through the pump for at least three minutes.

6.6 Dilution measurement.

6.6.1 This step may be performed simultaneously with 6.5 or it may be done "out-of-stack".

6.6.2 Start the pump and adjust the inlet vacuum to at least 20 inches Hg and measure the total (diluted) sample flow.

6.6.3 Block the air line and adjust the pump vacuum to 20 inches Hg, and measure the undiluted sample flow.

6.6.4 Calculate the dilution ratio as:

$$R = \frac{Q_d - Q_u}{Q_u}$$

where: R = dilution ration, air to sample
Q_d = flow rate of diluted sample
Q_u = flow rate of undiluted sample

7. Sampling

7.1 Start the pump and adjust inlet vacuum to at least 20 in. Hg

7.2 Attach the Tedlar bag to the pump outlet and purge for three minutes or longer.

7.3 Close the bag outlet and fill the bag.

8. Post-Sampling Procedures

8.1 The dilution ratio shall be checked as in 6.4

8.2 The bag shall be returned and evaluated within three hours.

9. Reporting

9.1 The data and information shown in Figure IV-41 shall be reported.

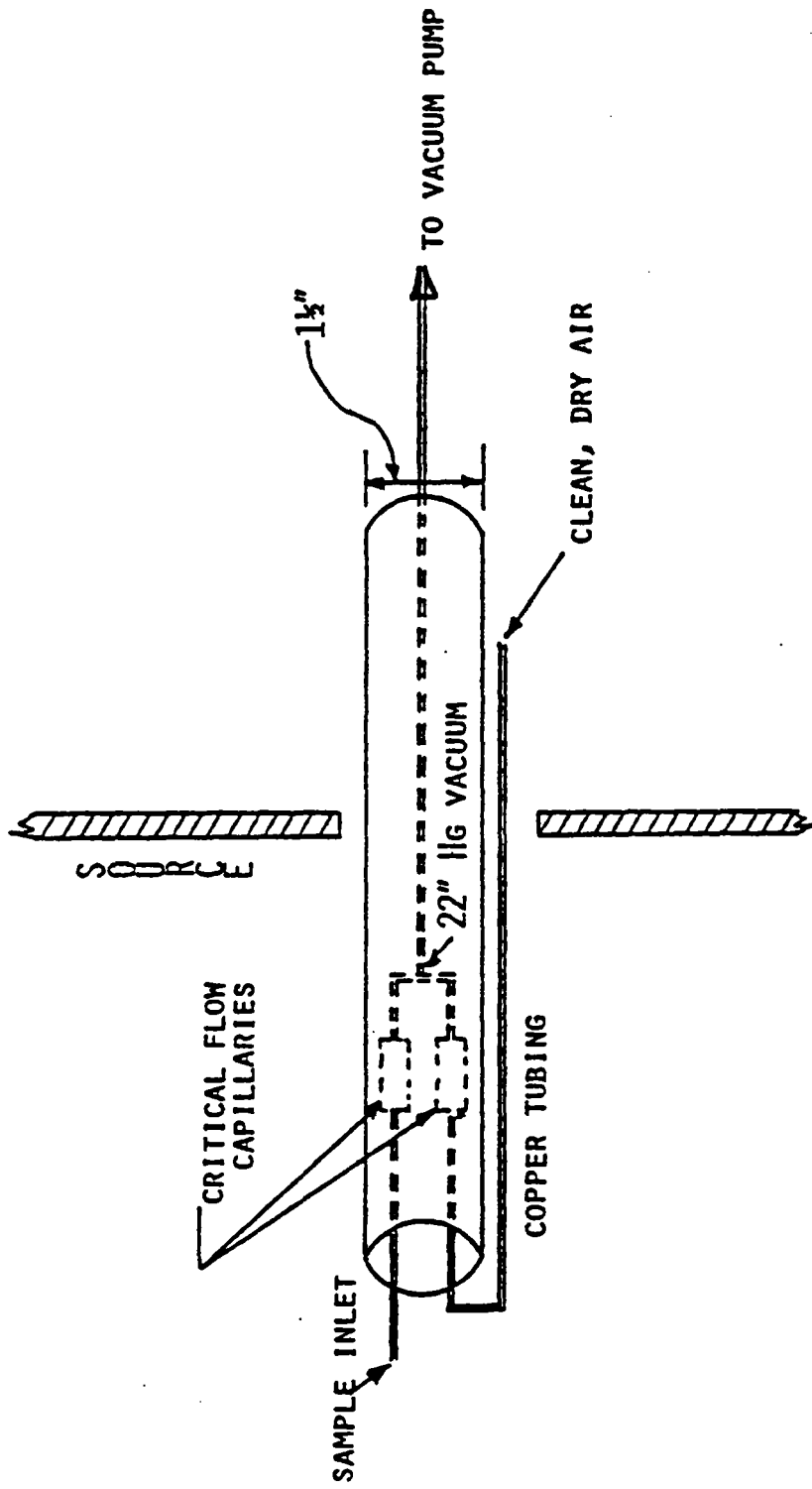


FIG. IV - 39

DILUTION PROBE

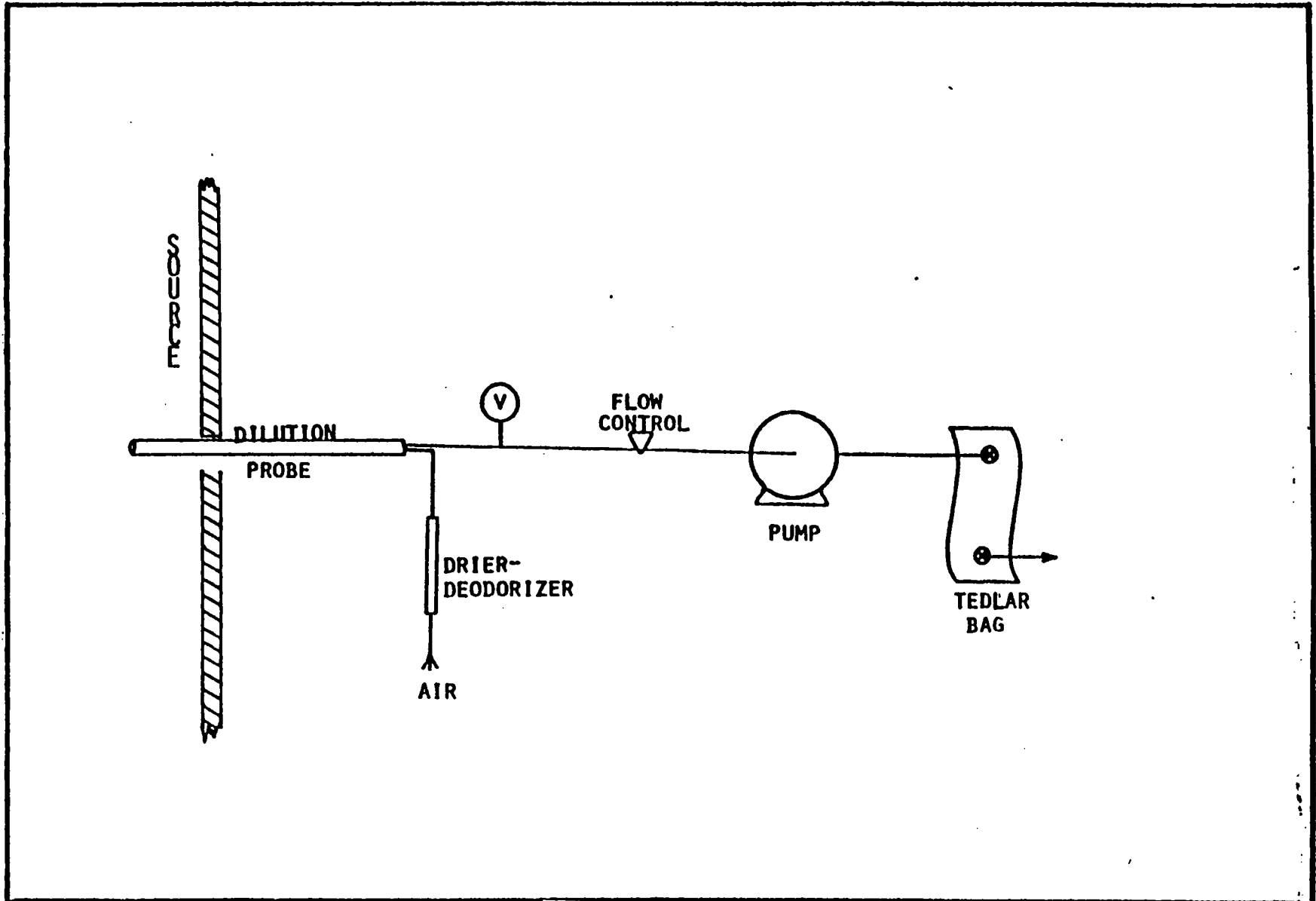


Fig. IV - 40

COLLECTION OF ODOROUS SAMPLES

SUMMARY OF SOURCE TEST RESULTS

SOURCE INFORMATION													
Firm Name and Address	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%; border-bottom: none;">Firm Representative and Title</td> <td style="width: 40%; border-bottom: none;">Report No.</td> </tr> <tr> <td style="border-bottom: none;">Phone No.</td> <td style="border-bottom: none;">Test Date:</td> </tr> <tr> <td style="border-bottom: none;">Source:</td> <td style="border-bottom: none;">Test Times:</td> </tr> <tr> <td style="border-bottom: none;">Operates hr/day & days/yr</td> <td style="border-bottom: none;">Run A:</td> </tr> <tr> <td style="border-bottom: none;">Operating Parameters</td> <td style="border-bottom: none;">Run B:</td> </tr> <tr> <td style="border-bottom: none;"></td> <td style="border-bottom: none;">Run C:</td> </tr> </table>	Firm Representative and Title	Report No.	Phone No.	Test Date:	Source:	Test Times:	Operates hr/day & days/yr	Run A:	Operating Parameters	Run B:		Run C:
Firm Representative and Title	Report No.												
Phone No.	Test Date:												
Source:	Test Times:												
Operates hr/day & days/yr	Run A:												
Operating Parameters	Run B:												
	Run C:												
Conditions During Tests													
Operating Parameters													
Test Results and Comments													

Source Test Method

12

Location of Sample Point

Elevation of sample point, ft.

Dilution rate

This sample was deemed (ODOROUS or NON-ODOROUS) according to Section 7-404 of Regulation 7.

Source Test Procedure ST-13A

OXIDES OF NITROGEN, CONTINUOUS SAMPLING

REF: Regs. 9-3-301
9-3-302
10-1-301

1. Applicability

1.1 This method is used to quantify emissions of oxides of nitrogen. It determines compliance with Regs. 9-3-301, 9-3-302 and 10-1-301.

2. Principle

2.1 A gas sample is extracted continuously from the sampling point and conditioned to remove water and particulate matter. Nitric oxide (NO) emissions are determined by passing a small portion of the sample through a chemiluminescent analyzer. The chemiluminescent process is based on the light given off when nitric oxide and ozone react. Nitrogen dioxide (NO₂) concentrations are determined by passing the sample through a catalyst which reduces the NO₂ to NO. The total oxides of nitrogen concentration (NO₂ + NO) is then determined by chemiluminescence.

3. Range and Sensitivity

3.1 The minimum and maximum measurable concentrations of NO_x depends on the specific chemiluminescent analyzer.

3.2 The minimum sensitivity of the analyzer shall be ±2% of full scale.

4. Interferences

4.1 If the molybdenum catalyst is used, compounds containing nitrogen (other than ammonia) may cause interference.

5. Apparatus

5.1 Oxides of nitrogen analyzer. Use a Thermo Electron Corp. Model 10A analyzer or its equivalent.

5.2 Chart recorder. The recorder monitors and records the continuous output from the analyzer.

5.3 Sample conditioning, zero air, and span gas system. The assembly of this system is shown in Figure IV-42. The sample conditioning system provides a dry, particulate free gas flow to the instrument. The zero air system provides clean dry atmospheric air for instrument calibration. The span gas system provides a known concentration of NO for use in calibrating the analyzer. Except as specified, all materials which come in contact with either the sample or span gas must be constructed of Teflon or stainless steel.

5.4 Sample probe. Use a borosilicate glass tube of sufficient length to traverse the stack being tested. If the stack temperature exceeds 425C (800F), use a quartz probe. Other probes are acceptable subject to prior approval by the Source Test Section.

5.5 Condensers. Use modified Greenberg-smith impingers with the impaction plates removed and the inlet tube shortened to a length of 10cm (4 inches), or equivalent.

5.6 Cooling system. Immerse the impingers in an ice bath during the test.

5.7 Particulate filter. Use a Balston type 95 holder with a grade B filter, or equivalent, in the sample system.

5.8 Pumps. Use leak-free, Teflon-lined, diaphragm pumps in the sample and zero air systems. The pumps must have a capacity of at least 28 liters/min (1.0 CFM).

5.9 Back-pressure regulator. Use a back-pressure regulator to maintain the sample and zero gas sample pressures to the instrument at five psig.

5.10 Gas scrubber. Use a bed of silica gel, Ascarite (or soda-lime), and charcoal to remove moisture, carbon dioxide, and hydrocarbons from the zero air system.

5.11 Span gas. Use a high-pressure cylinder containing a known concentration of NO in Nitrogen. The span gas concentration must be in the same range as the source being tested.

6. Pre-Test Procedures

6.1 Warm-up the instrument according to manufacturer's instructions.

6.2 Assemble the sampling system and analyzer as shown in Figs. IV-42 and IV-43.

6.3 Leak-test the sampling system by starting the pump, plugging the probe, and determining that the pressure to the analyzer falls to zero. Other leak-tests are acceptable subject to the approval of the Source Test Section.

6.4 Introduce zero air, into the analyzer and zero the instrument according to manufacturer's instructions.

6.5 Introduce span gas into the analyzer and calibrate the instrument according to manufacturer's instructions.

6.6 Conduct a preliminary concentration traverse to determine if stratification of the stack gases exists. If the NO_x concentration at any point differs from the average concentration by more than 10%, traverse the stack during the test. If not, sample at any single point.

6.7 Set-up the chart recorder according to manufacturer's instructions.

7. Sampling

7.1 Sample at continuous operations for a period of thirty minutes for each test run. Sample at batch operations for thirty minutes or 90% of the batch process time, whichever is less.

7.2 Introduce sample gas into the analyzer at the same flow rate used to calibrate the analyzer.

7.3 Maintain ice in the cooling system throughout the test.

7.4 Calibrate the analyzer before and after each test run. Record each step of the process clearly on the chart recording

7.5 Conduct three test runs.

8. Auxiliary Tests

8.1 Oxygen concentration. Determine the oxygen concentration simultaneously with each NO_x run in accordance with ST-14.

9. Calculations

9.1 Determine the time-averaged concentration of NO on a dry basis for each run from the chart recording.

9.2 Concentration of nitrogen oxides corrected to 3% oxygen.

$$C_{\text{NO}, 3\%} = C_{\text{NO}_x} \frac{17.95}{20.95 - C_{\text{O}_2}}$$

where: $C_{\text{NO}, 3\%}$ = Total concentration of NO_x on a dry basis at 3% O_2 .

C_{NO_x} = Total concentration of NO_x (from 9.1)

C_{O_2} = Concentration of oxygen on a dry basis (from 8.1).

17.95 = Ambient O_2 less 3%

9.3 When necessary to calculate the mass emission rate of NO_x , the molecular weight of NO_2 shall be used.

10. Reporting

The data and information shown in Fig. IV-44 shall be reported.

NOTE: SPAN-GAS SYSTEM NOT APPLICABLE TO ST-14

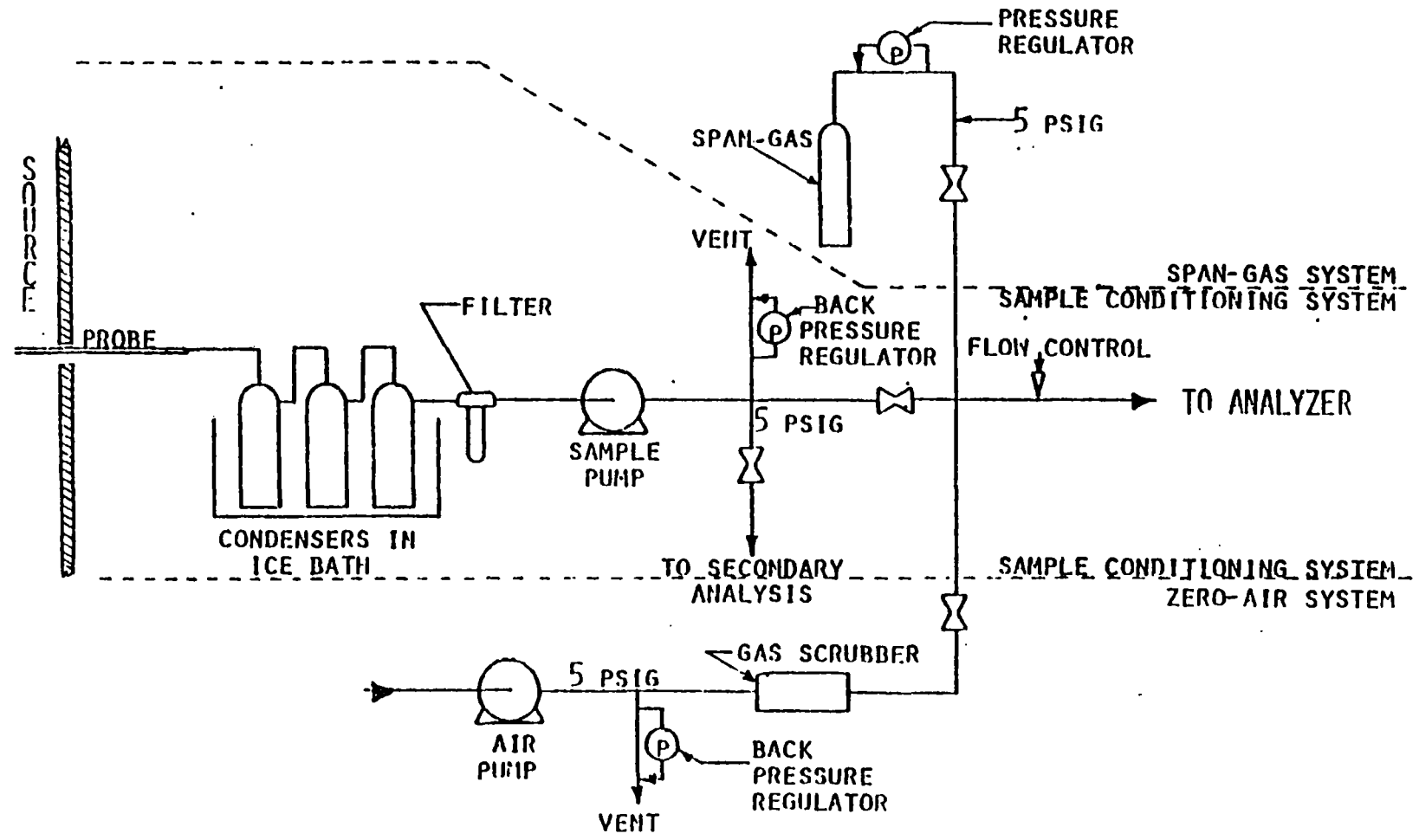


Fig. IV - 42

SAMPLE CONDITIONING, ZERO-AIR AND SPAN-GAS SYSTEMS

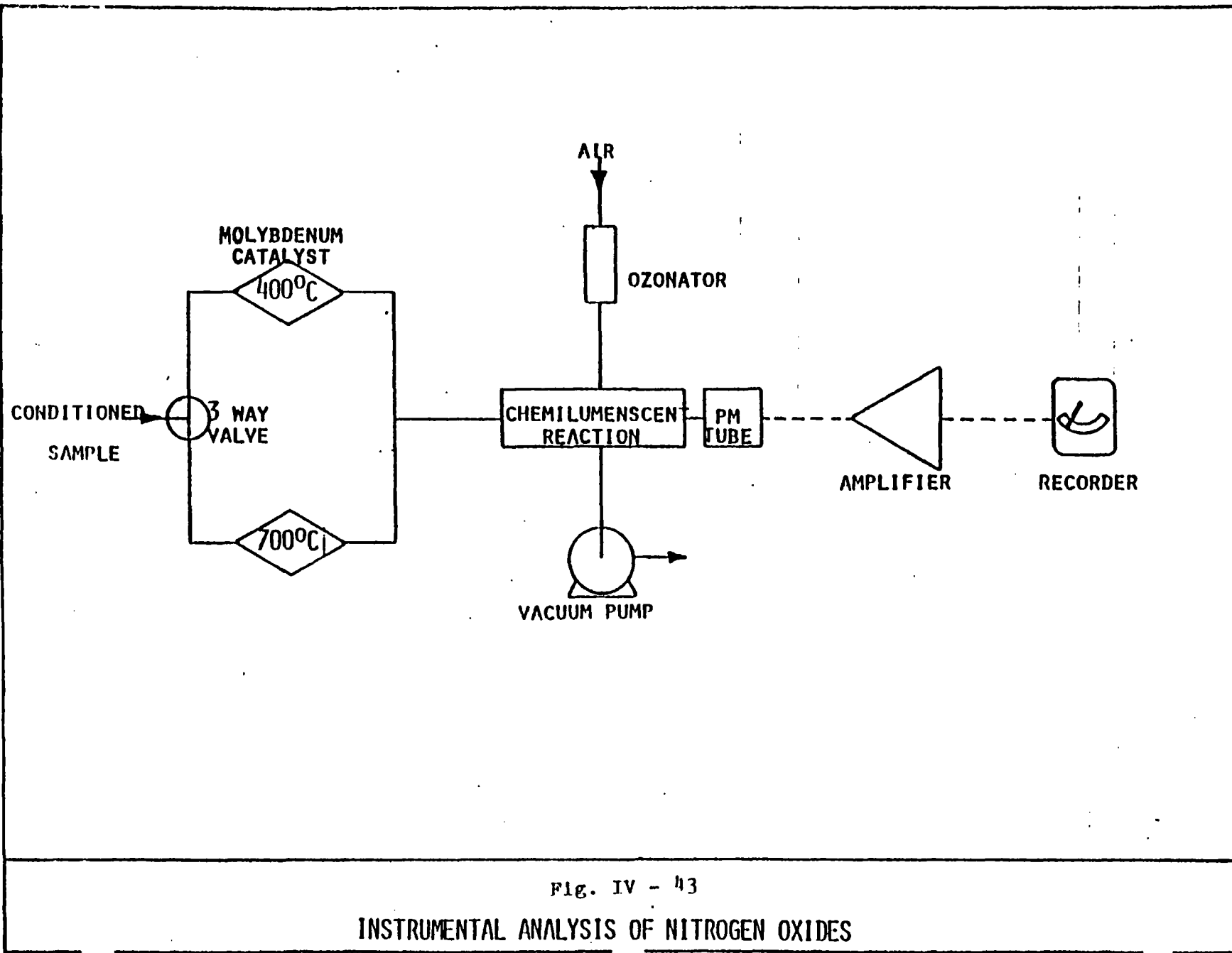


Fig. IV - 43

INSTRUMENTAL ANALYSIS OF NITROGEN OXIDES

Source Test Procedure ST-13B

OXIDES OF NITROGEN, INTERATED SAMPLE

REF: REGS. 9-3-301 9-3-304 10-1-301
9-3-302 9-4-301
9-3-303 9-4-302

1. Applicability

1.1 This method is used to quantify emissions of oxides of nitrogen. It determines compliance with Regs. 9-3-301, 9-3-302, 9-3-303, 9-3-304, 9-4-301, 9-4-302, 10-1-301 and is an acceptable alternate method to ST-13A.

2. Principle

2.1 Sample gas is drawn through an alkaline permanganate which absorbs the oxides of nitrogen. The oxides of nitrogen are subsequently analyzed for nitrite (NO₂) as specified in Analytical Procedure Lab-7A.

3. Range and Sensitivity

3.1 The minimum measurable concentration of oxides of nitrogen is 6 ppm at the sample volume specified in this procedure.

3.2 The maximum concentration for which this procedure has been proven is 1800 ppm.

4. Interference

None.

5. Apparatus

5.1 Probe. The probe is constructed of borosilicate glass tubing.

5.2 Absorbers. Use three Greenberg-Smith impingers modified by replacing the orifice and impaction plates with semi-fine frits of approximately 70 porosity. The third impinger has a thermometer attached to the inlet.

5.3 Cooling system. An ice bath is used to contain the impingers.

5.4 Sample pump. Use a leak-free vacuum pump capable of maintaining a 0.5 CFM flow rate at 15 inches of mercury-vacuum. The pump has a flow control valve and vacuum gauge attached to the inlet.

5.5. Silica gel tube. Approximately 500cc of silica gel with Drierite indicator are used to insure that the gas entering the dry gas meter is dry.

5.6 Dry test meter. Use a dry gas test meter accurate within $\pm 2\%$ of the true volume and equipped with a thermometer to measure the outlet temperature.

SUMMARY OF SOURCE TEST RESULTS

SOURCE INFORMATION		
Firm Name and Address	Firm Representative and Title	Report No. _____ Test Date: _____ Test Times: Run A: _____ Run B: _____ Run C: _____
Conditions During Tests	Phone No. _____ Source: _____	
	Operates hr/day & days/yr	
Operating Parameters		

Test Results and Comments

<u>METHOD</u>	<u>TEST</u>	<u>RUN A</u>	<u>RUN B</u>	<u>RUN C</u>	<u>AVG.</u>
	Run time, minutes				
	Stack gas temp., °F.				
ST-13A	Total oxides of nitrogen, uncorrected, ppm				
ST-14	O ₂ , conc., %				
ST-13A	Total oxides of nitrogen, corrected, ppm				

5.7 connections. Use Teflon tubing in making all connections that come in contact with the sample. Vinyl tubing is acceptable for all other connections.

5.8 barometer. Use a mercury, aneroid, or other barometer that is accurate to within ± 0.2 inches of mercury.

5.9 Rotameter. Use a calibrated Rotameter to measure the sampling rate.

6. Reagents

6.1 absorption solution. Dissolve 40 grams of potassium permanganate and 20 grams of sodium hydroxide in distilled water and dilute to 1 liter with distilled water.

7. Pre-Test Procedures

7.1 Add 100 ml of alkaline permanganate solution to each of the three impingers.

7.2 Stopper the impingers.

7.3 Assemble the sampling train as shown in Figure IV-45. Record the equipment identification on the test data sheet.

7.4 Leak-test the sampling train by turning on the pump, plugging the probe, and adjusting the pump inlet vacuum to 10 inches Hg. The leak rate must not exceed 0.6 lpm (0.02 CFM) through the dry test meter. Before turning off the pump, carefully release the plug in the sample probe to avoid backflow of the impinger solution.

7.5 Record the initial dry test meter reading and barometric pressure on a data sheet as shown in Figure IV-26.

8. Sampling

8.1 Sample at continuous operations for a period of thirty minutes for each test run. Sample at batch processes for a period of thirty minutes or 90% of the batch process time, whichever is less.

8.2 Position the probe at the sampling point and start the pump.

8.3 Sample at a constant rate of 6.0 liter/Hr (0.2 CFH) during the test as determined by the Rotameter.

8.4 Record the following information at five-minute intervals:

Dry test meter temperature
 Impinger outlet temperature
 Dry test meter volume
 Rotameter flow.

8.5 Add ice as necessary to maintain impinger temperatures at 7°C (45°F) or less.

8.6 At the conclusion of each run, stop the pump, remove the probe from the stack, and record the final meter volume.

8.7 Take three consecutive samples.

9. Post-Test Procedures

9.1 Stopper the impingers until they are analyzed.

9.2 Individually analyze the alkaline permanganate solutions for total oxides of nitrogen as NO₂.

10. Auxiliary Tests

10.1 Oxygen. Determine the oxygen content of the stack gases simultaneously with each oxides of nitrogen run using ST-14.

11. Calculations

11.1 Standard sample volume:

$$V_o = \frac{17.71 V_m P_b}{T_m}$$

where:

V_o = corrected sample volume, SDCF at 70°F and 29.92 inches Hg.
 V_m = uncorrected meter volume, ft³
 T_m = average run meter temperature, °R
 P_b = barometric pressure, inches Hg.
 17.71 = a constant correcting to 70°F and 29.92 inches Hg.

11.2 Uncorrected oxides of nitrogen concentration:

$$C_{NO} = \frac{19.3 \times 10^3 W}{V_o}$$

where:

C_{NO} = oxides of nitrogen concentration, (as NO₂) ppm by volume on a dry basis.
 W = total weight of nitrite in the impinger catch, for each run, grams.
 19.3×10^3 = constant derived from molecular weight and molar volume to convert concentration to standard conditions.

11.3 concentration of oxides of nitrogen corrected to 3% oxygen:

$$C_{NO_2, 3\%} = C_{NO} \frac{17.95}{20.95 - \%O_2}$$

where:

$\%O_2$ = percent oxygen by volume (dry basis).

17.95 = ambient O_2 less 3%

12. Reporting

The data and information shown in Fig. IV-47 shall be reported.

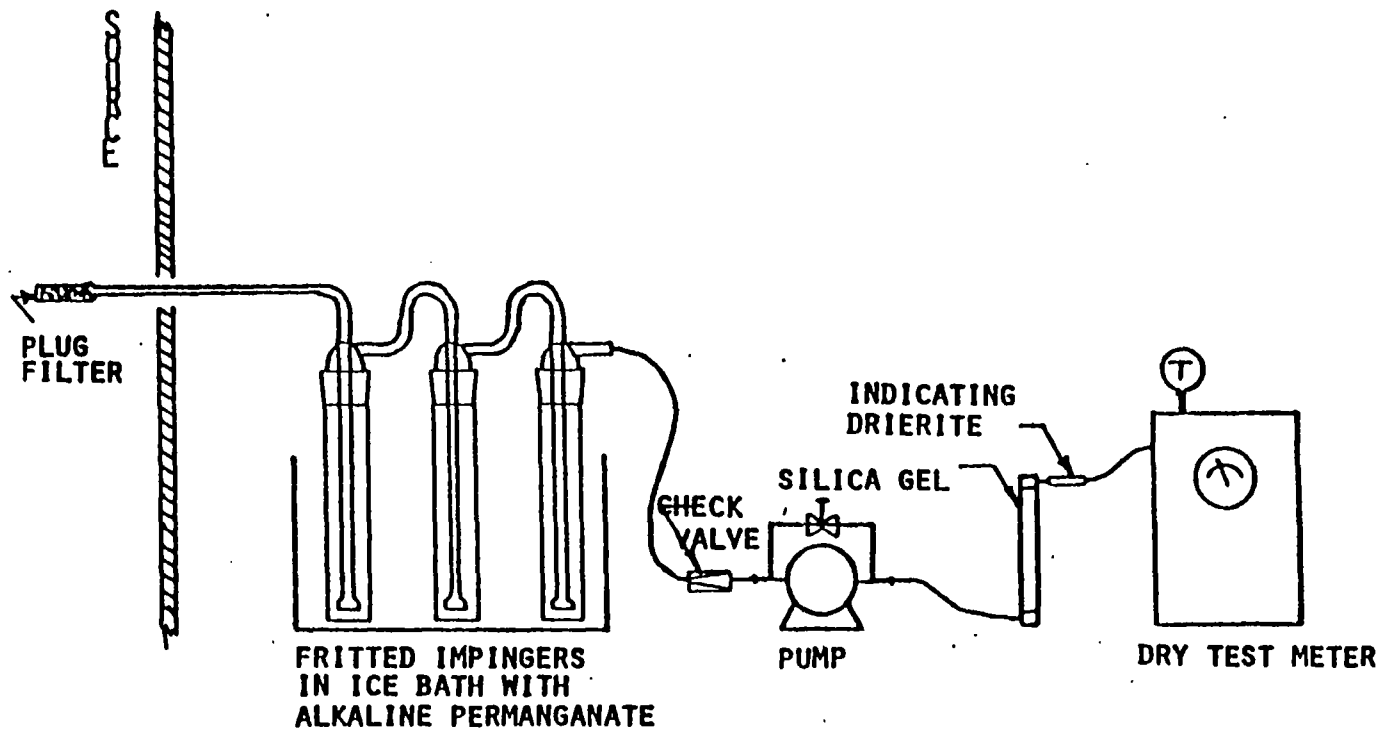


Fig. IV - 45
 NITROGEN OXIDE SAMPLING TRAIN

BAY AREA AIR POLLUTION CONTROL DISTRICT

Source Test Data Sheet

Source Operation _____
 Plant _____
 Sample Type _____
 Process Cycle _____
 Duct Size _____
 Duct Pressure _____

Source Test No. _____
 Run No. _____
 Date: _____

_____ Nozzle Diameter
 _____ Pitot Tube
 _____ Gas Collector No.
 _____ Barometric Pressure
 _____ Leak Rate @ 15"Hg

Sampling Train:

Traverse Point	Dist. From inches	INITIAL TRAVERSE			SAMPLING								REMARKS		
		Duct Temp ^{OF}	h H ₂ O	W/h	Traverse Point	h H ₂ O	V _g FPS	Time	METER			Vac "Hg		Sat'd Gas Temp ^{OF}	T _g Duct Temp ^{OF}
									Rate CFH	Temp ^{OF}	Volume Ft ³				

$$D_n = 13.7 \left[\frac{T_g + 460}{K_p V_g (100 - \%H_2O)} \right]^{1/2}$$

$$Q_m = \left[(2.638 \times 10^{-3}) K_p (100 - \%H_2O) D_{mm}^2 \right] \frac{V_g}{T_g}$$

Condensate _____ gm.
 V₀ _____
 %H₂O _____
 %CO₂ _____
 %CO _____
 %O₂ _____

Source Test Team

SUMMARY OF SOURCE TEST RESULTS

SOURCE INFORMATION		
Firm Name and Address	Firm Representative and Title	Report No. Test Date: Test Times: Run A: Run B: Run C:
	Phone No. Source:	
Conditions During Tests	Operates hr/day & days/yr	
Operating Parameters		
Test Results and Comments		

<u>METHOD</u>	<u>TEST</u>	<u>RUN A</u>	<u>RUN B</u>	<u>RUN C</u>	<u>AVG.</u>
	Run time, minutes				
	Stack gas temp., °F.				
ST-13B	Total oxides of nitrogen uncorrected, ppm				
ST-14	O ₂ conc., %				
ST-13B	Total oxides of nitrogen, corrected, ppm				

FIG. IV-47

Source Test Procedure ST-14

OXYGEN, CONTINUOUS SAMPLING

REF: Regs. 9-3-301
9-3-302

1. Applicability

1.1 This method is used to quantify emissions of oxygen. It determines compliance with Regs. 9-3-301 and 9-3-302.

2. Principle

2.1 A continuous representative gas sample is extracted from the sampling point and conditioned to remove water and particulate material. A small portion of the sample is passed through a fuel cell type oxygen analyzer which measures the electrical current generated by the oxidation reaction at the gas/fuel cell interface.

3. Range and Sensitivity

3.1 The minimum measurable concentration of oxygen is 0.1%.

3.2 The upper limit depends on the range of the instrument.

3.3 The sensitivity of the O₂ analyzer shall be $\pm 2\%$ of full scale.

4. Interferences

4.1 Halogens and halogenated compounds will cause a positive interference. Acid gases will consume the fuel cell and cause a slow calibration drift.

5. Apparatus

5.1 Oxygen analyzer. Use a Teledyne Analytical Instruments Inc., Model 326 analyzer or its equivalent.

5.2 Chart recorder. The recorder monitors and records the continuous output from the analyzer.

5.3 Sample conditioning, zero air, and span gas system. The assembly of this system is shown in Fig. IV-48. The sample conditioning system provides a dry, particulate free gas flow to the instrument. The zero air system provides clean dry atmospheric air for instrument calibration. Except as specified, all materials which come in contact with either the sample or span should be constructed of Teflon or stainless steel.

5.4 Sample probe. Use a borosilicate glass tube of sufficient length to traverse the stack being tested. If the stack temperature exceeds 425C (800F), use a quartz probe. Other probes are acceptable subject to prior approval by the Source Test Section.

5.5 Condensers. Use modified Greenberg-Smith impingers with the impaction plates removed and the inlet tube shortened to a length of 10cm (4 inches), or equivalent.

5.6 Cooling system. Immerse the impingers in an ice bath during the test.

5.7 particulate filter. Use a Balston type 95 holder with a grade B filter, or equivalent, in the sample system.

5.8 pumps. Use leak-free, Teflon-lined, diaphragm pumps in the sample and zero air systems. The pumps must have a capacity of at least 28 liters/min (1.0 CFM).

5.9 Back-pressure regulator. Use a back-pressure regulator to maintain the sample and zero gas sample pressures to the instrument at five psig.

5.10 Gas scrubber. Use a bed of silica gel, Ascarite (or soda-lime), and charcoal to remove moisture, carbon dioxide, and hydrocarbons from the zero air system.

5.11 Span gas. The analyzer is spanned using dry air from the zero-gas system.

6. Pre-Test Procedures

6.1 Warm-up the instrument according to manufacturer's instructions.

6.2 Assemble the sampling system as shown in Figure IV-28.

6.3 Leak-test the sampling system by starting the pump, plugging the probe, and determining that the pressure to the analyzer falls to zero. Other leak-tests are acceptable subject to the approval of the Source Test Section.

6.4 Introduce zero air, into the analyzer and zero the instrument according to manufacturer's instructions.

6.5 Introduce span gas into the analyzer and calibrate the instrument according to manufacturer's instructions.

6.6 Conduct a preliminary concentration traverse (according to ST-18) to determine if stratification of the stack gases exists. If the O₂ concentration at any point differs from the average concentration by more than 10%, traverse the stack during the test. If not, sample at any single point.

6.7 Set-up the chart recorder according to manufacturer's recommendations.

7. Sampling

7.1 Each test run shall be of thirty minute duration when testing emissions from continuous operations. Each test run at a batch process operation shall be for 90% of the batch time or thirty minutes, whichever is less.

7.2 Introduce sample gas into the analyzer at the same flow rate used to span the analyzer.

7.3 Maintain ice in the cooling system throughout the test.

7.4 Check the zero and span before and after each test run. Record each step of the process clearly on the chart recording.

7.5 Do three test runs.

8. Calculations

8.1 Determine the time-averaged concentration of O₂ on a dry basis for each run from the chart recording.

9. Reporting

9.1 These values are determined as auxiliary data for other procedures and shall be reported with those test results.

NOTE: SPAN-GAS SYSTEM NOT APPLICABLE TO ST-14

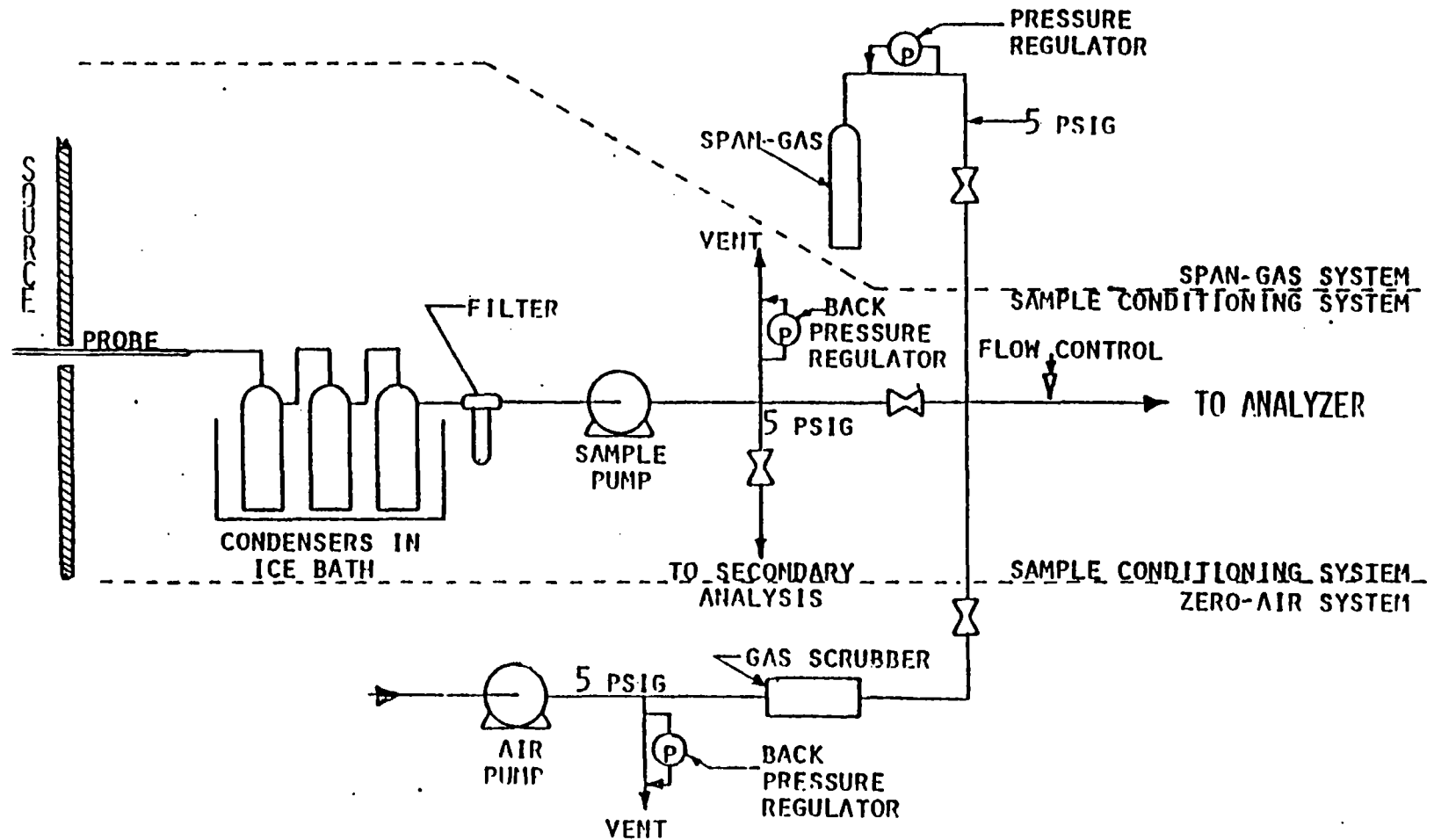


Fig. IV - 48

SAMPLE CONDITIONING, ZERO-AIR AND SPAN-GAS SYSTEMS

Source Test Procedure ST-15

PARTICULATE

REF: Regs. 6-310 10-1-301
6-311

1. Applicability

1.1 This method is used to quantify particulate emissions. It determines compliance with Regulations 6-310, 6-311 and 10-1-301.

2. Principle

2.1 Stack gases are drawn isokinetically through glass fiber filters at stack conditions. The weight of particulate matter, including any material that condenses at or above the stack temperature, is determined gravimetrically after the removal of uncombined water.

3. Range

3.1 The minimum particulate emissions measurable by this procedure is .001 gr/SDCF.

4. Interferences

4.1 Sulfur oxides, sulfates and some other species which are not particulate at stack conditions may react with the filter medium so as to produce a spurious weight gain. This phenomena is minimized by use of a back-up filter as a blank.

5. Apparatus

5.1 Probe nozzle. The probe nozzle shall be equivalent to the nozzle shown in Fig IV-49. The probe nozzle shall be constructed of borosilicate glass, quartz, or stainless steel.

5.2 Filter holder. Use filter tubes equivalent to the one shown in Fig. IV-49 and constructed of borosilicate glass or quartz.

5.3 Filter tube holder. Use a filter tube holder which will contain three filter tubes and the probe nozzle in a leak-free manner. Fig IV-50 shows an acceptable filter tube holder configuration.

5.4 Filter medium. Use borosilicate glass wool, or equivalent. Corning Glass Works Glass, Catalogue #3950 is acceptable.

5.5 Connections. The connection between the filters and the first impinger must be able to withstand stack temperatures. Vinyl tubing is acceptable in making all other connections.

5.6 Pitot tube. Use a Stauschelbe (Type-S), or equivalent, with a known coefficient which is constant within $\pm 5\%$ over the entire working range. The pitot tube coefficient is determined by placing both the S-type and the standard pitot tube in a gas stream and measuring the pressure head with both over the entire velocity range of interest. Calculate the coefficient of the Type-S pitot tube as follows:

$$C_{Ps} = C_{Pstd} \left[\frac{\Delta P_{std}}{\Delta P_s} \right]^{1/2}$$

where:

- C_{Ps} = Type-S pitot tube coefficient
- ΔP_s = Pressure head, Type-S pitot tube
- ΔP_{std} = Pressure head, standard pitot tube
- C_{Pstd} = Standard pitot tube coefficient

5.7 Temperature measuring device. Use a Chromel-Alumel thermocouple accurate to -15°F. , connected to a temperature compensated null type potentiometer, or equivalent, to measure stack temperatures.

5.8 Encasement tube. Assemble the items in 5.5, 5.6 and 5.7 in a pipe as shown in Fig. IV-51 to facilitate handling. To prevent the pitot tube from interfering with the gas low stream-lines approaching the sample nozzle, position the pitot tube and sample nozzle not closer together than 0.75 inches.

5.9 Condensers. Use three Greenberg-Smith impingers. The third impinger shall be modified by removing the impaction plate and attaching a thermometer to the inlet stem.

5.10 Cooling system. Use an ice bath to contain the impingers.

5.11 Sample pump. Use a leak-free vacuum pump capable of maintaining a 1.0 CFM flow rate at 15 inches of mercury. The pump must have a flow control valve and vacuum gauge attached to the inlet.

5.12 Silica gel tube. Use approximately 500cc of silica gel (with a Drierite indicator) to insure that the gas entering the dry test meter is free of H_2O .

5.13 Dry test meter. Use a 175 CFH dry test meter accurate within $\pm 2\%$ of the true volume and equipped with a thermometer to measure the outlet temperature. The working pressure across the meter shall not exceed one inch water column.

5.14 Rotameter. Use a calibrated rotameter to measure the sampling rate.

5.15 Pressure gauge. Use a Magnehelic differential pressure gauge, or equivalent, in the same range as the velocity and static pressures being measured in the stack.

5.16 Analytical balance. Use an analytical balance accurate to within ± 0.5 mg to measure filter weights. An analytical balance capable of measuring condensate weights to the nearest 0.1 gram is acceptable.

5.17 Barometer. Use a barometer that is accurate to within ± 0.2 inches of mercury.

6. Pre-Test Procedures

6.1 Filter preparation. Pack three labeled filter tubes for each run with borosilicate glass wool so as to produce a 10 inch H_2O pressure drop across each filter tube at 0.5 CFM flow. Dry the filter tubes in an oven at 105C for 24 hours cool them in a desiccator. Weigh each filter tube on an analytical balance to the nearest 0.5 mg. Record each weight on the lab data sheet shown in Figure IV-52.

6.2 Impinger preparation. Fill each of two unmodified Greenberg-Smith impingers with approximately 100 ml of distilled water. Weigh and record the weights on the data sheet as shown in Figure IV-52.

6.3 Nozzle size determination. Do the preliminary tests outlined below to determine the correct nozzle size to aid in isokinetic sampling.

6.3.1 Determine the number and location of the stack traverse points in accordance with ST-18.

6.3.2 Conduct a velocity traverse in accordance with ST-17 and measure the stack gas temperature.

6.3.3 Determine the moisture content of the stack gases in accordance with ST-23.

6.3.4 Nozzle diameter.

$$D_n = 13.7 \left[\frac{T_s}{V_s (100 - H_2O)} \right]^{1/2}$$

D_n = Nozzle diameter, mm
 T_s = Stack gas temperature, °R
 H_2O = Stack gas moisture concentration, %
13.7 = A constant based on an assumed meter rate of 0.5 CFM, meter temperature of 70F, and a molecular weight of 28.8.
 V_s = stack gas velocity fps

6.4 Assemble the sampling train as shown in Figs. IV-50 and IV-53.

6.5 The entire sampling train must be leak-checked before each test run. Plug the sampling probe, start the pump, and adjust the pump vacuum to 380mm Hg (15" Hg). A leak rate through the meter which exceeds 0.57 lpm (0.02 CFM) is unacceptable.

7. Sampling

7.1 Each test run shall be of 50 minute duration when testing emissions from continuous operations. Each test run at batch process operations shall be for 90% of the batch time or 50 minutes, whichever is less.

7.2 Sample at the traverse points determined in accordance with ST-18.

7.3 The sampling rate at each traverse point must be isokinetic. Measure the stack velocity and stack temperature at each point and adjust the meter flow rate according to the following equation:

$$Q_m = \frac{2.638 \times 10^{-3} (100 - \%H_2O) D_n^2 V_s}{T_s}$$

where: Q_m = isokinetic sampling rate, ACFM
 T_m = meter temperature, °R
 H_2O = stack gas moisture content (from 6.3.3)

7.4 When inserting the probe into the stack rotate the nozzle so it points down stream to avoid particulate collection prior to sampling. Immediately before sampling, rotate the probe so the nozzle points upstream.

7.5 Record the following information at five-minute intervals or whenever changing sampling locations on a field data sheet as shown in Figure IV-54.

Stack velocity head
Sample time
Sample rate
Cumulative sample volume
Impinger saturation temperature
Stack gas temperature
Impinger vacuum
Dry test meter temperature

7.6 At the conclusion of each run, stop the pump, remove the probe from the stack and record the final meter reading. Point the probe upward and purge the sample train with ambient air.

7.7 Conduct three consecutive test runs.

8. Post-Test Procedures

8.1 Remove the nozzle and filters as a unit and seal both ends. This must be done in a clean dry location to avoid sample contamination.

8.2 Stopper the impingers to minimize sample losses.

8.3 Clean the exterior of the nozzle and filter tubes and dry them in an oven for 24 hours at 105C. Allow to cool in a desiccator and weigh to the nearest 0.5 mg. Repeat the desiccation and weighing process daily until constant weights are recorded.

8.4 After weighing the nozzle containing particulate matter, clean, dry and weigh the nozzle to obtain its tare weight.

8.5 Weigh each impinger to the nearest 0.1 g.

9. Auxiliary Tests

9.1 Determine the CO₂, O₂ and CO concentrations simultaneously with each particulate run in accordance with ST-5, ST-14, & ST-6. An Orsat analysis (ST-24) is also acceptable.

10. Calculations

10.1 Standard Dry Sample Volume

$$V_o = \frac{17.71 V_m P_b}{T_m}$$

where: V_o = standard dry sample volume, SDCF @ 70F and 29.92 inches Hg.
 V_m = actual metered volume, ft³
 P_b = barometric pressure, inches Hg.
 T_m = Average meter temperature, °R
17.71 = constant correcting to 70F and 29.92 inches Hg.

10.2 Water Vapor Content

$$H_2O = \frac{(.0474 W_c) + \frac{V_o P_{sat}}{P_b - P_i - P_{sat}}}{V_o + (.0474 W_c) + \frac{V_o P_{sat}}{P_b - P_i - P_{sat}}} \times 100$$

where: W_c = total condensate weight, all impingers, grams
 P_{sat} = water saturation pressure in the impingers, inches Hg.
 P_b = barometric pressure, inches Hg.
 P_i = pump inlet vacuum, inches Hg.
 H_2O = per cent water vapor
.0474 = cubic feet of vapor resulting from 1 cubic centimeter of liquid H₂O.

10.3 Stack Gas Molecular Weight -

$$MW = 0.44 (\%CO_2) + 0.32(\%O_2) + 0.28(\%N_2 + \%CO) + 0.18(\%H_2O)$$

- MW = molecular weight
%CO₂ = percent carbon dioxide by volume (dry basis)
%O₂ = percent oxygen by volume (dry basis)
%CO = percent carbon monoxide by volume (dry basis)
%H₂O = percent moisture by volume
%N₂ = percent nitrogen by volume (dry basis - determine by difference)

10.4 Stack Gas Flow Rate - Determine in accordance with ST-17.

10.5 Corrected Particulate Weight - Calculate using the third filter net weight as blank:

$$W_p = (W_1 + W_2) - \frac{W_3}{F_3}(F_1 + F_2)$$

- W_p = Corrected weight of particulate catch, grams
W₁ = Weight gain in 1st filter, grams
W₂ = Weight gain in 2nd filter, grams
W₃ = Weight gain in 3rd filter, grams
F₁ = Weight of wool in 1st filter, grams
F₂ = Weight of wool in 2nd filter, grams
F₃ = Weight of wool in 3rd filter, grams

10.6 Particulate Weight Concentration -

$$G = 15.43 \frac{W_p}{V_0}$$

where:

- G = Particulate concentration, grains/SDCF
W_p = Weight of particulate catch, grams
V₀ = Standard dry sample volume, SDCF
15.43 = grains/gram

10.7 Particulate Mass Emission Rate

$$M = \frac{GQ_0}{116.7}$$

where:

- M = Particulate mass emission rate, lbs/hr.
Q₀ = Standard dry stack flow rate, SDCFM
116.7 = Conversion factor for grains to pounds and minutes to hours.

10.8 Correction to 12% Carbon Dioxide

$$M' = \frac{12.0M}{C_{CO_2}}$$

where:

- M' = Mass emissions, lb/hr at 12% CO₂
- C_{CO₂} = Percent carbon dioxide in stack gas (dry basis).

10.9 Auxiliary Fuel Correction Factor. If the test results are applied to Regulation 6-310.1 and if auxiliary fuel is used, a correction for the carbon dioxide shall be calculated as

$$M'' = \frac{0.12(Q_o + 1.04Q_g)M}{Q_o C_{CO_2} / 100 + 1.04Q_g}$$

where:

- Q_o = Dry stack flowrate, SDCFM
- Q_g = Natural gas flowrate, SCFM
- C_{CO₂} = Percent carbon dioxide in stack gas (dry basis)

10.10 Isokinetic Ratio. Calculate for each traverse point as:

$$R_i = \frac{T_{si} Q_{mi}}{60(100-H) A V_{si} T_{mi}}$$

where:

- R_i = isokinetic ratio at given point
- t_i = time, at point i, minutes
- A_i = nozzle area, ft²
- V_{si} = stack velocity, point i, FPS
- T_{mi} = meter temperature, point i, °R
- T_{si} = stack temperature, point i, °R
- Q_{mi} = metered volume, point i
- 60 = minutes/hour.

$$R = \frac{Q_{mi}}{60(100-H) A T_m V_{si} T_{si}}$$

11. Reporting

11.1 The data and information indicated in Fig. IV-55 shall be reported.

All joints 35/25, spherical ground

- I.D. as required

max. O.D. 1.74" (Select or grind to fit)

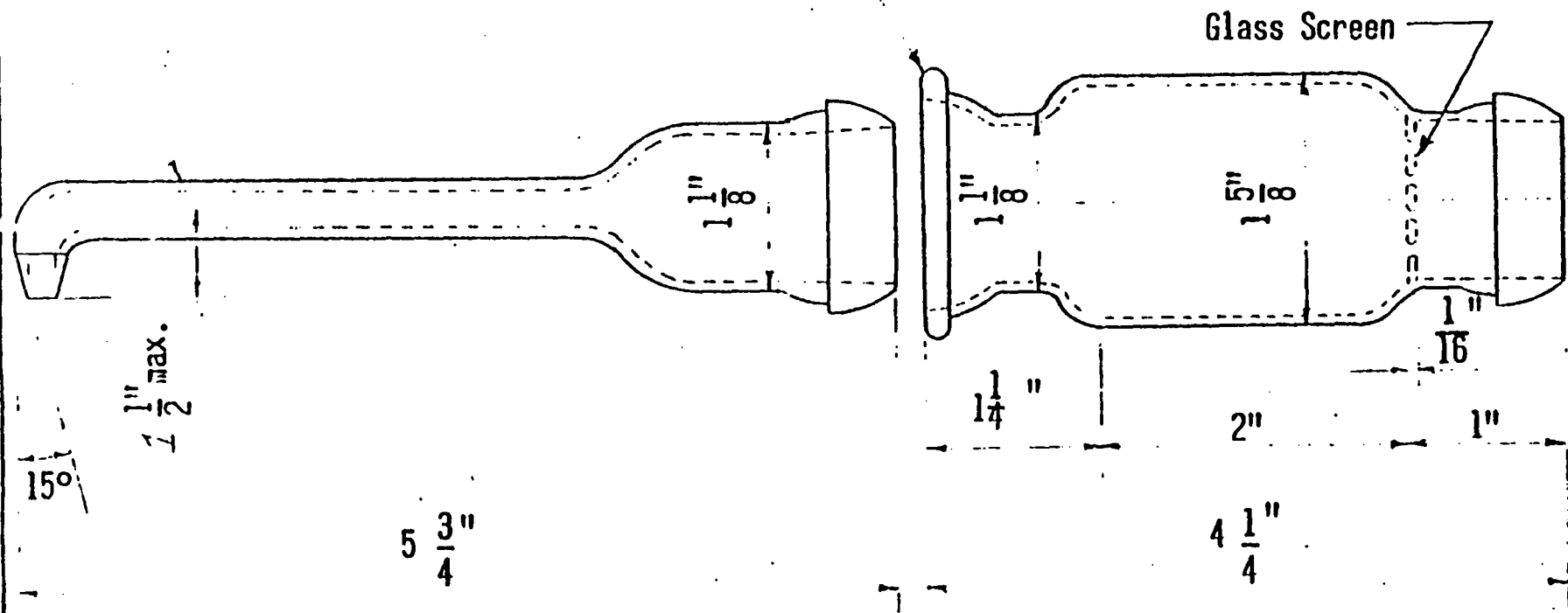


Fig. IV - 49

NOZZLE AND FILTER TUBE DETAILS

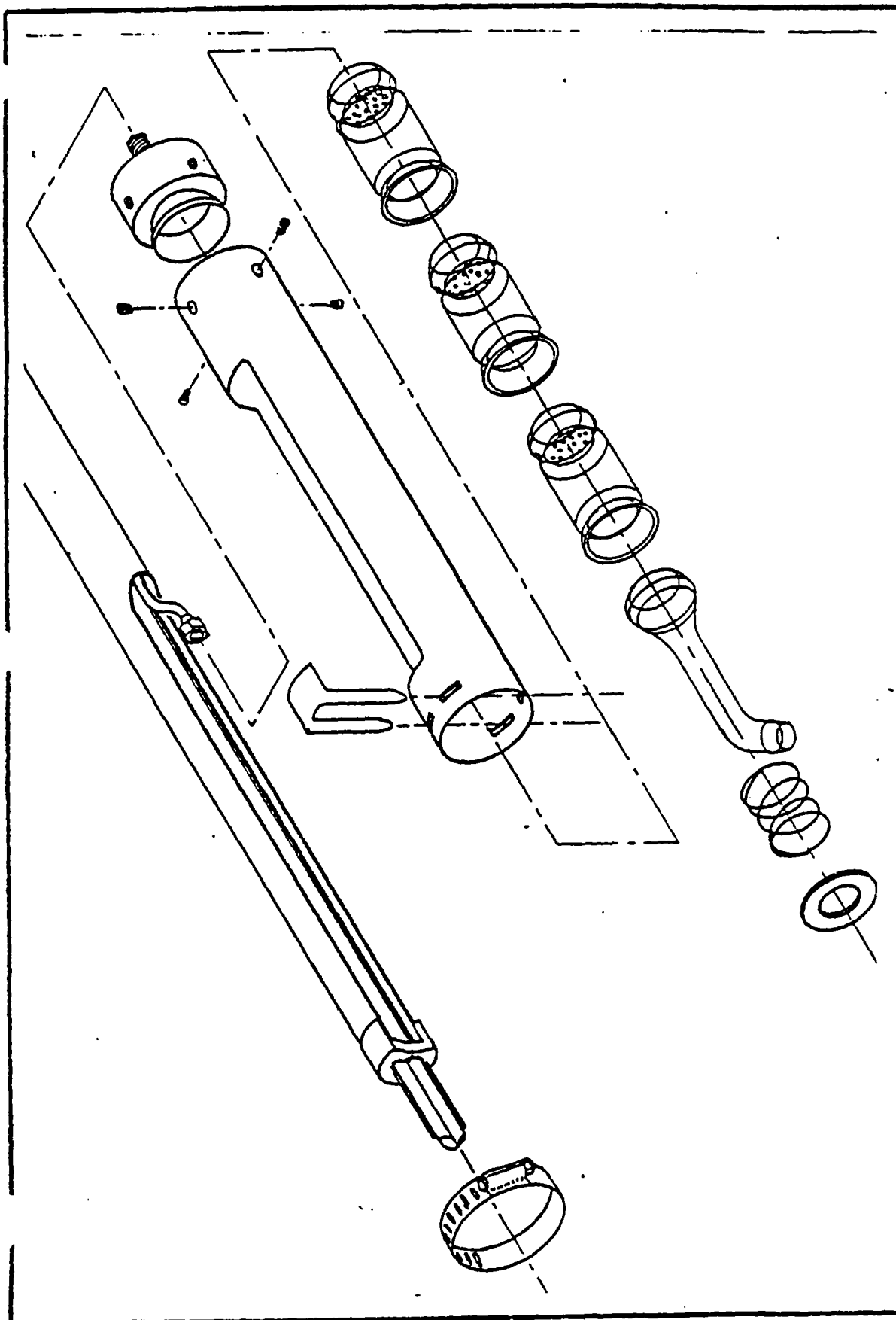


Fig. IV - 50

PROBEHOLDER ASSEMBLY

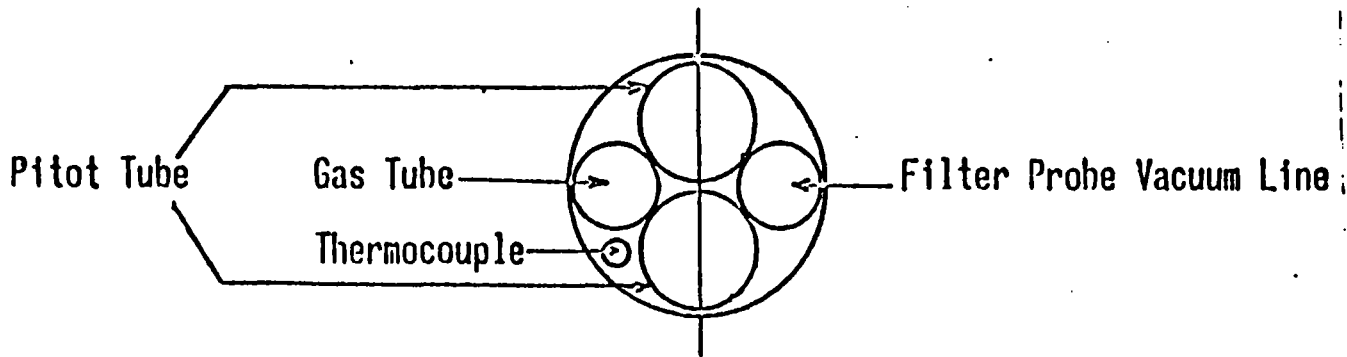
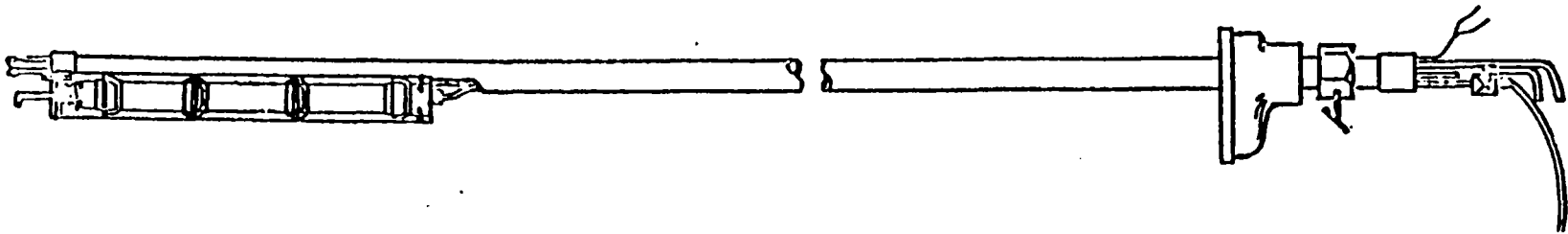


Fig. IV - 51

PROBE ENCASEMENT TUBE

SOURCE TEST LAB DATA SHEET

PLANT _____
SOURCE OPERATION _____
SOURCE TEST NO. _____
FILTER MEDIA _____

PAGE _____ OF _____
INITIAL _____
TEST DATE _____

DRYING PROCEDURE: 105°C for 24 hours before and after test, desiccated

STURBIES

NO.	TARE	PACKED WT			PARTICULATE

NOZZLES

NO.	TARE		PARTICULATE

IMPINGERS

SOLN.	NO.	a TARE WT	b FILLED WT	c FINAL WT	c-a SAMPLE WT	c-b COND

COMMENTS:

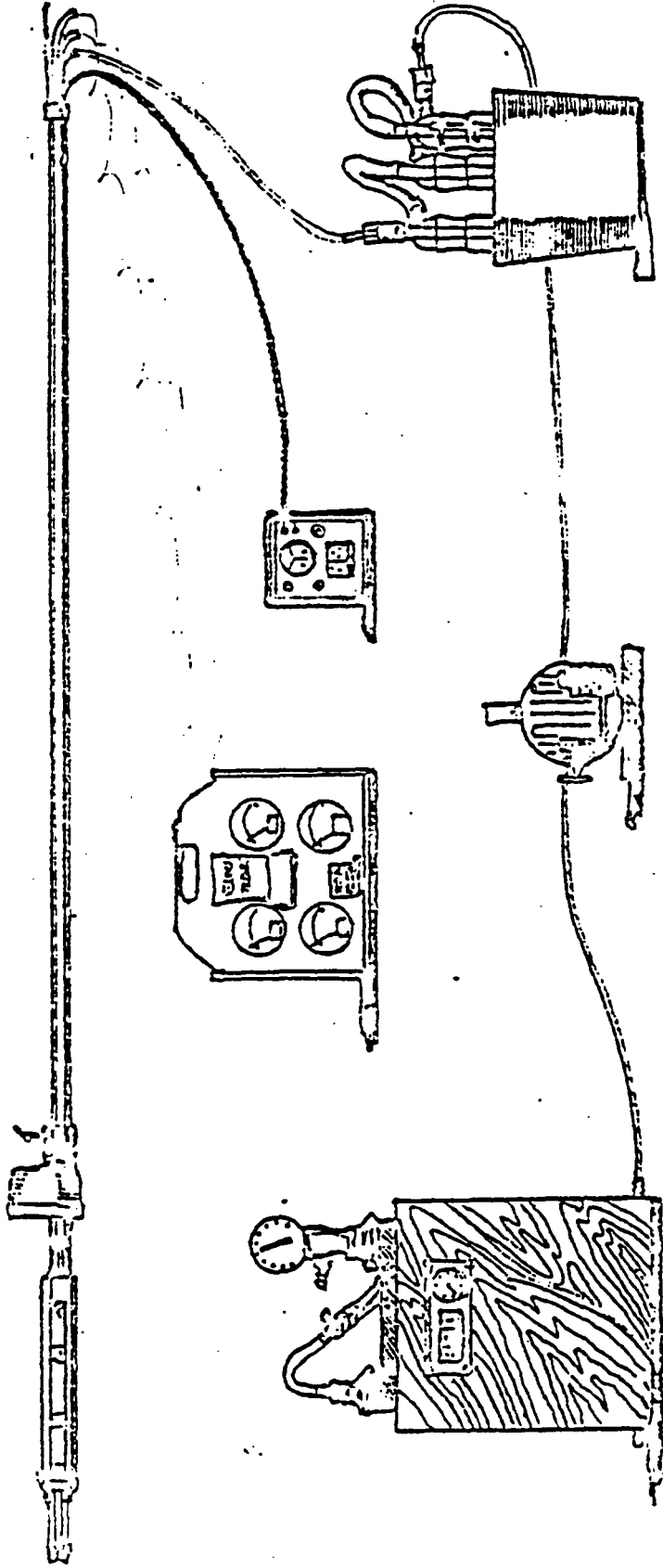


Fig. IV - 53

PARTICULATE SAMPLING TRAIN

SUMMARY OF SOURCE TEST RESULTS

SOURCE INFORMATION		
Firm Name and Address	Firm Representative and Title	
Conditions During Tests	Phone No. _____	
	Source: _____	
Operating Parameters	Operates hr/day & days/yr	
	Report No. _____	
		Test Date: _____
		Test Times:
		Run A: _____
		Run B: _____
		Run C: _____

Test Results and Comments

<u>METHOD</u>	<u>TEST</u>	<u>RUN A</u>	<u>RUN B</u>	<u>RUN C</u>	<u>AVG.</u>
	Run time, minutes				
	Stack gas temp., °F.				
ST-17	Stack flowrate, SDCFM				
ST-14	O ₂ conc., dry basis, %				
ST-5	CO ₂ conc., dry basis, %				
ST-6	CO conc., dry basis, %				
ST-23	H ₂ O conc, actual, %				
ST-15	Particulate, Gr/SDCF				
	Particulate, lbs/hr.				
	Isokinetic ration				

Source Test Procedure ST-16

PHENOLIC COMPOUNDS

REF: Reg. 7-303

1. Applicability

1.1 This method is used to quantify emissions of phenolic compounds as phenol. It is applicable to the determination of compliance with Regulation 7-303.

2. Principle

2.1 Sample gas is drawn through a solution of 0.1 normal (0.1N) sodium hydroxide which absorbs the phenolic compounds. The phenolic compounds are then analyzed by gas chromatography as specified in Analytical Procedure Lab-8.

3. Range and Sensitivity

3.1 The minimum measurable concentration of phenolic compounds is 200 ppb at the sample volume specified in this procedure.

3.2 Elevated concentrations of phenolic compounds may be determined by increasing the concentration of the absorbing reagent, sodium hydroxide solution. The concentration of reagent to be used may be determined by stoichiometry, allowing a 50% excess.

4. Interference

None. known.

5. Apparatus

5.1 probe. The probe is constructed of borosilicate glass tubing fitted with glass wool in the nozzle.

5.2 Absorbers. Use three Greenberg-Smith impingers. The third impinger has a thermometer attached to the inlet stem.

5.3 cooling system. An ice is used to contain the impingers.

5.4 sample pump. Use a leak-free vacuum pump capable of maintaining a 0.5 CFM flow rate at 15 inches of mercury-vacuum. The pump has a flow control valve and vacuum gauge attached to the inlet.

5.5 silica gel tube. Approximately 500cc of silica gel with a Drierite indicator are used to insure that the gas entering the dry gas meter is dry.

5.6 dry test meter. Use a J75 CFH dry gas test meter accurate

within $\pm 2\%$ of the true volume and equipped with a thermometer to measure the outlet temperature.

5.7 connections. Use Teflon tubing in making all connections that come in contact with the sample. Vinyl tubing is acceptable for all other connections.

5.8 barometer. Use a mercury, aneroid, or other barometer that is accurate to within ± 0.2 inches of mercury.

5.9 Rotameter. Use a calibrated Rotameter to measure the sampling rate.

6. Reagents

6.1 0.1N sodium hydroxide acid. Dissolve 4.0grams of NaOH in sufficient distilled water to make a 1.0 liter solution.

7. Pre-Test Procedures

7.1 Add 100 ml of the 0.1N NaOH solution to each of the two impingers.

7.2 Stopper the impingers.

7.3 Retain 100 ml of the solution to later analyze as a blank for phenol compounds.

7.4 Assemble the sampling train as shown in Figure IV-56. Record the equipment identification on the test data sheet.

7.5 Leak-test the sampling train by turning on the pump, plugging the probe, and adjusting the pump inlet vacuum to 10 inches Hg. The leak rate must not exceed 0.02 CFM through the dry test meter. Before turning off the pump, carefully release the plug in the sample probe to avoid backflow of the impinger solution.

7.5 Record the initial dry test meter reading and barometric pressure using IV-57.

8. Sampling

8.1 Sample at continuous operations for a period of thirty minutes for each test run. Sample at batch processes for a period of thirty minutes or 90% of the batch process time, whichever is less.

8.2 Position the probe at the sampling point and start the pump.

8.3 Sample at a constant rate of 14.3 liter/min (0.5 CFM) during the test as determined by the rotometer.

8.4 Record the following information at five-minute intervals:

dry test meter temperature
impinger outlet temperature
dry test meter volume
Rotometer flow.

8.5 Add ice as necessary to maintain impinger temperatures at 7°C (45°F) or less.

8.6 At the conclusion of each run, stop the pump, remove the probe from the stack, and record the final meter volume.

8.7 Take three consecutive samples.

9. Post-Test Procedures

9.1 Stopper the impingers until they are analyzed.

9.2 Individually analyze the sodium hydroxide solutions and blank for total content of phenolic compounds, as phenols, according to analytical procedure Lab 8.

10. Calculations

10.1 Standard sample volume:

$$V_o = \frac{17.71 V_m P_b}{T_m}$$

where:

V_o = corrected sample volume, SDCF at 70°F and 29.92 inches Hg.
 V_m = uncorrected meter volume, ft.³
 T_m = average run meter temperature, °R
 P_b = barometric pressure, inches Hg.
17.71 = a constant correcting to 70°F and 29.92 inches Hg.

10.2 phenolic compound, as phenol concentration:

$$C = \frac{9.07 \times 10^3 W}{V_o}$$

where:

C = phenolic compound, as phenol concentration, ppm by volume on a dry basis.
 W = total weight of phenolic compounds, as phenol in the impinger catch, for each run, grams.
 9.07×10^{-3} = constant derived from molar volume, 453.6 grams/l and molecular weight of phenol.

11. Reporting

11.1 Report the data indicated on Figure IV-58.

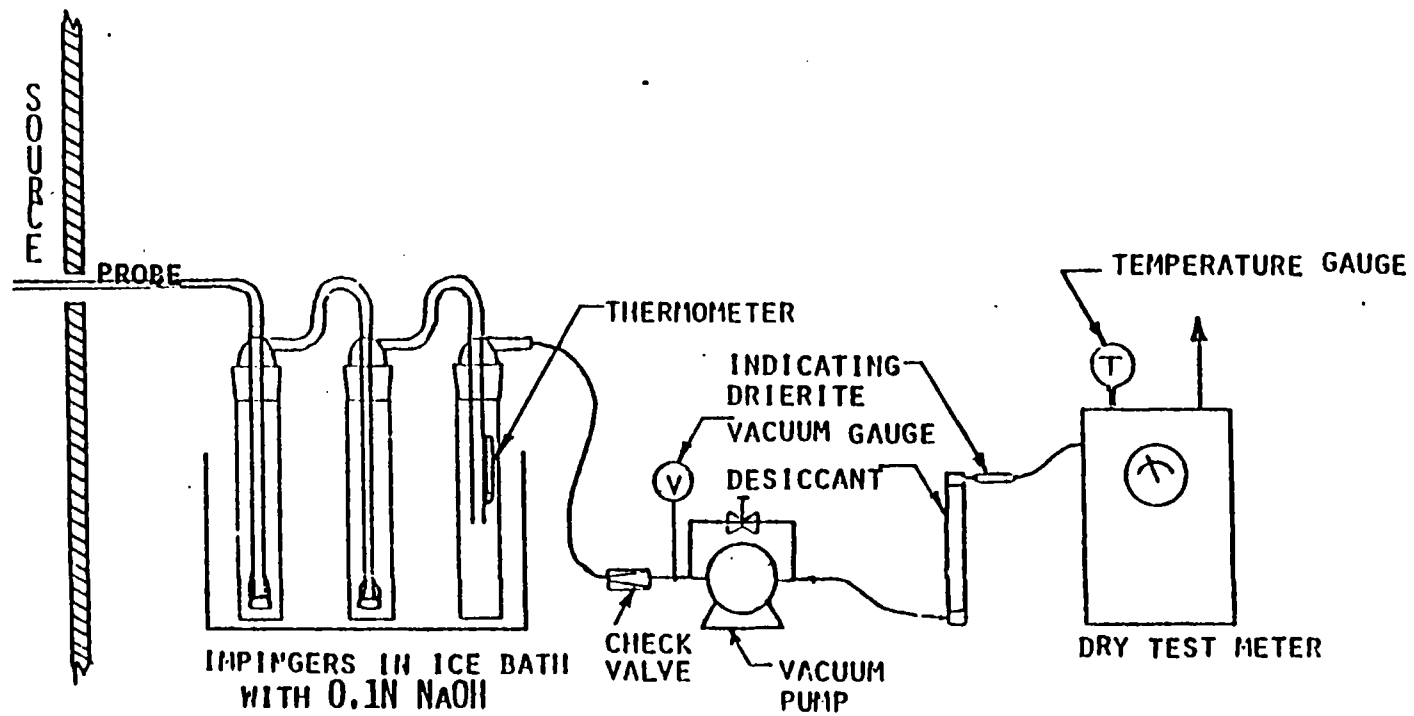


Fig. IV - 56

PHENOLIC COMPOUND SAMPLING TRAIN

BAY AREA AIR POLLUTION CONTROL DISTRICT

Source Test Data Sheet

Source Operation _____
 Plant _____
 Sample Type _____
 Process Cycle _____
 Duct Size _____
 Duct Pressure _____

Source Test No. _____
 Run No. _____
 Date: _____

_____ Nozzle Diameter
 _____ Pitot Tube
 _____ Gas Collector No.
 _____ Barometric Pressur
 _____ Leak Rate @ 15"Hg

Sampling Train: .

Traverse Point	Dist. From inches	INITIAL TRAVERSE			SAMPLING										REMARKS		
		Duct Temp ^o F	h H ₂ O	√h	Traverse Point	h H ₂ O	V _s FPS	Time	METER			Vac "Hg	Sat'd Gas Temp ^o F	T _g Duct Temp ^o F			
									Rate CFH	Temp ^o F	Volume Ft ³						

$$D_n = 13.7 \left[\frac{T_g + 460}{K_p V_s (100 - \%H_2O)} \right]^{1/2}$$

$$Q_m = \left[(2.638 \times 10^{-3}) K_p (100 - \%H_2O) D_{mm}^2 \right] \frac{V_s}{T_s}$$

Condensate _____ gm.
 V_o _____
 %H₂O _____
 %CO₂ _____
 %CO _____
 %O₂ _____

Source Test Team

SUMMARY OF SOURCE TEST RESULTS

SOURCE INFORMATION

Firm Name and Address

Firm Representative and Title

Phone No. _____

Source: _____

Conditions During Tests

Operates hr/day & days/yr

Operating Parameters

Report No.

Test Date:

Test Times:

Run A:

Run B:

Run C:

Test Results and Comments

<u>METHOD</u>	<u>TEST</u>	<u>RUN A</u>	<u>RUN B</u>	<u>RUN C</u>	<u>AVG.</u>
	Run time, minutes				
	Stack gas temp., °F.				
ST-16	Total phenols, as C ₆ H ₅ OH, ppm				

Source Test Procedure ST-17

STACK GAS VELOCITY AND VOLUMETRIC FLOW RATE

1. Applicability

1.1 This procedure is used to determine stack gas velocity and to quantify volumetric flow rate. It is applicable for use in determining compliance with any regulation of the BAAQMD wherein stack gas velocity or flow rate is required.

2. Principle

2.1 The stack gas velocity is determined by using a pitot tube to measure the velocity heads at pre-determined traverse points (ST-18) across the stack. The stack gas temperature, static pressure, and molecular weight and moisture content are also measured. The volumetric flow rate can then be determined from knowledge of the duct geometry. Velocity measurements should be made from a Type "A" sampling point whenever possible. If sampling facilities permit, velocity traverses are conducted from two ports which are in radii of 90°.

3. Range and Repeatability

3.1 The minimum measurable stack gas velocity is 8 feet per second. The maximum measurable velocity is limited only by available equipment.

3.2 The repeatability of the stack gas velocity method is $\pm 7\%$.

4. Interferences

4.1 Not applicable.

5. Apparatus

5.1 Pitot tube. Use a Stauscheibe (type S) or equivalent, with a known coefficient which is constant within $\pm 5\%$ over the entire working range. The pitot tube coefficient is determined by placing both the S-type and a standard pitot tube in a gas stream and measuring the pressure head with both over the entire velocity range of interest. The coefficient of the type-S pitot tube shall be calculated as:

$$C_{ps} = C_{pstd} \left[\frac{\Delta P_{std}}{\Delta P_s} \right]^{1/2}$$

where:

- C_{ps} = type S pitot tube coefficient
- ΔP_s = pressure head, type S
- ΔP_{std} = pressure head, standard
- C_{pstd} = standard pitot tube coefficient

5.2 Differential Pressure gauge. Use a Magnehelic differential pressure gauge, or equivalent, capable of measuring the velocity head with $\pm 5\%$ accuracy.

5.3 Temperature gauge. Use a Chromel-alumel thermocouple to measure stack temperature within $\pm 15^\circ$ of the stack absolute temperature (OF).

5.4 Barometer. Use a mercury, aneroid, or other capable of measuring atmospheric pressure to within ± 0.2 inches of mercury.

5.5 Connections. All flexible tubing connections must be leak free.

6. Pre-Test Procedures

6.1 Set up the apparatus.

6.2 The pitot tube shall be pressurized so as to create a reading on the differential pressure gauge and then blocked at both ports. The pressure should remain constant.

6.3 Determine the location of the traverse point according to ST-18.

6.4 Calculate the molecular weight of the gas stream. The following stack gas concentrations shall be measured by the procedures indicated. An orsat analysis as outlined in ST-24 may be substituted for ST-5, ST-6 and ST-14.

- % carbon dioxide, dry basis (ST-5)
- % carbon monoxide, dry basis (ST-6)
- % oxygen, dry basis (ST-14)
- % water vapor. (ST-23)

Record the stack gas composition on the test data sheet, Figure IV-59.

7. Test Procedures

7.1 The velocity head and the temperature at each traverse point is measured and recorded along with the point location on the source test data sheet.

7.2 Measure the static pressure in the stack and record on the data sheet.

8. Calculations

8.1 Average Molecular Weight

$$\overline{MW} = 0.44 (\%CO_2) + 0.32 (\%O_2) + 0.28 (\%N_2 + CO) + 0.18 (\%H_2O)$$

where: MW = average molecular weight
 %CO₂ = percent carbon dioxide by volume (dry basis)
 %O₂ = percent oxygen by volume (dry basis)
 %CO = percent carbon monoxide by volume (dry basis)
 %N₂ = percent nitrogen by volume (dry basis - determined by difference)

8.2 Stack Gas Velocity.

$$V_s = 85.49 C_{ps} \left[(\Delta P)^{1/2} \right]_{\text{avg}} \left[\frac{T_s}{(P_b + P_d) MW} \right]^{1/2}$$

where: V_s = average stack velocity, FPS
 C_{ps} = Pitot tube coefficient
 T_s = Stack gas temperature, °R
 P_b = Barometric pressure, inches Hg (absolute)
 P_d = Stack gas static pressure, inches Hg (absolute)
 85.49 = A constant derived from molecular weight standard conditions, and Bernoulli's equation.

$\left[(\Delta P)^{1/2} \right]_{\text{avg}}$ = Arithmetic average of square roots of the velocity heads in inches or water.

8.3 Stack gas Flowrate

$$Q_o = \frac{(10.6) V_s A (P_b + P_d) (100 - CH_2O)}{T_s}$$

where: Q_o = volumetric flowrate, SDCFM
 A = stack cross-sectional area, ft²
 CH₂O = % water vapor
 10.6 = A constant derived from correction to 70°F, 29.92 in Hg, and 60 sec/min.

9. Reporting

9.1 These values are determined as auxiliary data for other procedures and shall be reported with those test results.

Source Test Procedure ST-18

STACK TRAVERSE POINT DETERMINATION

1. Applicability

1.1 This procedure is used to determine the number and location of traverse points required when determining stack gas velocity or extracting a sample from a type "A" sample point.

2. Principle

2.1 Depending on the stack geometry, a cross-section of the stack perpendicular to the gas flow is divided into a specified number of equal areas. Each traverse point is then located at pre-determined points in each area.

3. Calculations

3.1 For circular ducts, the following guidelines for the number of traverse points shall be followed:

TABLE 18-1

<u>Duct Diameter, Inches</u>	<u>Number of Traverse Points</u>
D < 12	4
13 < D < 20	6
21 < D < 30	8
31 < D < 48	10
D > 48	12

3.2 For circular ducts, the following formula shall be used to determine the location of each traverse point:

$$r_i = \sqrt{\frac{(i - 0.5) \times R^2}{a}}$$

- where:
- r_i = distance to i th traverse point on radius from the center
 - i = i th traverse point on a radius
 - a = total number of traverse points on a radius
 - R = inside radius of the duct

3.3 For rectangular ducts, the following formula shall be used to determine the equivalent diameter of the stack:

$$\text{equivalent diameter} = \frac{2(\text{length})(\text{width})}{(\text{length}) + (\text{width})}$$

The number of traverse points is then determined from Table 18-1 using the equivalent diameter.

3.4 For rectangular ducts, divide the cross section into elemental areas such that the ratio of the length to width of the elemental areas is between one and two. Locate the traverse points at the centroid of each elemental area.

3.5 No traverse point shall be located within one inch of the stack wall.

SULFUR DIOXIDE, CONTINUOUS SAMPLING

REF: Regs. 9-1-302 10-1-301
 9-1-304 thru 310

1. Applicability

1.1 This method is used to quantify emissions of sulfur dioxide (SO₂). It determines compliance with Regulations 9-1-302, 9-1-304 thru 310 and 10-1-301.

1.2 The EPA has granted alternate status to EPA Method 6 for this method. It determines compliance with sulfur dioxide emissions covered under Regulation 7 (New Source Performance Standards).

2. Principle

2.1 A continuous representative gas sample is extracted from the sampling point and conditioned to remove water and particulate material. The sulfur dioxide concentration is determined by passing a small portion of the sample through an ultraviolet analyzer.

3. Range and Sensitivity

3.1 The minimum and maximum measurable concentrations of SO₂ depends on the sample cell length in the analyzer.

3.2 The minimum sensitivity of the UV analyzer shall be $\pm 2\%$ of full scale.

4. Interferences

4.1 Elemental sulfur, sulfur trioxide, and carbon disulfide will cause interferences.

5. Apparatus

5.1 Sulfur dioxide analyzer. Use an E.I. DuPont de Nemours and Co. Model 400 photometric analyzer or its equivalent.

5.2 Chart recorder. The recorder monitors and records the continuous output from the analyzer.

5.3 Sample conditioning, zero air, and span gas system. The assembly of this system is shown in Fig. IV-60. The sample conditioning system provides a dry, particulate free gas flow to the instrument. The zero air system provides clean dry atmospheric air for instrument calibration. The span gas system provides a known concentration of SO₂ for use in calibrating the analyzer. Except as specified, all materials, which come in contact with either the sample or span gasses must be constructed of Teflon or stainless steel.

5.4 Sample probe. Use a borosilicate glass tube of sufficient length to traverse the stack being tested. If the stack temperature exceeds 425C (800F), use a quartz probe. Other probes are acceptable with approval of Source Test

5.5 Condensers. Use modified Greenberg-Smith impingers with the impaction plates removed and the inlet tube shortened to a length of 10cm (4 inches), or equivalent.

5.6 Cooling system. Immerse the impingers in an ice bath during the test.

5.7 Particulate filter. Use a Balston type 95 holder with a grade B filter, or equivalent, in the sample system.

5.8 Pumps. Use leak-free, Teflon-lined, diaphragm pumps in the sample and zero air system. The pumps must have a capacity of at least 28 liters/min (1.0 CFM).

5.9 Back-pressure regulator. Use a back-pressure regulator to maintain the sample and zero gas sample pressures to the instrument at five psig.

5.10 Gas scrubber. Use a bed of silica gel, Ascarite (or soda-lime), and charcoal to remove moisture, carbon dioxide, and hydrocarbons from the zero air system.

5.11 Span gas. A high-pressure cylinder containing a known concentration of SO₂ in nitrogen. The span gas concentration must be in the same range as the source being tested.

6. Pre-Test Procedures

6.1 Warm-up the instrument according to manufacturer's instructions

6.2 Assemble the sampling system as shown in Figure IV-60.

6.3 Leak-test the sampling system by starting the pump, plugging the probe, and determining that the pressure to the analyzer falls to zero.

6.4 Introduce zero air into the analyzer and zero the instrument according to manufacturer's instructions

6.5 Introduce span gas into the analyzer and calibrate the instrument according to manufacturer's instructions.

6.6 Conduct a preliminary concentration traverse according to ST-18 to determine if stratification of the stack gases exists. If the SO₂ concentration at any point differs

from the average concentration by more than 10%, traverse the stack during the test. If not, sample at any single point.

6.7 Set-up the chart recorder according to manufacturer's recommendations.

7. Sampling

7.1 Each test run shall be of thirty minute duration when testing emissions from continuous operations. Each test run at batch process operations shall be for 90% of the batch time or thirty minutes, whichever is less.

7.2 Introduce sample gas into the analyzer at the same flow rate used to calibrate the analyzer.

7.3 Maintain ice in the cooling system throughout the test.

7.4 Calibrate the analyzer before and after each test run. Record each step of the calibration process clearly on the chart recording.

7.5 Conduct three test runs.

8. Auxiliary Tests

8.1 Stack flow rate. Use ST-17 to determine the stack gas flow rate after each test run.

8.2 Moisture content. Use ST-23 to determine the moisture content of the stack gases.

8.3 Production rate. Determine the sulfuric acid or sulfur production from plant data based on a 24 hour, daily production rate in tons per day, if the test is being conducted on a sulfur recovery unit or a sulfuric acid plant.

8.4 Oxygen concentration. Use ST-14 to determine the oxygen concentration of the stack gas.

9. Calculations

9.1 From the chart recording determine the time-averaged concentration of SO₂ on a dry basis for each run.

9.2 Mass emission rate of SO₂: $M_{SO_2} = KC_{SO_2}Q_0$

where: M_{SO_2} = mass emission rate of SO₂ Kg/hr (lb/hr)
 C_{SO_2} = concentration of SO₂, dry basis, ppm
 Q_0 = stack gas flow rate, $\frac{SDM^3}{min}$ ($\frac{SDFT^3}{min}$)

$K = (9.93 \times 10^{-6}) \frac{LB}{(ppm)Ft^3Hr.}$ for English units

$= (1.59 \times 10^{-4}) \frac{Kg}{ppm M^3 hr}$ for metric units

9.3 Mass emissions based on production rate:

$$M_{tp} = \frac{MSO_2}{M_d}$$

where:

$$M_{tp} = \text{Mass emissions per ton of product, } \frac{\text{Kg}}{\text{metric ton}} \left(\frac{\text{lbs}}{\text{short ton}} \right)$$

$$MSO_2 = \text{Mass emission rate of } SO_2, \frac{\text{Kg}}{\text{hr.}} \left(\frac{\text{lbs}}{\text{hr.}} \right)$$

M_d = Production rate per hour. (based on up to 48 hour average.)

9.4 Oxygen Correction factor:

$$F = \frac{21.95 - X_{O_2}}{21.95 \times P_{O_2}}$$

where:

- F = Oxygen correction factor
- X_{O_2} = Oxygen concentration to be corrected to; 0% for Sulfur Recovery plants and 12% for Sulfuric Acid Plants.
- P_{O_2} = Oxygen content present in stack gas.

9.5 SO_2 concentration corrected for oxygen content.

$$C_{SO_2F} = F \times C_{SO_2}$$

where:

C_{SO_2F} = SO_2 concentration corrected for oxygen content.

10. Reporting

10.1 The results of each test is reported as shown in Figure IV-61.

NOTE: SPAN-GAS SYSTEM NOT APPLICABLE TO ST-14

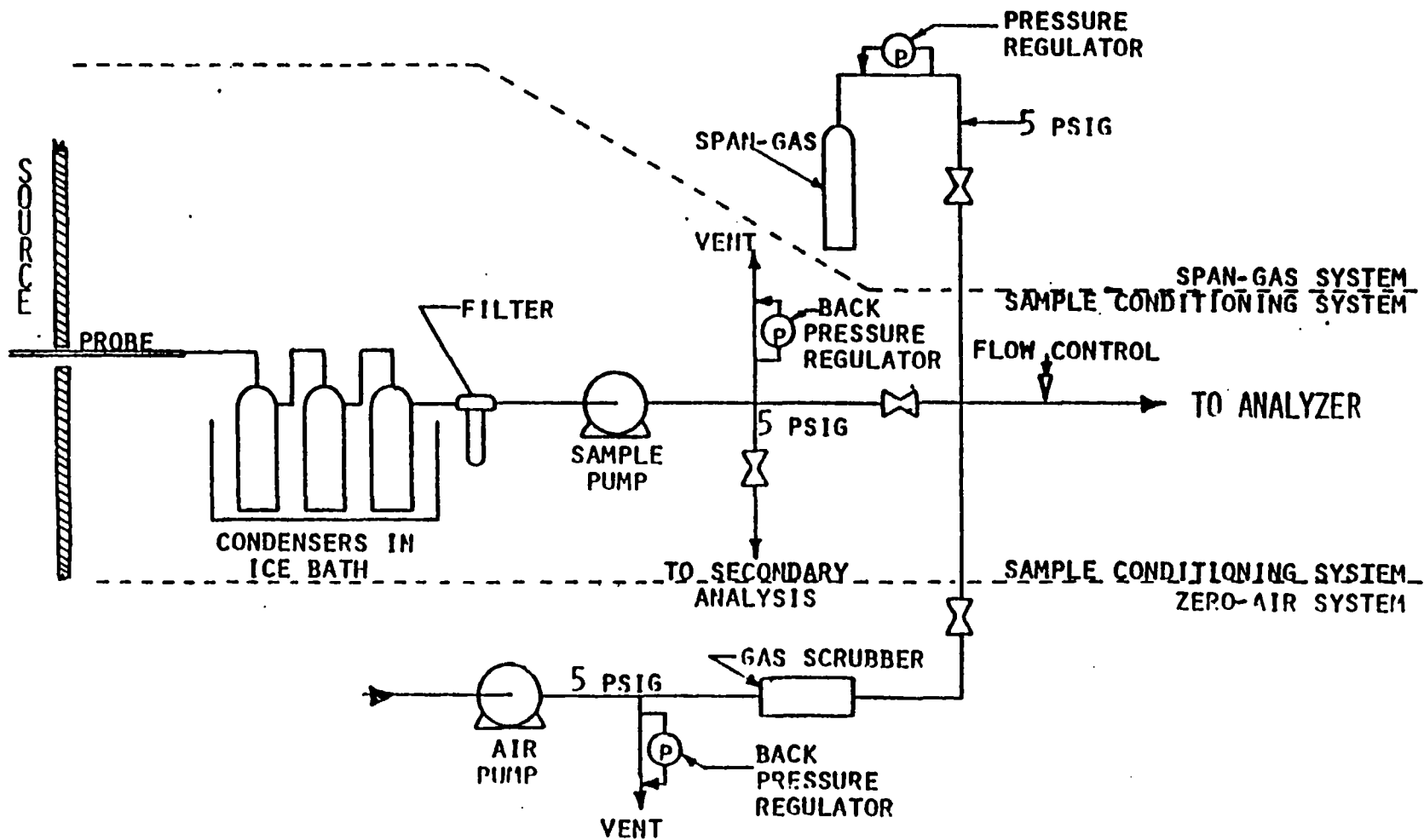


Fig. IV - 60

SAMPLE CONDITIONING, ZERO-AIR AND SPAN-GAS SYSTEMS

SUMMARY OF SOURCE TEST RESULTS

SOURCE INFORMATION		
Firm Name and Address	Firm Representative and Title	Report No. _____ Test Date: _____ Test Times: Run A: _____ Run B: _____ Run C: _____
Conditions During Tests	Phone No. _____ Source: _____	
Operating Parameters	Operates hr/day & days/yr	

Test Results and Comments

<u>METHOD</u>	<u>TEST</u>	<u>RUN A</u>	<u>RUN B</u>	<u>RUN C</u>	<u>AVG.</u>
	Run time, minutes				
	Stack gas temp., °F.				
ST-17	Stack flowrate, SDCFM				
ST-14	O ₂ conc., dry basis, %				
ST-5	CO ₂ conc., dry basis, %				
ST-6	CO conc., dry basis, %				
ST-23	H ₂ O conc., real basis, %				
ST-19A	Sulfur Dioxide, ppm				
	Sulfur Dioxide, lb/hr.				
	SO ₂ , lbs/ton product				

Source Test Procedure ST-19B

TOTAL SULFUR OXIDES INTEGRATED SAMPLE

REF: Regs. 9-1-302 10-1-301
9-1-304 thru 310

1. Applicability

1.1 This method is used to quantify emissions of total sulfur oxides. It determines compliance with Regulation 9-1-302, 9-1-304 thru 310 and 10-1-301, it is an acceptable alternate method to ST-19A.

2. Principle

2.1 Sample gas is drawn through 3% hydrogen peroxide solution which absorbs the sulfur oxides. The peroxide solution is then analyzed according to Analytical Procedure Lab-11.

3. Range

3.1 The minimum measurable concentration of sulfur oxides is 7ppm at the sample volume specified in this procedure.

3.2 The maximum measurable concentration of sulfur oxides is 2.5%.

4. Interference

4.1 The presence of strong acids, such as hydrochloric acid or sodium bisulfite give erroneously high results. The presence of alkaline gases or reactive basic solids, such as ammonia or calcium oxide give erroneously low results.

5. Apparatus

5.1 Probe. The probe is constructed of borosilicate glass tubing.

5.2 Absorbers. Use three Greenberg-Smith impingers. The final impinger has a thermometer attached to the inlet stem.

5.3 Filter. Use a glass filter tube of the same type as is used in ST-15.

5.4 Cooling system. An ice bath is used to contain the impingers.

5.5 Sample pump. Use a leak-free vacuum pump capable of maintaining a 0.5 CFM flow rate at 15 inches of mercury. The pump must have a flow control valve and vacuum gauge attached to the inlet.

5.6 Silica gel tube. Use approximately 500cc of silica gel (with a Drierite indicator) to insure that the gas entering the dry test meter is dry.

5.7 Dry test meter. Use a dry test meter accurate within $\pm 2\%$ of the true volume and equipped with a thermometer to measure the outlet temperature.

5.8 Connections. Use Teflon tubing in making all connections that come in contact with the sample. Vinyl tubing is acceptable for all other connections.

5.9 Barometer. Use a barometer that is accurate to within ± 0.2 inches of mercury.

5.10 Rotameter. Use a calibrated rotameter to measure the sampling rate.

6. Reagents

6.1 Hydrogen peroxide solution, 3%. Prepare a solution of 3%, by volume, hydrogen peroxide in distilled water.

7. Pre-Test Procedures

7.1 Add 100 ml of 3% H_2O_2 to each of two impingers.

7.2 Stopper the impingers.

7.3 Retain 100 ml of the hydrogen peroxide solution to analyze as a blank.

7.4 Assemble the sampling train as shown in Figure IV-62.

7.5 Leak-test the sampling train by starting the pump, plugging the probe, and adjusting the pump inlet vacuum to 10 inches Hg. The leak rate must not exceed 0.02 CFM through the dry test meter. Before stopping the pump, carefully release the plug in the sample probe to avoid backflow of the impinger solution.

7.6 Record the initial dry test meter reading and barometric pressure as shown in Figure IV-63.

8. Sampling

8.1 Each test run shall be of thirty minute duration when testing emissions from continuous operations. Each test run at batch process operations shall be for 90% of the batch time or thirty minutes, whichever is less.

8.2 Position the probe at the sampling point and start the pump.

8.3 Sample at a constant rate of 14.3 liter/min (0.5 CFM) during the test as determined by the rotameter. Use the rotameter only to establish the initial sampling rate. Then remove it from the system.

8.4 Record the following information at five-minute intervals:

dry test meter temperature
impinger outlet temperature
dry test meter reading

8.5 Add ice as necessary to maintain impinger temperatures at 7°C or less.

8.6 At the conclusion of each run, stop the pump, remove the probe from the stack, and record the final meter reading.

8.7 Take three consecutive samples.

9. Post-Test Procedures

9.1 Immediately after each test run, stopper the impingers to minimize sample losses.

9.2 Individually analyze the hydrogen peroxide solutions for total sulfur oxide content according to analytical procedure Lab 11.

10. Auxiliary Tests

10.1 Stack flowrate. Determine the stack gas flowrate after each test run in accordance with ST-17.

10.2 Moisture. Determine the stack gas moisture content in accordance with ST-23.

10.3 Production rate. Determine the sulfuric acid or sulfur production from plant data based on a 24 hour, daily production rate in tons per day, if the test is being conducted on a sulfur recovery unit or a sulfuric acid plant.

10.4 Oxygen concentration. Use ST-14 to determine the oxygen concentration of the stack gas.

11. Calculations

11.1 Standard sample volume:

$$V_o = \frac{17.71 V_m P_b}{T_m}$$

where: V_o = corrected sample volume, SDCF at 70°F and 29.92 inches Hg.
 V_m = uncorrected meter volume, ft³
 T_m = average run meter temperature, °R
 P_b = barometric pressure, inches Hg.
17.71 = a constant correcting to 70F and 29.92 inches Hg.

11.2 Sulfur oxide concentration:

$$C_{SO} = \frac{1.33 \times 10^4 W}{V_0}$$

where: C_{SO} = sulfur oxides concentration, as SO_2 ppm by volume on a dry basis.
 W = total weight of sulfur oxides in the impinger catch, for each run, grams
 1.33 = constant derived from molar volume, 454 grams/lb, and molecular weight of SO_2 .

11.3 Mass emission rate of SO_x :

$$M_{SO_x} = K D_{SO_x} Q_0$$

where: M_{SO_x} = mass emission rate of SO_x (as SO_2) kg/hr (lb/hr.)
 Q_0 = stack gas flow rate $\frac{SDM^3}{min}$ ($\frac{SDFT^3}{min}$)
 K = $9.93 \times 10^{-6} \frac{lb}{ppm-ft^3-hr}$ for English units.
 = $1.59 \times 10^{-4} \frac{kg}{ppm-m^3-hr}$ for SI units.

11.4 Mass emissions based on production rate:

$$M_{tp} = \frac{M_{SO_2}}{M_d}$$

where:

M_{tp} = mass emissions per ton of product, $\frac{Kg}{metric\ ton}$ ($\frac{lbs}{short\ ton}$)
 M_{SO_2} = mass emission rate of SO_2 , $\frac{kg}{hr.}$ ($\frac{lbs.}{hr.}$)
 M_d = production rate per hour. (based on a 48 hour average).

11.5 Oxygen Correction factor:

$$F = \frac{21.95 \times X_{O_2}}{21.95 \times P_{O_2}}$$

where:
 F = oxygen correction factor
 X_{O_2} = Oxygen concentration to be corrected to 0% for Sulfur Recovery plants and 12% for Sulfuric Acid plants.
 P_{O_2} = Oxygen content present in stack gas.

11.6 SO_2 concentration corrected for oxygen content.

$C_{SO_2}^F = F \times C_{SO_2}$ where:
 $C_{SO_2}^F$ = SO_2 concentration corrected for oxygen content.

12. Reporting

12.1 Report the data indicated on Figure IV-64.

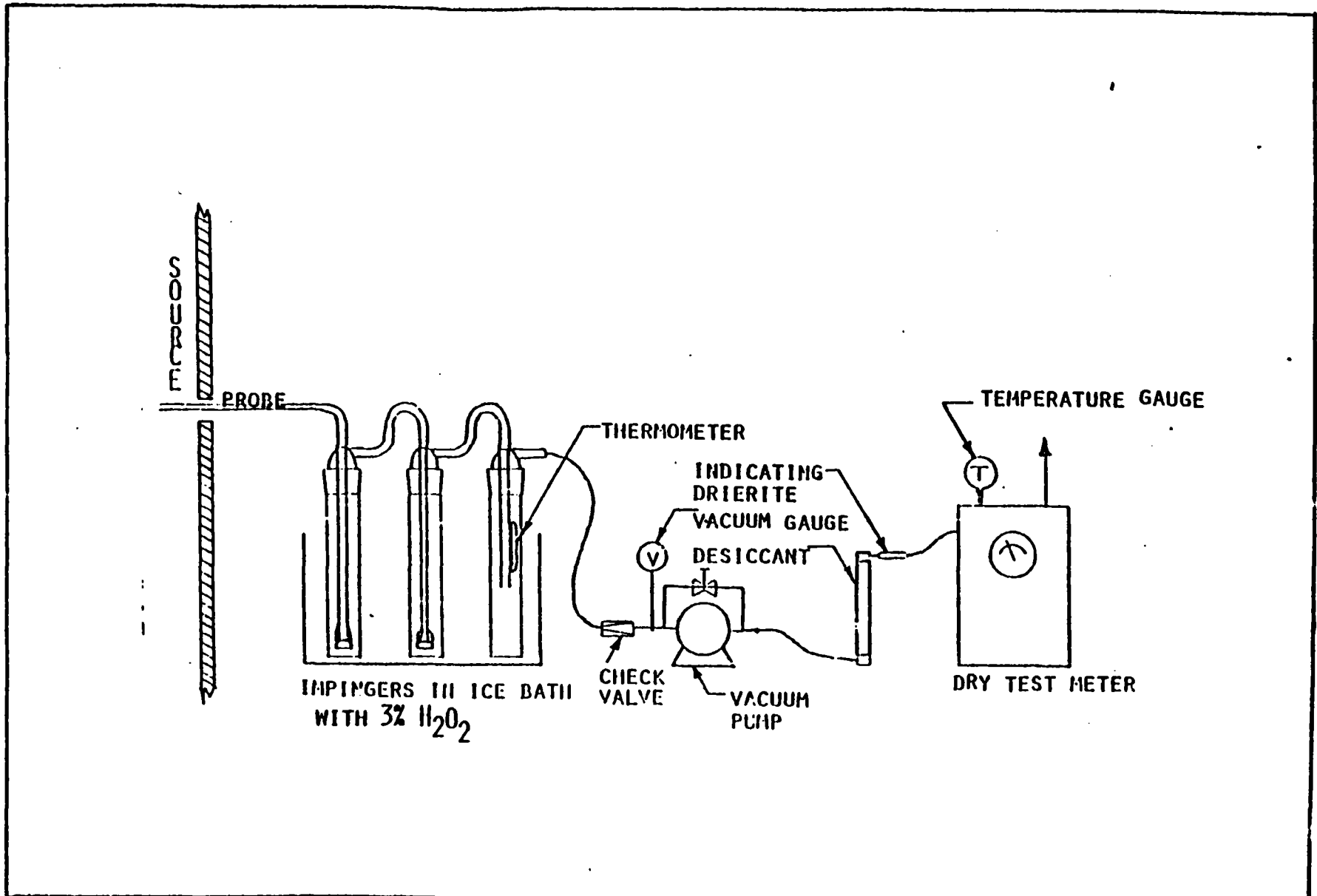


Fig. IV - 62

SULFUR DIOXIDE SAMPLING TRAIN

SUMMARY OF SOURCE TEST RESULTS

SOURCE INFORMATION		
Firm Name and Address	Firm Representative and Title	Report No. Test Date: Test Times: Run A: Run B: Run C:
Conditions During Tests	Phone No. Source:	
Operating Parameters	Operates hr/day & days/yr	

Test Results and Comments

<u>METHOD</u>	<u>TEST</u>	<u>RUN A</u>	<u>RUN B</u>	<u>RUN C</u>	<u>AVG.</u>
	Run time, minutes				
	Stack gas Temp., °G				
ST-17	Stack flowrate, SDCFM				
ST-19B	Sulfur Dioxide, ppm				
	Sulfur Dioxide, lb/hr				
	SO ₂ , lbs/ton product				

SOURCE TEST PROCEDURE ST-20

SULFUR DIOXIDE, SULFUR TRIOXIDE, SULFURIC ACID MIST

REF: Regs. 6-320, 6-330,
9-1-302, 9-1-304 thru 310
10-1-301, 12-6-301

1. Applicability

1.1 This method is used to quantify emissions of sulfur dioxide, sulfur trioxide and sulfuric acid mist. It determines compliance with Regulations 6-320 and 6-330 for SULFUR TRIOXIDE and SULFURIC ACID MIST, and 9-1-302, 9-1-304 thru 310 and 10-1-301 and 12-6-301 for SULFUR DIOXIDE.

1.2 This method, modified with a glass fiber disc filter as the back-up SO₃ filter, has been given alternate status by the EPA to EPA Method 8. It may be used to determine compliance with oxides of sulfur regulations under Regulation 9.

2. Principle

2.1 Sulfuric acid mist, sulfur trioxide and sulfur dioxide are collected in a single extractive sampling train. Acid mist is trapped in a quartz wool plug in the sample probe and is subsequently analyzed with an acid-base titration. Sulfur trioxide is absorbed in an 80% isopropyl alcohol (IPA)/water solution with a quartz wool back-up filter and is analyzed using analytical procedure LAB 12. Sulfur dioxide is absorbed in a aqueous hydrogen peroxide solution and is analyzed using analytical procedure LAB 12.

3. Range

3.1 The minimum measurable concentrations using this method listed below are:

- 3.1.1 Acid mist - .0002 gr/ft³ as H₂SO₄
- 3.1.2 Sulfur trioxide - 7ppm
- 3.1.3 Sulfur dioxide - 7ppm

3.2 The maximum measurable concentrations using this method listed below are:

- 3.2.1 Acid mist - undetermined
- 3.2.2 Sulfur trioxide - 350ppm
- 3.2.3 Sulfur dioxide - 2.5%

4. Interferences

4.1 Acid mist and sulfur dioxide. The presence of strong acids or salts such as hydrochloric acid or sodium bisulfite give erroneously high results. The presence of alkaline gases or reactive basic solids such as ammonia or calcium oxide give erroneously low results.

4.2 Sulfur Trioxide. Sulfur dioxide at 2000 ppm or over may oxidize to sulfur trioxide in the IPA/H₂O solution. For this reason, two IPA/H₂O impingers are used in series. The sample concentration of SO₃ as indicated by the second impinger is regarded as a blank analysis and is subtracted from the analysis of the first impinger.

5. Apparatus

5.1 Probe. Use a borosilicate glass probe long enough to extend across the stack diameter. If stack temperatures exceed 800°F, use a quartz probe. The probe entrance shall be enlarged to approximately 20mm I.D. for a length of 10cm. The downstream end should be fitted with a 90° elbow and a ball joint. The probe shall be heat-traced and insulated if necessary to prevent sample condensation.

5.2 Acid mist filter. Insert approximately 3 grams of quartz wool in the probe entrance.

5.3 Absorbers. Use four Greenberg-Smith impingers, one with the inlet fitted with a ball joint to receive the probe.

5.4 Filter. Approximately 10 grams of quartz or quartz wool are packed into a glass holder of the same specifications as the filter holders used in ST-15.

5.5 Cooling system. An ice bath is used to contain the impingers.

5.6 Sample pump. Use a leak-free vacuum pump capable of maintaining a 0.5 CFM flow rate at 15 inches of mercury-vacuum. The pump has a flow control valve and vacuum gauge attached to the inlet.

5.7 Silica gel tube. Use approximately 500cc of silica gel (with a Drierite indicator) to insure that the gas entering the dry test meter is dry.

5.8 Dry test meter. Use a dry gas test meter accurate within ±2% of the true volume and equipped with a thermometer to measure the outlet temperature.

5.9 Connections. Use Teflon tubing in making all connections that come in contact with the sample. Vinyl tubing is acceptable for all other connections.

5.10 Barometer. Use a barometer that is accurate to within ±0.2 inches of mercury.

5.11 Rotameter. Use a calibrated rotameter to measure the sampling rate.

6. Reagents

6.1 Isopropanol, 80%. Prepare an 80% by volume solution of isopropanol (IPA) in distilled water. Check the solution for contamination using Analytical Procedure Lab-10.

6.2 Hydrogen peroxide, 3%. Prepare a 3% by volume solution of hydrogen peroxide in distilled water.

7. Pre-Test Procedures

7.1 Add 100 ml of the 80% IPA to each of the impingers.

7.2 Add 100 ml of the hydrogen peroxide solution to each of the two impingers.

7.3 Stopper the impingers.

7.4 Retain 100 ml of each solution to analyze as a blank.

7.5 Assemble the sampling train as shown in Figure IV-65.

7.6 If condensation is expected, heat trace the sample line.

7.7 Leak-test the sampling train by starting the pump, plugging the probe, and adjusting the pump inlet vacuum to 10 inches Hg. The leak rate must not exceed 0.02 CFM through the dry test meter. Before stopping the pump, carefully release the plug in the sample probe to avoid backflow of the impinger solution.

7.8. Record the initial dry test meter reading and barometric pressure on a data sheet as shown in Figure IV-66.

8. Sampling

8.1 Sample at continuous operations for a period of thirty minutes for each test run. Sample at batch processes for a period of thirty minutes or 90% of batch process time, whichever is less.

8.2 Position the probe at the sampling point and start the pump.

8.3 Sample at a constant rate of 14.3 liter/min (0.5 CFM) during the test as determined by the rotameter.

8.4 Record the following information at five-minute intervals:

dry test meter temperature
impinger outlet temperature
dry test meter reading

8.5 Check the sample probe periodically for condensate. If condensation occurs, stop the test until the problem is rectified.

8.6 Add ice as necessary to maintain the temperature exiting the last impinger at 7°C(45°F) or less.

8.7 At the conclusion of each run, stop the pump, remove the probe from the stack, and record the final meter volume.

8.8 Take three consecutive samples.

9. Post-Test Procedures

9.1 Immediately after sampling, purge the impinger train with ten cubic feet of SO₂-free ambient air at a rate of 0.5 CFM.

9.2 Keep the two IPA solutions on ice and stoppered until they are analyzed.

9.3 Analyze the IPA solution within 24 hours after sampling.

9.4 Individually analyze each train for acid mist, sulfur trioxide, and sulfur dioxide using Analytical Procedure Lab-12.

10. Auxiliary Tests

10.1 Stack velocity. Determine the stack gas velocity after each run in accordance with ST-17.

10.2 Moisture content. Determine the moisture in the stack gases in accordance with ST-23.

10.3 Production rate. Determine the sulfuric acid or sulfur production from plant data based on a 24 hour, daily production rate in tons per day, if the test is being conducted on a sulfur recovery acid plant.

10.4 Oxygen concentration. Use ST-14 to determine the oxygen concentration of the stack gas.

11. Calculations

11.1 The standard sample volume:

$$V_o = \frac{17.71 V_m P_b}{T_m}$$

where:

V_o = corrected sample volume, SDCF @70°F and 29.92 inches Hg
 V_m = sample volume as recorded by dry test meter, SCF
 T_m = average meter temperature, °R
 P_b = barometric pressure, inches Hg.
17.71 = a constant correcting to 70°F and 29.92 inches Hg.

11.2 Acid mist concentration:

$$C_{H_2SO_4} = \frac{15.4W}{V_0}$$

where:

$C_{H_2SO_4}$ = concentration of acid mist, grains/SDCF

W = weight of acid on the probe filter, grams.

15.4 = correction from grams to grains

11.3 Sulfur trioxide concentration, as sulfuric acid:

$$C_{SO_3} \text{ (Impinger \#1)} = \frac{15.4W_1}{V_0}$$

$$C_{SO_3} \text{ (Impinger \#2)} = \frac{15.4 W_2}{V_0}$$

$$C_{SO_3} \text{ (filter)} = \frac{15.4 W_F}{V_0}$$

where:

W_1 = weight of SO_3 (as H_2SO_4) in Impinger #1.

W_2 = weight of SO_3 (as H_2SO_4) in Impinger #2

W_F = weight of SO_3 (as H_2SO_4) in the filter.

11.4 Total sulfur trioxide content of the sample:

$$C_{SO_3} = C_{SO_3} \text{ (Impinger \#1)} - C_{SO_3} \text{ (Impinger \#2)} + C_{SO_3} \text{ (filter)}$$

where:

C_{SO_3} = concentration of SO_3 , as H_2SO_4 , grains/SDCF.

11.5 Total of acid mist and sulfur trioxide concentration:

$$C_{H_2SO_4} \text{ (total)} = C_{H_2SO_4} + C_{SO_3}$$

11.6 The concentration of sulfur dioxide:

$$C_{SO_2} = \frac{1.33 \times 10^4 W}{V_0}$$

where:

C_{SO_2} = concentration of SO_2 , ppm (dry)

W^{SO_2} = total Impinger catch of SO_2 for each run, grams.

1.33×10^4 = a constant derived from the molar volume and molecular weight of SO_2

11.7 The total sample concentration of sulfur dioxide:

$$C_{SO_2} = C_{SO_2} (\text{impingers\#3}) + C_{SO_2} (\text{impinger \#4})$$

11.8 Mass emission rate of SO₂:

$$M_{SO_2} = KC_{SO_2} Q_0 \quad \text{where:}$$

$$M_{SO_2} = \text{mass emission rate of SO}_2 \text{ kg/hr (lb/hr)}$$

$$Q_0 = \text{stack gas flow rate SDM}^3/\text{min (SDFT}^3/\text{min)}$$

$$K^o = 9.92 \times 10^{-6} \frac{\text{lb}}{\text{ppm-ft}^3\text{-hr}} \quad \text{for English units.}$$

$$= 1.59 \times 10^{-4} \frac{\text{kg}}{\text{ppm-M}^3\text{-hr}} \quad \text{for SL units.}$$

11.9 Mass emissions based on production rate:

$$M_{tp} = \frac{M_{SO_2}}{M_d} \quad \text{where:}$$

$$M_{tp} = \text{mass emissions per ton of product, } \frac{\text{Kg}}{\text{metric ton}} \left(\frac{\text{lbs}}{\text{short ton}} \right)$$

$$M_{SO_2} = \text{mass emission rate of SO}_2, \frac{\text{Kg}}{\text{hr.}} \left(\frac{\text{lbs}}{\text{hr.}} \right)$$

$$M_d = \text{Production rate per hour. (based on up to 48 hour average.)}$$

11.10 Oxygen Correction factor:

$$F = \frac{21.95 - X_{O_2}}{21.95 \times P_{O_2}} \quad \text{where:}$$

$$F = \text{Oxygen correction factor}$$

$$X_{O_2} = \text{Oxygen concentration to be corrected to 0\% for Sulfur Recovery plants and 12\% for Sulfuric Acid Plants.}$$

$$P_{O_2} = \text{Oxygen content present in stack gas.}$$

11.11 SO₂ concentration corrected for oxygen content.

$$C_{SO_2}^F = F \times C_{SO_2} \quad \text{where:}$$

$$C_{SO_2}^F = \text{SO}_2 \text{ concentration corrected for oxygen content.}$$

12. Reporting

12.1 Report the data indicated in Figure IV-67.

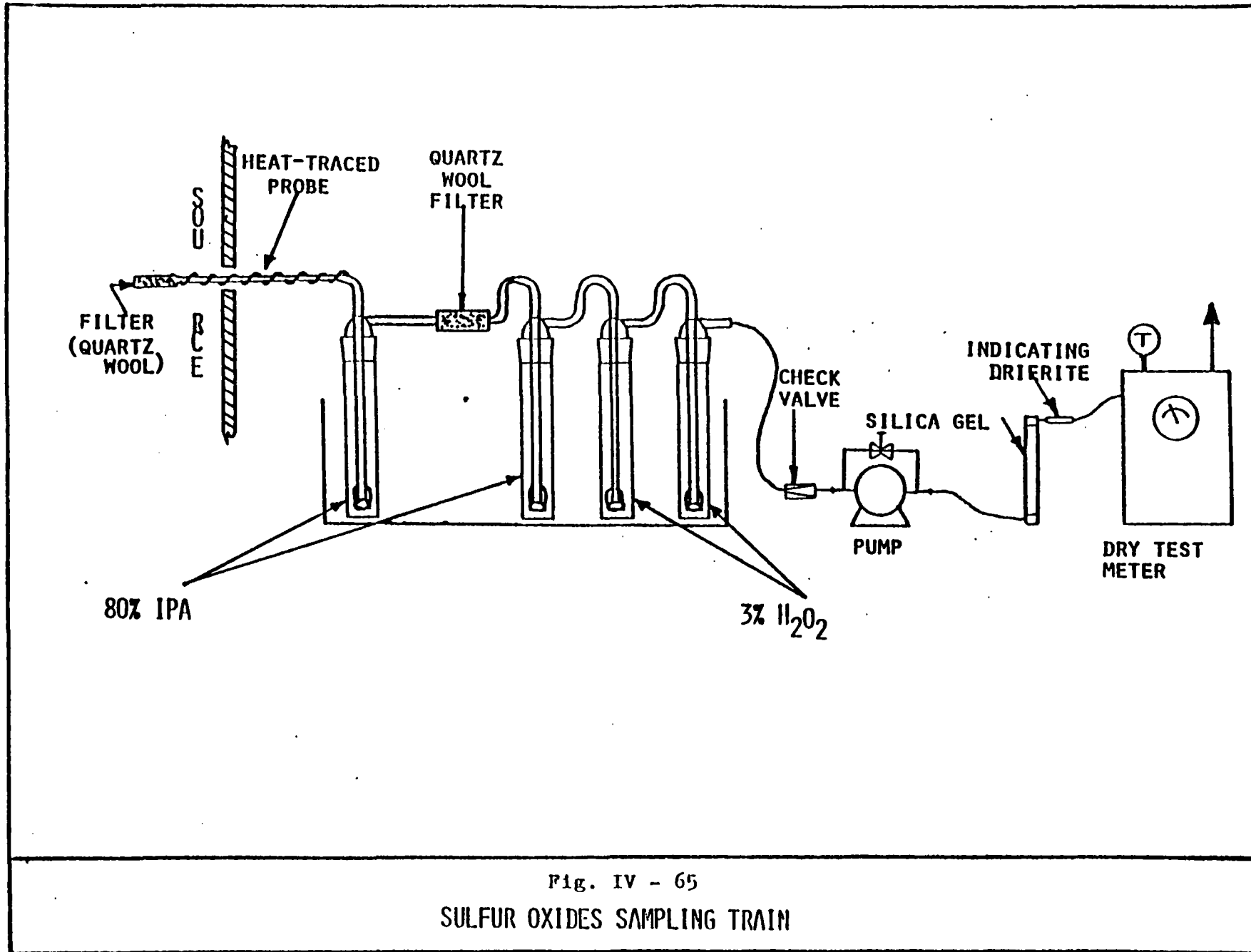


Fig. IV - 65
 SULFUR OXIDES SAMPLING TRAIN

SUMMARY OF SOURCE TEST RESULTS

SOURCE INFORMATION			
Firm Name and Address	Firm Representative and Title		
Conditions During Tests	Phone No.	Report No.	
	Source:	Test Date:	
Operating Parameters	Operates	hr/day &	days/yr
	Test Times:		
	Run A:		
Run B:			Run C:

Test Results and Comments

<u>METHOD</u>	<u>TEST</u>	<u>RUN A</u>	<u>RUN B</u>	<u>RUN C</u>	<u>AVG.</u>
	Run time, minutes				
	Stack gas temp., OF.				
ST-17	Stack flowrate, SDCFM				
ST-14	O ₂ conc., dry basis, %				
ST-5	CO ₂ conc., dry basis, %				
ST-6	CO conc., dry basis, %				
ST-23	H ₂ O conc., actual basis, %				
ST-19A	Sulfur dioxide, ppm				
	Sulfur dioxide, lb/hr				
	Sulfur trioxide, as acid grains/SDCF				
	Sulfuric acid mist, grains/SDCF				
	Total acid, grains/SDCF				
	SO ₂ , lbs/ton product				

Source Test Procedure ST-21

TOTAL REDUCED SULFUR

REF: Regs. 12-1-301 thru 303

1. Applicability

1.1 This method is used to quantify emissions of total reduced (TRS) compounds as H_2S , in the presence of sulfur dioxide. It determines compliance with Regulations 12-301, 12-302 and 12-303.

2. Principle

2.1 A continuous representative gas sample is extracted from the sampling point and conditioned to remove water and particulate material. A small portion of the conditioned sample is passed through a potassium citrate/citric acid buffer solution to remove sulfur dioxide and then through a combustion tube to oxidize all reduced sulfur to sulfur dioxide. The sulfur dioxide is measured with an ultraviolet analyzer.

3. Range and Sensitivity

3.1 The minimum measurable concentration of reduced sulfur, as H_2S , is 5 ppm with this method.

3.2 The maximum concentration of reduced sulfur is 5000 ppm.

3.3 The method has been proven in the presence of up to 3500 ppm sulfur dioxide.

3.4 The analyzer sensitivity is $\pm 2\%$ of instrument scale.

4. Interferences

4.1 None are known.

5. Apparatus

5.1 Analyzer. Use an E.I. DuPont de Nemours Photometric analyzer Model 400 equipped with a stainless steel sample cell or its equivalent to determine SO_2 concentrations.

5.2 Chart recorder. The recorder monitors and records the continuous output from the analyzer.

5.3 Sample conditioning, zero air, and span gas system. The assembly of this system is shown in Fig. IV-68. The sample conditioning system provides a dry, particulate free gas flow to the instrument. The zero air system provides clean dry atmospheric air for instrument calibration. The span gas system provides a known concentration of SO_2 for use in calibrating the analyzer. Except as specified, all materials

which come in contact with either the sample or span gases must be constructed of Teflon or stainless steel.

5.4 Sample probe. Use a borosilicate glass tube long enough to traverse the stack being tested. If the stack temperature exceeds 425C (800F), use a quartz probe. Other probes are acceptable subject to prior approval by the Source Test Section.

5.5 Condensers. Use modified Greenberg-Smith Impingers with the impaction plates removed and the inlet tube shortened to a length of 10cm (4 inches), or equivalent.

5.6 Cooling system. Immerse the impingers in an ice bath during the test.

5.7 Particulate filter. Use a Balston type 95 holder with a grade B filter, or equivalent, in the sample system.

5.8 Pumps. Use leak-free, Teflon-lined, diaphragm pumps in the sample and zero air system. The pumps must have a free-flow capacity of at least 40 liters/min (1.5 CFM).

5.9 Back-pressure regulator. Use a back-pressure regulator to maintain the sample and zero-gas sample pressures to the instrument at five psig.

5.10 Gas scrubber. Use a bed of silica gel, Ascarite (or soda-lime), and charcoal to remove moisture, carbon dioxide, and hydrocarbons from the zero-air system.

5.11 Span gas. Use high-pressure cylinder containing a known concentration of SO₂ in nitrogen. The span gas concentration must be in the same range as the source being tested.

5.12 Combustor. Use a system to oxidize all reduced sulfur compounds in the sample stream to SO₂. An example of an acceptable combustion tube found adequate by the BAAQMD is shown in Figures IV-69 and IV-70.

5.13 Sulfur dioxide scrubber. Use three midget impingers containing the scrubbing reagent.

5.14 Filter. Use a Balston type 95 holder with a grade B filter following the combustion tube to remove SO₃ and particulate from the effluent.

6. Reagents

6.1 Potassium Citrate/Citric Acid Buffer. Add 300 grams of potassium citrate and 41.0 grams of citric acid to one liter of distilled water. Check the pH of the solution and adjust as necessary to 5.6 with the appropriate reagents.

7. Pre-Test Procedures

7.1 Warm-up the instrument according to manufacturer's instructions.

7.2 Assemble the sampling system as shown in Figure IV-71.

7.3 Leak-test the sampling system by starting the pump, plugging the probe, and checking that the pressure to the analyzer falls to zero.

7.4 Introduce zero-air, into the analyzer and zero the instrument according to manufacturer's instructions.

7.5 Introduce span gas into the analyzer and calibrate the instrument according to manufacturer's instructions.

7.6 Conduct a preliminary concentration traverse (in accordance with ST-18) to determine if stratification of the stack gases exists. If the concentration of reduced sulfur compounds at any point differs from the average concentration by more than 10%, traverse the stack during the test. If not, sample at any single point.

7.7 Prepare the chart recorder according to manufacturer's instructions.

7.8 Add approximately 25ml of the citrate buffer reagent to each of two midjet impingers.

7.9 Check the scrubber efficiency when the stack SO_2 concentration exceeds 300 ppm. Pass SO_2 span gas in the range expected through the sample system at a flow rate of 2 CFH. Break-through should not occur in less than 20 minutes. If breakthrough occurs, add 25 ml more of the citrate buffer reagent.

8. Sampling

8.1 Each test run shall be of thirty minute duration when testing emissions from continuous operations. Each test run at a batch operation shall be for 90% of the batch time or thirty minutes, whichever is less.

8.2 Introduce sample gas into the analyzer at the same flow rate used to calibrate the analyzer.

8.3 Maintain ice in the cooling system throughout the test.

8.4 Calibrate the analyzer before and after each test run. Record each step of the process clearly on the chart recording.

8.5 Conduct three test runs.

8.6 Periodically pass SO_2 span gas through the scrubber and ascertain that the analyzer reads zero. If it doesn't, replace the buffer reagent.

9. Auxiliary Tests

9.1 Stack flow rate. Determine the stack gas flow rate after each test run in accordance with ST-17.

9.2 Moisture. Determine the stack gas moisture content in accordance with ST-23.

10. Calculations

10.1 From the chart recording determine the time-averaged concentration of TRS on a dry basis for each run.

10.2 The mass emission rate of TRS, as H₂S, at kraft pulp mills:

$$W = \frac{5.27 \times 10^{-6} CR_s Q_o t}{T}$$

where: W = mass emission of reduced sulfur, as H₂S, in lbs, per ton of pulp produced.
CR_s = time-averaged concentration of reduced sulfur, as H₂S, ppm
Q_o = stack flow rate, SDCFM
t = time of pulp production/day, hrs/day
T = tons of pulp produced/day.
5.27 x 10⁻⁶ = a constant based on the above units, standard conditions and molecular weight.

11. Reporting

11.1 The results are reported as shown in Figure IV-72.

NOTE: SPAN-GAS SYSTEM NOT APPLICABLE TO ST-14

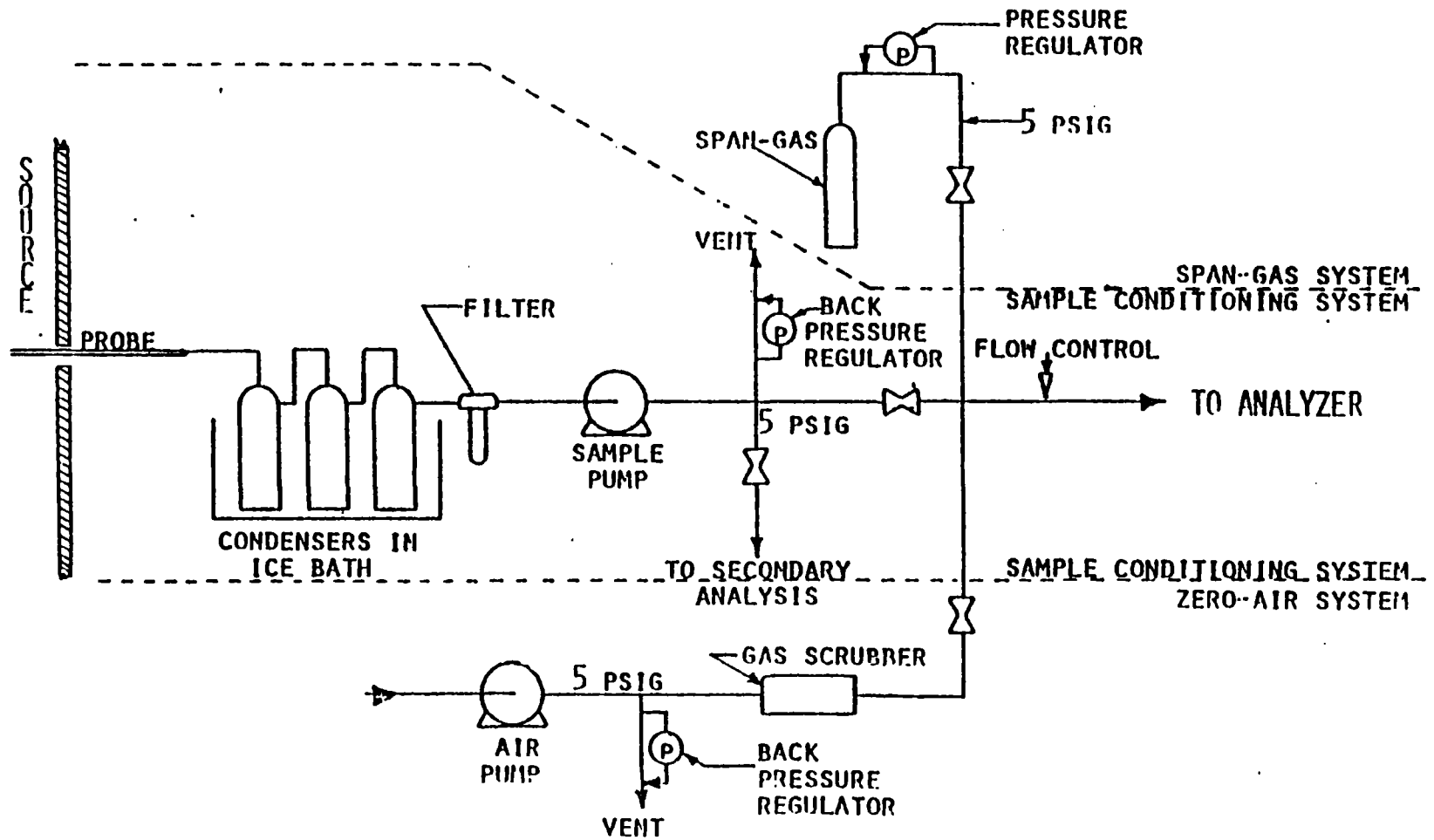


Fig. IV - 68

SAMPLE CONDITIONING, ZERO-AIR and SPAN-GAS SYSTEMS

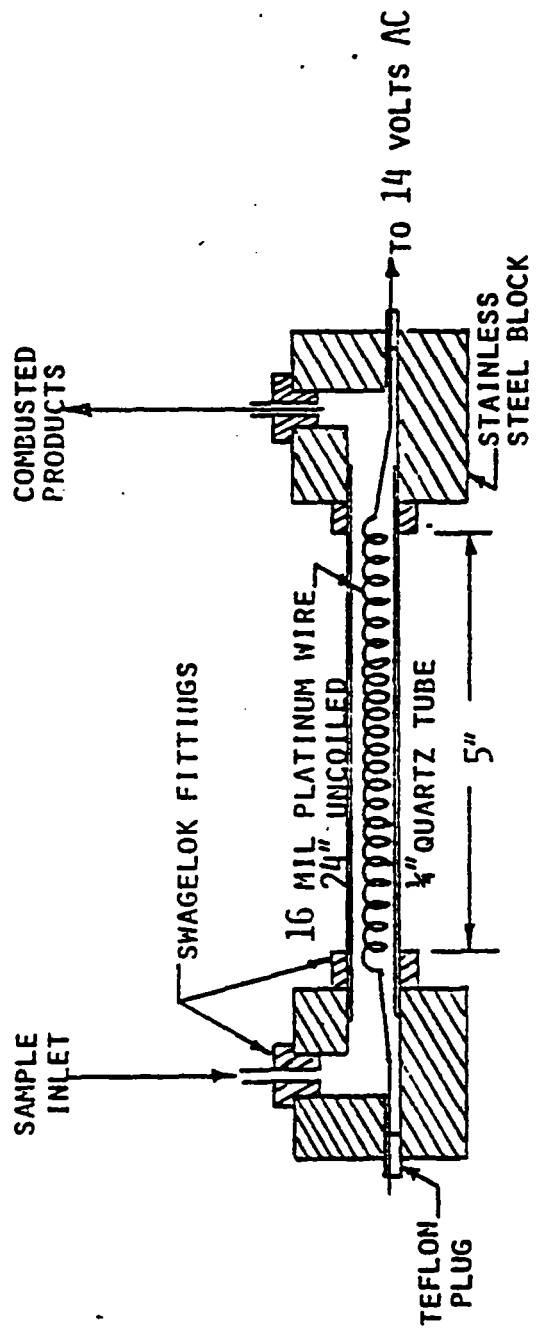
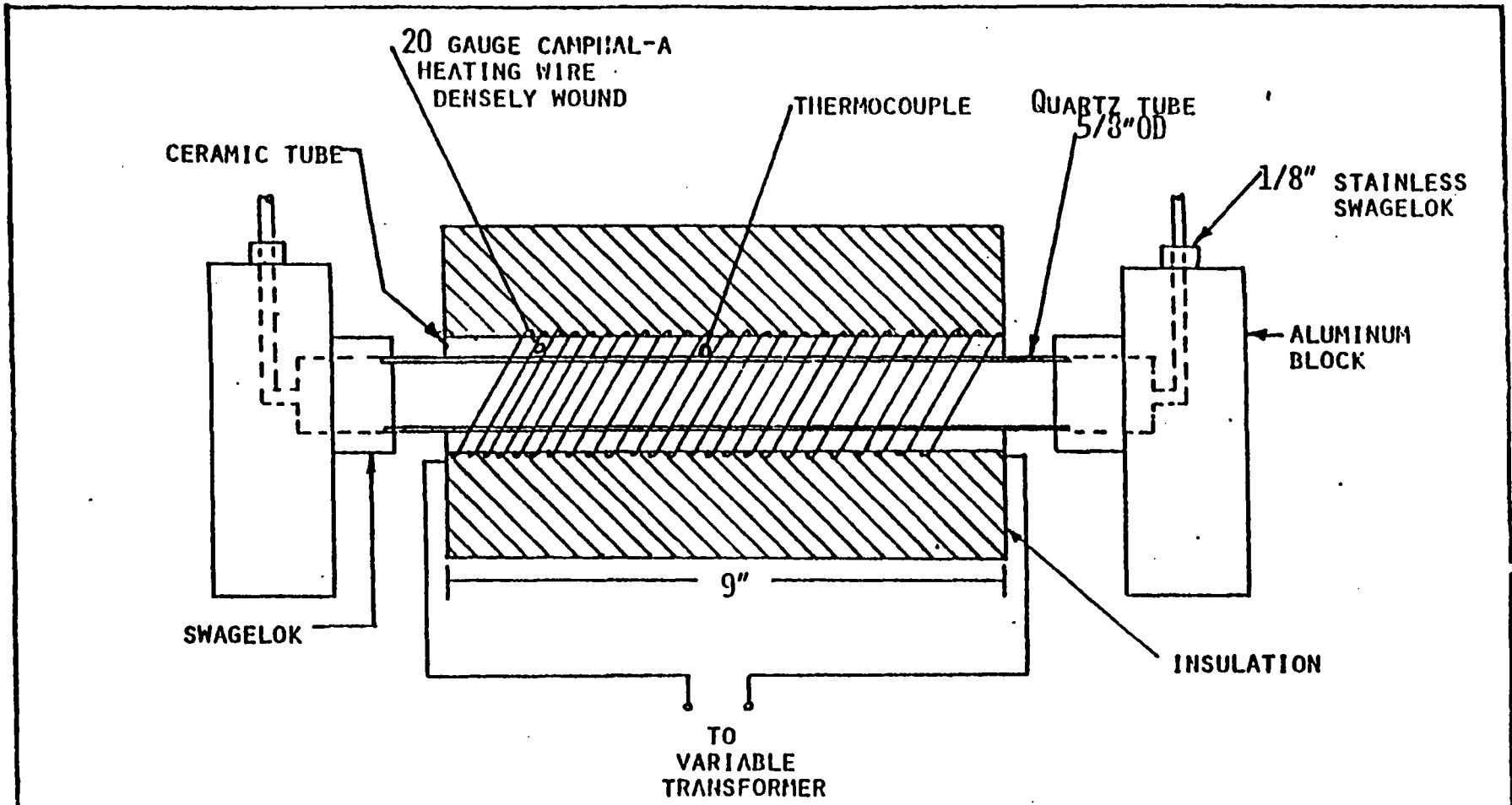


Fig. IV - 69

INTERNALLY HEATED COMBUSTION TUBE



NOTE: FURNACE OPERABLE TO 1100C

Fig. IV - 70

EXTERNALLY HEATED COMBUSTION TUBE

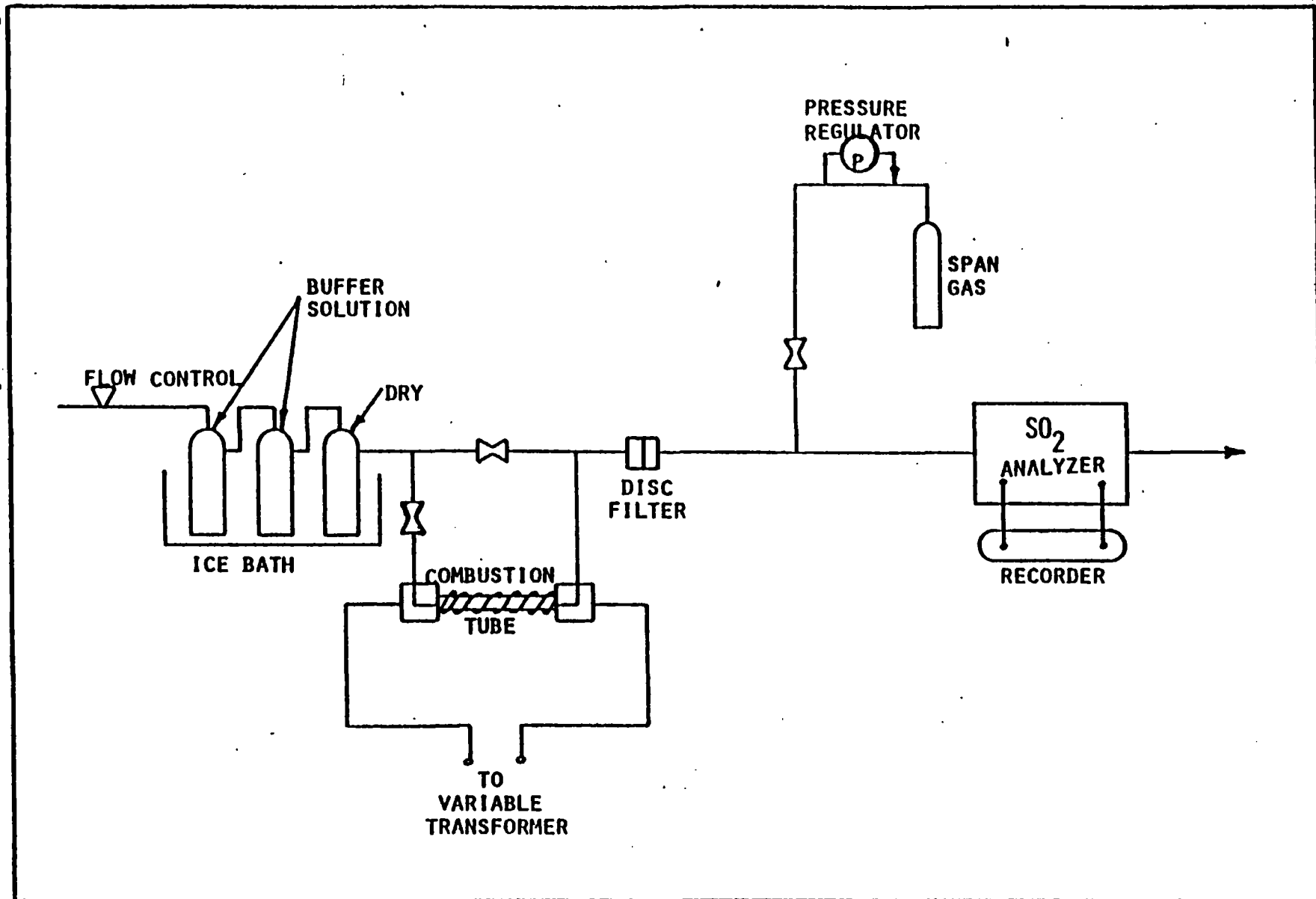


Fig. IV - 71

INSTRUMENTAL ANALYSIS OF TOTAL REDUCED SULFUR

SUMMARY OF SOURCE TEST RESULTS

SOURCE INFORMATION		
Firm Name and Address	Firm Representative and Title	
	Phone No. _____ Source: _____	Report No. _____
Conditions During Tests	Operates hr/day & days/yr	Test Date: _____ Test Times: Run A: _____ Run B: _____ Run C: _____
Operating Parameters		

Test Results and Comments

<u>METHOD</u>	<u>TEST</u>	<u>RUN A</u>	<u>RUN B</u>	<u>RUN C</u>	<u>AVG.</u>
	Run time, minutes				
	Stack gas temp., °F.				
ST-17	Stack flowrate, SDCFM				
ST-14	O ₂ conc., dry basis, %				
ST-5	CO ₂ conc., dry basis, %				
ST-6	CO conc., dry basis, %				
ST-12	H ₂ O conc., actual basis, %				
ST-21	Reduced sulfur, as H ₂ S, ppm				
	Reduced sulfur, lb/hr.				

Source Test Procedure ST-22

TRIMETHYLAMINE

Ref: Reg. 7-3-3

1. Applicability

1.1 This method is used to quantify emissions of Trimethylamine (TMA). It determines compliance with Reg. 7-3-3.

2. Principle

2.1 Sample gas is drawn through a solution of 0.1 normal (0.1N) hydrochloric acid which absorbs the TMA. The TMA is subsequently separated and analyzed as specified in Analytical Procedure Lab 14.

3. Range and Sensitivity

3.1 The minimum measurable concentration of TMA is 20 ppb at the sample volume specified in this procedure.

3.2 Elevated concentrations of TMA may be determined by increasing the concentration of the absorbing reagent, hydrochloric acid solution. The concentration of reagent to be used may be determined by stoichiometry, allowing a 50% excess.

4. Interference

4.1 None known.

5. Apparatus

5.1 probe. The probe is constructed of borosilicate glass tubing.

5.2 Absorbers. Use three Greenberg-Smith Impingers. The third impinger has a thermometer attached to the inlet stem.

5.3 Cooling system. An ice bath is used to contain the impingers.

5.4 Sample pump. Use a leak-free vacuum pump capable of maintaining a 0.5 CFM flow rate at 15 inches of mercury-vacuum. The pump has a flow control valve and vacuum gauge attached to the inlet.

5.5 Silica gel tube. Use approximately 500cc of silica gel with a Drierite indicator to insure that the gas entering the dry test meter is dry.

5.6 Dry test meter. Use a dry test meter accurate within $\pm 2\%$ of the true volume and equipped with a thermometer to measure the outlet temperature.

5.7 Connections. Use Teflon tubing in making all connections that come in contact with the sample. Vinyl tubing is acceptable for all other connections.

5.8 Barometer. Use a mercury, aneroid, or other barometer that is accurate to within ± 0.2 inches of mercury.

5.9 Rotameter. Use a calibrated rotameter to measure the sampling rate.

6. Reagents

6.1 Hydrochloric acid, 0.1 N.

7. Pre-Test Procedures

7.1 Add 100 ml of the HCl solution to each of two impingers.

7.2 Stopper the impingers.

7.3 Retain 100 ml of the hydrochloric acid to analyze as a blank

7.4 Assemble the sampling train as shown in Figure IV-73.

7.5 Leak-test the sampling train by starting the pump, plugging the probe, and adjusting the pump inlet vacuum to 10 inches Hg. The leak rate must not exceed 0.02 CFM through the dry test meter. Before stopping the pump, carefully release the plug in the sample probe to avoid backflow of the impinger solution.

7.6 Record the initial dry test meter reading and barometric pressure as shown in Figure IV-74.

8. Sampling

8.1 Each test run shall be of sixty minute duration when testing emissions from continuous operations. Each test run at batch process operations shall be for 90% of the batch time or sixty minutes, whichever is less.

8.2 Position the probe at the sampling point and start the pump.

8.3 Sample at a constant rate of 14.3 liter/min (0.5 CFM) during the test as determined by the rotameter. Use the rotameter only to establish the initial sampling rate. Then remove it from the system.

8.4 Record the following information at five minute intervals.

Dry test meter temperature
Impinger outlet temperature
Dry test meter reading

8.5 Add ice as necessary to maintain impinger temperatures at 7°C (45°F) or less.

8.6 At the conclusion of each run, stop the pump, remove the probe from the stack, and record the final meter volume.

8.7 Take three consecutive samples.

9. Post-Test Procedures

9.1 Immediately after each test run, stopper the impingers to minimize sample losses.

9.2 Individually analyze the hydrochloric acid solutions and blank for TMA content according to analytical procedure Lab 14.

10. Calculations

10.1 Standard sample volume:

$$V_o = \frac{17.71 V_m P_b}{T_m}$$

where:

V_o = corrected sample volume, SDCF at 70°F and 29.92 inches Hg.
 V_m = uncorrected meter volume, ft³
 T_m = average run meter temperature, °R
 P_b = barometric pressure, inches Hg.
17.71 = a constant correcting to 70°F and 29.92 inches Hg

10.2 TMA concentration:

$$C = \frac{14.4 \times 10^3 W}{V_o}$$

where:

C_{TMA} = TMA concentration, ppm by volume on a dry basis.

W = total weight of TMA in the impinger catch, for each run, grams.

14.4 = Constant derived from molar volume, molecular weight, and 454 grams/lb.

11. Reporting

11.1 Report the data indicated on Figure IV-75.

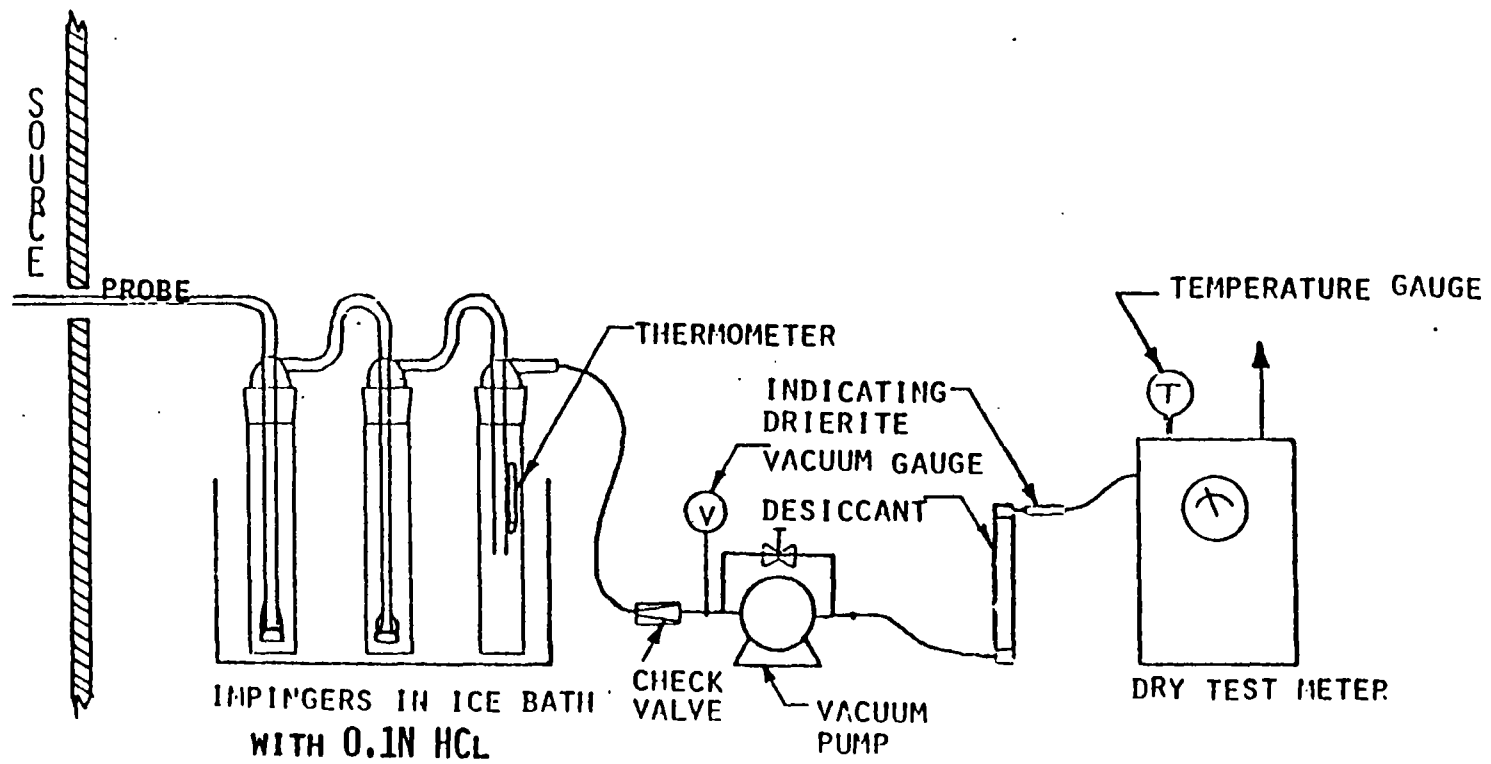


Fig. IV - 73

TRIMETHYLAMINE SAMPLING TRAIN

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Source Test Data Sheet

Source Operation _____
 Plant _____
 Sample Type _____
 Process Cycle _____
 Duct Size _____
 Duct Pressure _____

Source Test No. _____
 Run No. _____
 Date: _____

_____ Nozzle Diameter
 _____ Pitot Tube
 _____ Gas Collector No.
 _____ Barometric Pressure
 _____ Leak Rate @ 15" Hg

Sampling Train: _____

Traverse Point	Dist. From Inches	INITIAL TRAVERSE			SAMPLING									REMARKS		
		Duct Temp °F	h H ₂ O	√h	Traverse Point	h H ₂ O	V _g FPS	Time	METER			Vac "Hg	Sat'd Gas Temp °F		T _g Duct Temp °F	
									Rate CFH	Temp °F	Volume Ft ³					

$$D_n = 13.7 \left[\frac{T_g + 460}{K_p V_g (100 - \%H_2O)} \right]^{1/2}$$

$$Q_m = \left[(2.638 \times 10^{-3}) K_p (100 - \%H_2O) D_{mn}^2 \right] \frac{V_g}{T_g}$$

Condensate _____ gm.
 V_o _____
 %H₂O _____
 %CO₂ _____
 %CO _____
 %O₂ _____

Source Test Team

FIG. 1' '4

SUMMARY OF SOURCE TEST RESULTS

SOURCE INFORMATION		
Firm Name and Address	Firm Representative and Title	Report No. Test Date: Test Times: Run A: Run B: Run C:
Conditions During Tests	Phone No.	
	Source:	
Operating Parameters	Operates hr/day & days/yr	

Test Results and Comments

<u>METHOD</u>	<u>TEST</u>	<u>RUN A</u>	<u>RUN B</u>	<u>RUN C</u>	<u>AVG.</u>
-22	Run time, minutes Stack gas temp., °F. TMA concentration, ppm				

WATER VAPOR

1. Applicability

1.1 This method is used to quantify the water vapor content of stack gases. It is applicable in all cases in which such data are needed by any other procedure in this manual.

2. Principle

2.1 A gas sample is extracted from the stack at a constant rate. Moisture is removed from the gas through the use of cold condensers. The total condensate is weight determined gravimetrically. The residual water vapor is determined by calculation.

3. Range and Repeatability

3.1 The minimum measurable concentration of water vapor is 2% moisture by volume. The maximum measurable concentration is 100% water vapor.

3.2 The sensitivity of the procedure is $\pm 1.0\%$ water vapor.

4. Interference

4.1 Compounds which will condense at 45°F. The saturated gas temperature will cause a positive bias.

5. Apparatus

5.1 Probe. The probe is constructed of either borosilicate glass or quartz and must be heated as necessary to avoid condensation in the probe. Other probe materials are acceptable when stack conditions allow.

5.2 Condensers. Use three Greenberg-Smith impingers as condensers. The third has a thermometer attached to the inlet stem.

5.3 Cooling system. An ice bath is used to contain all the impingers.

5.4 Sample pump. Use a leak-free vacuum pump capable of a flow rate at 10 inches of Hg vacuum.

5.5 Dry test meter. Use a dry gas meter test meter accurate within $\pm 2\%$ of the true volume and equipped with a thermometer to measure the outlet temperature.

5.6 Connections. All flexible tubing must be leak-free.

6. Pre-Test Procedures

6.1 Tare weights on each of the impingers are recorded to the nearest .1 gram.

6.2 The sampling train is assembled as shown in Figure IV-76. Equipment identification is recorded on the test data sheet.

6.3 It is recommended, but not required that the sampling train be leak-tested before sampling by turning on the pump, plugging the probe and adjusting the pump inlet vacuum to 15" Hg. The leak rate through the dry test meter shall not exceed 0.02 CFM.

6.4 Record the initial meter reading before sampling commences.

7. Sampling

7.1 The pump is started and the flow rate adjusted to approximately 0.5 CFM. Maintain a steady sampling rate throughout the test period.

7.2 Sample for thirty minutes or until at least 20cc of condensate have collected in the first impinger.

7.3 At five-minute intervals, record the following:

- Test meter temperature
- Flow rate
- Saturation temperature (from third impinger)
- Pump inlet vacuum

7.4 Record the barometric pressure.

8. Post-Test Procedures

8.1 Clean, dry and weigh the impingers.

9. Calculations

9.1 Standard dry sample volume at 90°F, 29.92 inches Hg.

$$V_o = \frac{17.71 P_b V_m}{T_m}$$

where: 17.71 = a constant correcting to 70F and 29.92 inches Hg.
 V = standard sample volume, SDCF
 P_b = barometric pressure, inches Hg
 T_m = average meter temperature
 V_m = uncorrected meter volume, ft³

9.2 Stack gas water vapor content

$$H = \frac{(.0474W) + \frac{V_o P_{sat}}{P_b - P_i - P_{sat}}}{V_o + (.0474W) + \frac{V_o P_{sat}}{P_b - P_i - P_{sat}}} \times 100$$

where: W = total condensate, grams
 H = % water vapor
 P_{sat} = water saturation pressure, inches Hg
determined from average saturation temperature.
 P_i = pump inlet vacuum, inches Hg
.0474 = a constant for correcting to standard conditions.

10. Reporting

10.1 These values are determined as auxiliary data for other procedures and shall be reported with those test results.

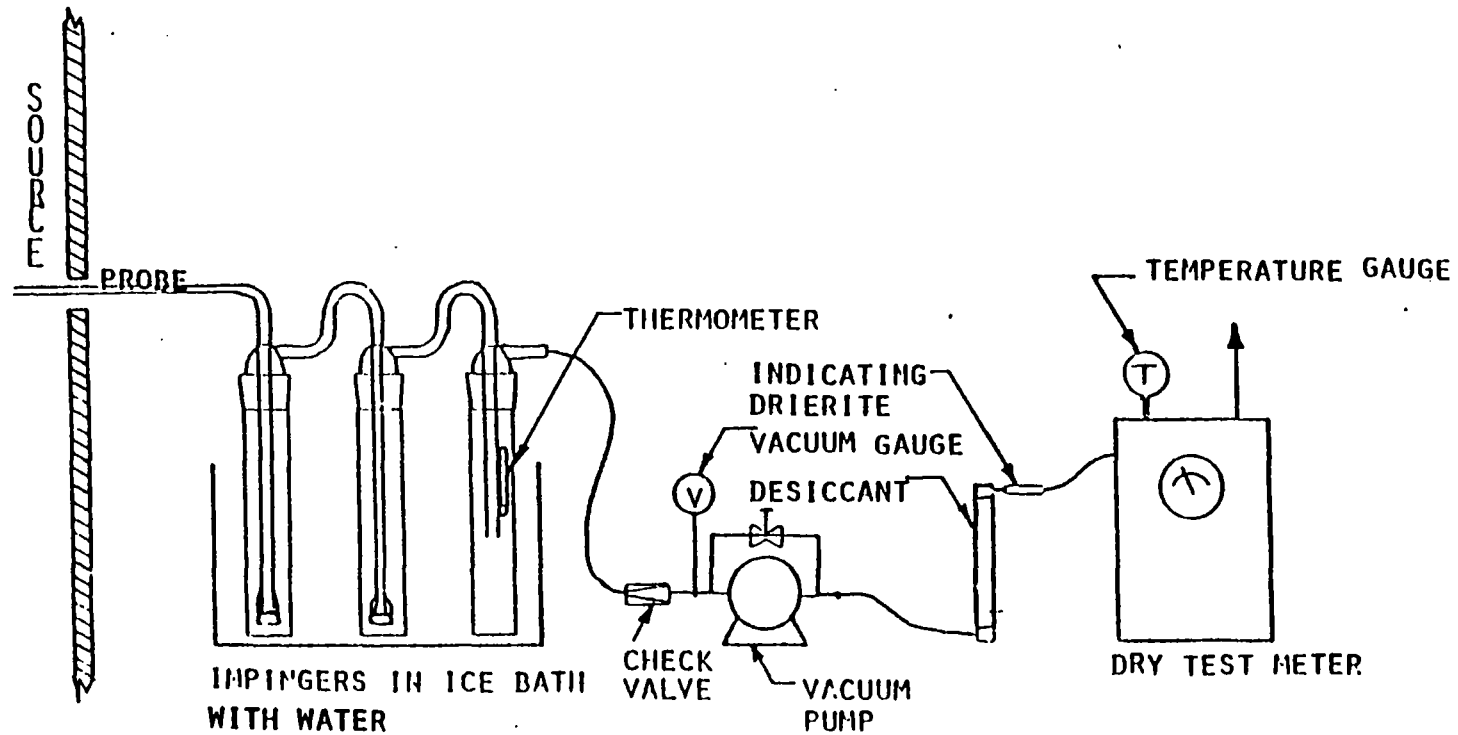


Fig. IV - 76

WATER SAMPLING TRAIN

Source Test Procedure ST-24

TANK SAMPLING FOR ORSAT ANALYSIS
(CO, CO₂, O₂)

REF: Regs. 6-310.1, 8-1-110.3 10-3-301
9-3-301 thru 9-3-304

1. Applicability

1.1 This method is used to determine the carbon monoxide, carbon dioxide and oxygen contents of stack gases. It is an acceptable alternate to ST-5, ST-6, and ST-14.

2. Principle

2.1 Stack gases are drawn at a constant rate into an evacuated stainless steel tank. A desiccant is used to dry the gases before entering the tank. After testing, the tank is positively pressurized with a known amount of dry nitrogen. The tank contents are then analyzed with an Orsat analyzer, and the results are corrected back to pre-dilution conditions.

3. Range

3.1 The minimum measurable concentration of CO, CO₂ or O₂ is 0.2%.

3.2 The procedure is usable for gases up to 100% CO, CO₂ or O₂.

4. Interference

4.1 SO₂ Interfers with CO₂ determination.

5. Apparatus

5.1 Tank. Use a stainless steel tank, 8-liter capacity or larger, fitted with a stainless steel flow-controlling valve and a vacuum gauge is used.

5.2 Flowmeter. Use a rotameter capable of measuring low sampling rates.

5.3 Desiccant bed. Use Drierite, or equivalent, of sufficient capacity to dry a volume of sample equal to the tank volume.

5.4 Probe. The probe is constructed of either stainless steel or glass.

5.5 Connections. All flexible tubing connections must be leak free.

5.6 Purging Apparatus. Use a squeeze bulb with check valves (see Figure 1) to purge the sample lines with stack gases prior to sampling, as shown in Figure 1.

5.7 Manometer. Use differential manometer with a range of -30 to +20 inches Hg.

5.8 Barometer. Use a temperature compensated aneroid type with a range of 28.0 to 31.0 inches of mercury.

6. Pre-Test Procedures

6.1 Prior to the field test, evacuate and seal the tank. If, after a period of not less than two hours, the vacuum gauge indicates a leak, do not use the tank.

6.2 If no leak is found, record the evacuated pressure (gauge), the ambient temperature, and barometric pressure at the time of evacuation.

6.3 In the field, assemble the sampling apparatus as shown in Fig. IV-77. Purge the sampling train until stack gas has completely replaced ambient air. Then remove purging apparatus from the sampling system.

7. Sampling

Sample at a constant rate slow enough to fill the evacuated cylinder in approximately 30 minutes.

7.2 For batch processes sample at a constant rate slow enough to fill the evacuated cylinder in approximately 30 minutes or 90% of the batch process time, whichever is less.

7.3 When the tanks is full, seal it for later evaluation.

7.4 Take three consecutive samples if feasible.

8. Post-Test Procedures

8.1 Allow the tank to equilibrate at or near the ambient temperature at which it was evacuated. Then record the pressure of its contents and the barometric pressure.

8.2 Pressurize the tank to at least 10 inches of mercury with dry oxygen-free nitrogen. Wait at least ten minutes before reading and recording the pressure.

9. Analytical Procedures

9.1 The tank contents are analyzed for oxygen, carbon monoxide and/or carbon dioxide by the Orsat method. Operation of the analysis apparatus shall follow manufacturer's instructions.

9.2 The tank contents are analyzed until successive analyses are constant within .2% (absolute). The constant values shall be reported as the results of the analysis.

10. Calculations

10.1 Tank dilution correction factor:

$$F = \frac{P_3 + P_{BF}}{(P_2 + P_{BF}) - (P_1 + P_{B1})}$$

where:

- F = correction factor
- P₁ = residual pressure after evacuation (gauge)
- P₂ = pressure after sampling, (gauge)
- P₃ = pressure after addition of nitrogen (gauge)
- P_{B1} = barometric pressure at time of evacuation
- P_{BF} = barometric pressure at time of pressurization

10.2 Multiply by the factor determined in 10.1, the Orsat analytical results from Section 9.

11. Reporting

11.1 These values are determined as auxiliary data for other procedures and shall be reported with those test results.

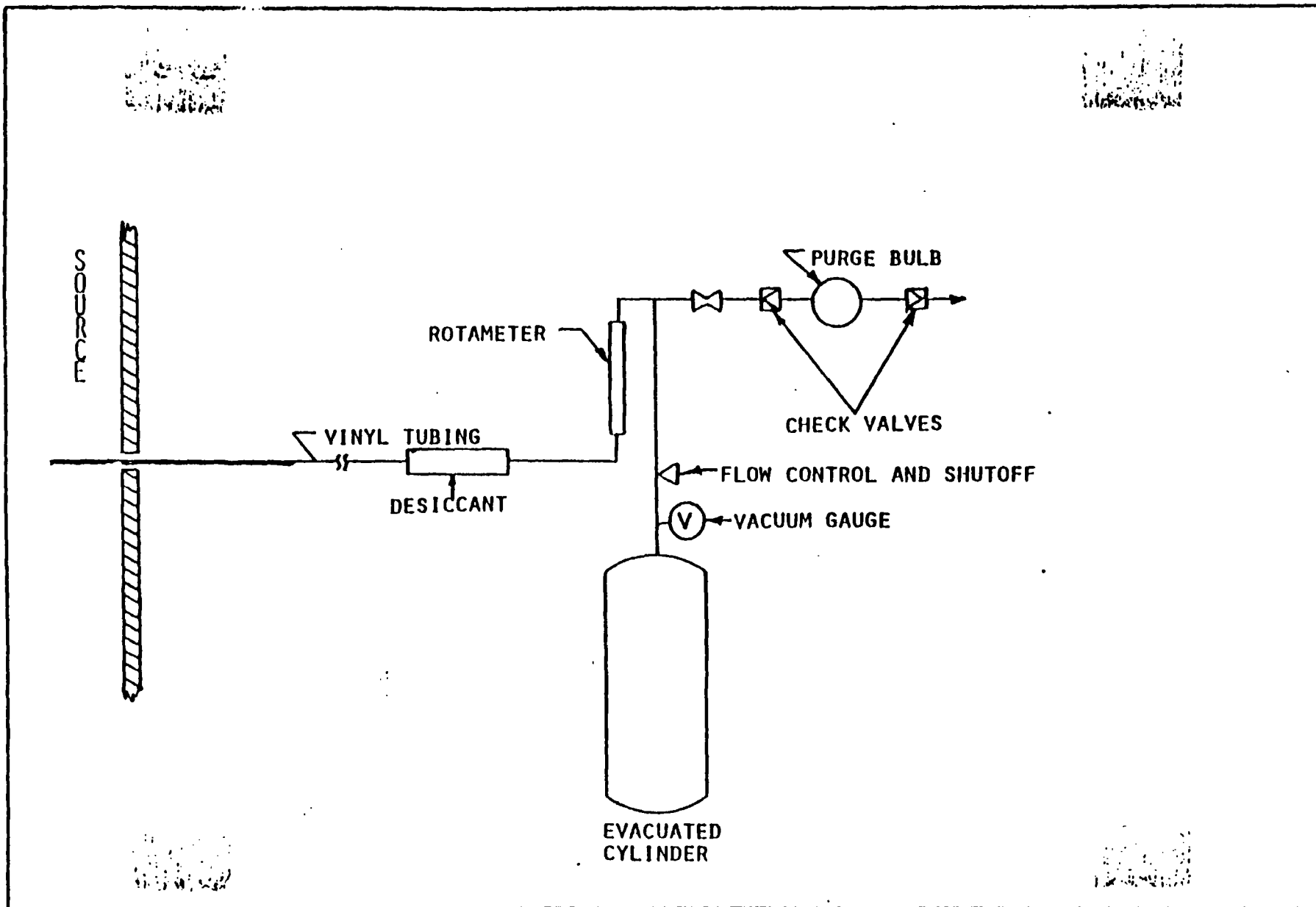


Fig. IV - 77

SAMPLING FOR ORSAT ANALYSIS

FLUORIDE, INTEGRATED SAMPLING

REF: Reg. 10-1-301

1. Applicability

1.1 This method is used to quantify emissions of fluoride. It determines compliance with Section 10-1-301 of Regulation 10.

2. Principle

2.1 Sample gas is drawn through a solution of 0.1 normal (0.1N) sodium hydroxide which absorbs the fluoride. The fluoride is then analyzed according to Analytical Procedure Lab-24.

3. Range

3.1 The minimum measurable concentration of fluoride is 0.05 ppm at the sample volume specified in this procedure.

4. Interference

Interferences are accounted for in Lab Procedure 24.

5. Apparatus

5.1 Probe. The probe is constructed of borosilicate glass tubing.

5.2 Condensers. Use three Greenberg-Smith impingers as absorber/condensers. The final impinger has a thermometer attached to the inlet stem.

5.3 Cooling system. Use an ice bath to contain the impingers.

5.4 Sample pump. Use a leak-free vacuum pump capable of maintaining a 14.3 liter/min (0.5 CFM) flow rate at 15 inches of mercury. The pump must have a flow control valve and vacuum gauge attached to the inlet.

5.5 Silica gel tube. Use approximately 500cc of silica gel (with a Drierite indicator) to insure that the gas entering the dry test meter is dry.

5.6 Dry test meter. Use a dry gas test meter accurate within $\pm 2\%$ of the true volume and equipped with a thermometer to measure the outlet temperature.

5.7 Connections. Use teflon tubing in making all connections that come in contact with the sample. Vinyl tubing is acceptable for all other connections.

5.8 Barometer. Use a barometer that is accurate to within ± 0.2 inches of mercury.

5.9 Rotameter. Use a calibrated rotameter to measure the sampling rate.

6. Reagents

6.1 Sodium hydroxide, 0.1N. Dissolve 4.0 grams of sodium hydroxide ml concentrated HCl pellets in sufficiently distilled water to make a 1.0 liter solution.

7. Pre-Test Procedures

7.1 Add 100 ml of the NaOH solution to each of two impingers.

7.2 Stopper the impingers.

7.3 Retain 100 ml of the NaOH solution to analyze as a blank.

7.4 Assemble the sampling train as shown in Figure IV-78.

7.5 Leak-test the sampling train by starting the pump, plugging the probe, and adjusting the pump inlet vacuum to 10 inches Hg. The leak rate must not exceed 0.6 liter/min (0.02 CFM) through the dry test meter. Before stopping the pump, carefully release the plug in the sample probe to avoid backflow of the impinger solution.

7.6 Record the initial dry test meter reading and barometric pressure on the sampling data sheet, Figure IV-79.

7.7 If there is evidence of concentration stratification, select the sampling traverse points according to ST-18. Otherwise, sample at single point.

8. Sampling

8.1 Each test run shall be of thirty minute duration when testing emissions from continuous operations. Each test run at batch process operation shall be for 90% of the batch time or thirty minutes, whichever is less.

8.2 Position the probe at the sampling point and start the pump.

8.3 Sample at a constant rate of 14.3 liter/min (0.5 CFM) during the test as determined by the rotameter. Use the rotameter only to establish the initial sampling rate. Then remove it from the system.

8.4 Record the following information at five-minute intervals:

Dry test meter temperature
Impinger outlet temperature
Dry test meter volume

8.5 Add ice as necessary to maintain impinger temperatures at 70C (450F) or less.

8.6 At the conclusion of each run, stop the pump, remove the probe from the stack, record the final meter reading. Point the probe upward and purge the sample train with ambient air. Rinse the probe and connecting tubing with 50 ml of the NaOH solution and drain into the first impinger. Immediately transfer the impinger solutions into polyethylene bottles for subsequent analyses.

8.7 Take three consecutive samples.

9. Post-Test Procedures

9.1 Individually analyze the sodium hydroxide solutions and blank for total fluoride content according to analytical procedure Lab 24.

10. Auxiliary Tests

10.1 Stack gas velocity and volumetric flowrate, ST-17.

11. Calculations

11.1 Standard sample volume:

$$V_o = \frac{17.71 V_m P_b}{T_m}$$

Where: V_o = corrected sample volume, SDCF at 70°F and 29.92 inches Hg.
 V_m = uncorrected meter volume, ft³
 T_m = average run meter temperature, °R
 P_b = barometric pressure, inches Hg.
17.71 = a constant correcting to 70°F and 29.92 inches Hg

11.2 Fluoride concentration:

$$C = \frac{2.73 \times 10^3 (V)}{V_o}$$

Where: C = ammonia concentration, ppm by volume on a dry basis
 V = total volume of fluoride in the impinger catch for each run, microliters.
 2.73×10^3 = a constant derived from the molecular weight and correcting to 70F and 29.92 Inches Hg

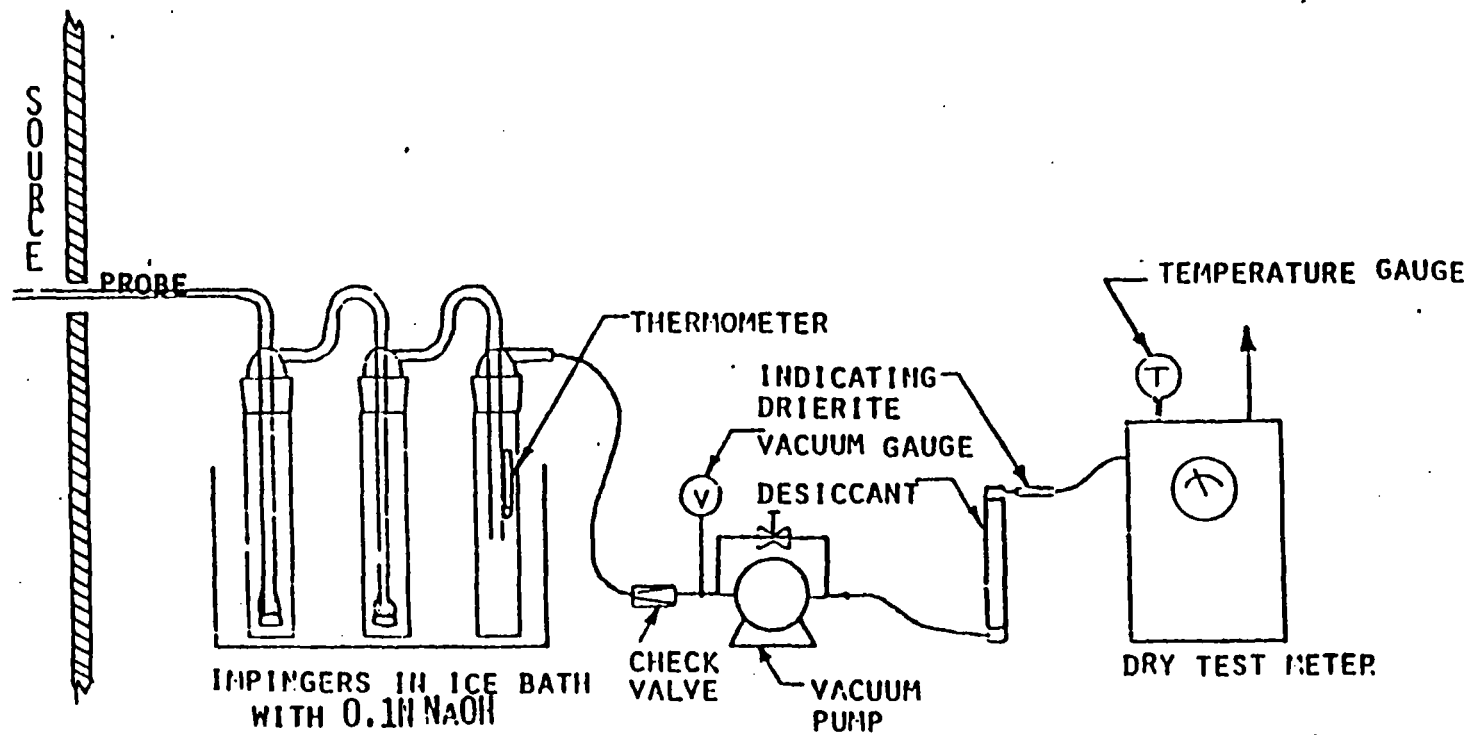


Fig. IV - 78

FLUORIDE SAMPLING TRAIN

SUMMARY OF SOURCE TEST RESULTS

SOURCE INFORMATION	
Firm Name and Address	Firm Representative and Title
Conditions During Tests	Phone No.
	Source:
Operating Parameters	Operates hr/day & days/yr
	Report No.
	Test Date:
	Test Times:
	Run A:
	Run B:
	Run C:

Test Results and Comments

<u>METHOD</u>	<u>TEST</u>	<u>RUN A</u>	<u>RUN B</u>	<u>RUN C</u>	<u>AVG.</u>
ST-25	Run time, minutes Stack gas temp., °F. Fluoride, ppm Fluoride, pounds per ton of product				

11.3 Pounds of fluoride per ton of product:

$$M = \frac{2.94 \times 10^{-6} (\text{PPM}) (Q_0)}{P}$$

Where: M = pounds of fluoride per ton of product
Q₀ = stack gas volumetric flow rate, ST-17
P = production rate, tons per hour (daily average)
2.94 x 10⁶ = a constant derived from corrections to standard conditions, time and molecular weight.

12. Reporting

12.1 Report the data indicated on Figure IV-80.

Source Test Procedure ST-26

COKE BURN-OFF RATE

REF: Reg. 10-8-301

1. Applicability

1.1 In order to determine compliance with Regulation 10-8-301 for particulate emissions from Fluid Catalytic Cracking Unit Catalyst Regenerators it is necessary to calculate the coke burn-off rate.

2. Calculation of Coke Burn-Off Rate

$$2.1 R_c = 0.0186 Q_{RE} (\%CO_2 + \%CO) + 0.1303 Q_{RA} - 0.0062 Q_{RE} \left(\frac{\%CO}{2} + \%CO_2 + \%O_2 \right)$$

Where:

- R_c = Coke burn-off rate (lb/hr)
- 0.0186 = material balance factor divided by 100 (lb-min/hr-ft³)
- $\%CO_2$ = percent carbon dioxide by volume, dry basis
- $\%CO$ = percent carbon monoxide by volume, dry basis
- 0.1303 = material balance factor divided by 100 (lb-min/hr-ft³)
- Q_{RA} = air rate to fluid catalyst cracking unit catalyst regenerator, as determined from fluid catalytic cracking unit control room instrumentation (dscf/min)
- 0.0062 = material balance factor divided by 100 (lb-min/hr-ft³)

3. Reference

3.1 40 CFR 60.106. Test Methods and Procedures Part (A) (4).

Source Test Procedure ST-27

PRESSURE DROP, PHASE II GASOLINE VAPOR RECOVERY

REF: Reg. 8-7-600

1. Applicability

1.1 This method is used to determine the pressure drop in the vapor lines leading from the dispensing nozzle to the underground tank, inclusively. It is applicable in all cases where a Phase II vapor balance system is used.

2. Principle

2.1 The pressure drop during refueling is simulated by passing nitrogen through the Phase II recovery system at a constant rate. The resultant pressure drop is measured using a pressure gauge.

3. Range

3.1 The minimum and maximum pressure drops that can be measured are dependent upon available pressure gauges. Recommended gauge ranges are 0-2 in. H₂O and 0-10 in. H₂O.

4. Interferences

4.1 Any leaks in the nozzle vapor path, vapor hose, or underground vapor return piping will result in a low pressure drop measurement.

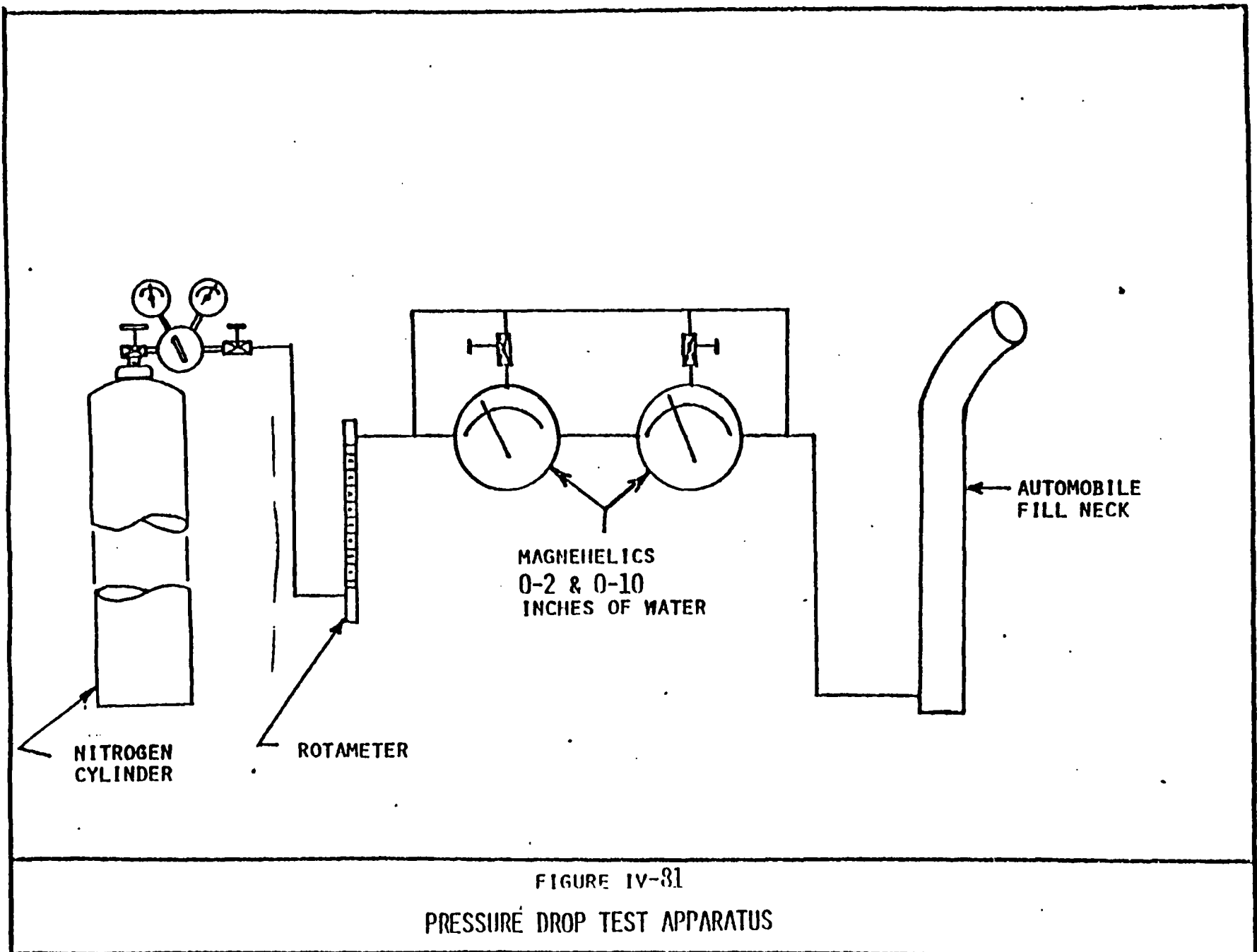


FIGURE IV-81

PRESSURE DROP TEST APPARATUS

BAAPCD

PHASE II - TEST WORKSHEET

TEST NUMBER _____ DATE _____

STATION _____

ADDRESS _____ CITY _____

MANAGER _____ TEL. _____

PUMP NUMBER	GASOLINE GRADE	NOZZLE MFG. & MODEL NUMBER	FLOWRATE, CFH	DYNAMIC BACK PRESSURE "H ₂ O		STATIC BACK PRESSURE "H ₂ O	COMMENTS
				BEFORE	AFTER		

FIGURE IV-82

SUMMARY OF SOURCE TEST RESULTS

SOURCE INFORMATION		
Firm Name and Address	Firm Representative and Title	Report No. Test Date: Test Times: Run A: Run B: Run C:
Conditions During Tests	Phone No. Source:	
Operating Parameters	Operates hr/day & days/yr	

Test Results and Comments

<u>METHOD</u>	<u>PUMP NUMBER</u>	<u>NOZZLE TYPE</u>	<u>DYNAMIC BACK PRESSURE, IN. H₂O</u>	
			<u>BEFORE DRAINING</u>	<u>AFTER DRAINING</u>

Source Test Procedure ST-28

HYDROGEN SULFIDE, INTEGRATED SAMPLING

REF: Reg. 10-8-303

1. Applicability

1.1 This method is applicable for the determination of hydrogen sulfide (H₂S) emissions from stationary sources for compliance with Regulation 10-8-303.

2. Principle

2.1 Hydrogen sulfide is collected in a series of impingers and reacted with alkaline cadmium hydroxide (Cd(OH)₂) to form cadmium sulfide (CdS). The precipitated CdS is dissolved in hydrochloric acid and absorbed in an iodine solution. The iodine consumed is related to the H₂S content of the gas. The sample train is preceded by an impinger containing hydrogen peroxide to remove SO₂ which interfere with the determination.

3. Range and Sensitivity

3.1 The minimum measurable concentration of hydrogen sulfide is 0.0002 grains/SCDF

4. Interferences

4.1 High concentrations of SO₂ or other acid gases could saturate the peroxide impinger and interfere.

5. Apparatus

5.1 Probe. The probe is constructed of borosilicate glass tubing.

5.2 Absorbers. Use five Greenberg-Smith impingers. The final impinger has a thermometer attached to the inlet stem.

5.3 Cooling system. An ice bath is used to contain the impingers.

5.4 Sample pump. Use a leak free vacuum pump capable of maintaining a 0.5 CFM flow rate at 15 inches of mercury. The pump has a flow control and vacuum gauge attached to the inlet.

5.5 Silica gel tube. Use approximately 500 cc of silica gel with a drierite indicator to insure dry gas entering the dry gas meter.

5.6 Dry test meter. Use a dry test meter accurate within $\pm 2\%$ of the true volume and equipped with a thermometer to measure the outlet temperature.

5.7 Connections. Use Teflon tubing in making all connections that come in contact with the sample. Vinyl tubing is acceptable for all other connections.

5.8 Barometer. Use a barometer that is accurate within ± 0.2 inches of mercury.

5.9 Rotameter. Use a calibrated rotameter to measure the sampling rate.

6. Reagents

6.1 Hydrogen peroxide (H_2O_2) solution, 3%. Prepare a solution of 3% by volume hydrogen peroxide in distilled water.

6.2 Cadmium hydroxide ($Cd(OH)_2$). Mix 4.3 g cadmium sulfate hydrate ($3CdSO_4 \cdot 8H_2O$) and 0.3g of sodium hydroxide (NaOH) in 1 liter of distilled water.

7. Pre-test Procedures

7.1 Add 100 ml of 3% H_2O_2 to one impinger.

7.2 Add 100 ml of $Cd(OH)_2$ to each of three impingers.

7.3 Assemble the sampling train as shown in Figure IV-84.

7.4 Leak-test the sampling train by starting the sample pump, plugging the probe, and adjusting the pump inlet vacuum to 10 inches Hg. The leak rate must not exceed 0.02 CFM through the meter. Before stopping the pump, carefully release the plug in the sample probe to avoid backflow of the impinger solution.

7.5 Record the initial dry test meter reading and barometric pressure as shown in Figure IV-85.

8. Sampling

8.1 Each test run shall be of thirty minute duration when testing emissions from continuous operations. Each test run at batch process operations shall be for 90% of the batch time or thirty minutes, whichever is less. If the yellow color of cadmium sulfide is visible in the third cadmium hydroxide impinger discontinue sampling.

8.2 Position the probe at the sampling point and start the pump.

8.3 Sample at a constant rate of 14.3 liter/min (0.5 CFM) during the test as determined by the rotameter. Use the rotameter only to establish the initial sampling rate. Then remove it from the system.

8.4 Record the following information at five-minute intervals:

dry test meter temperature
impinger outlet temperature
dry test meter reading

8.5 Add ice as necessary to maintain impinger temperatures at 7°C or less.

8.6 At the conclusion of each run, stop the pump, remove the probe from the stack, and record the final meter reading.

8.7 Take three consecutive samples.

9. Post-Test Procedures

9.1 Disconnect the impinger train from the probe and purge the train with clean ambient air for 15 minutes to ensure all H₂S is removed from the hydrogen peroxide.

9.2 Stopper the impingers to minimize sample losses.

9.3 Individually analyze the cadmium hydroxide solutions for hydrogen sulfide according to analytical procedure Lab 18.

10 Calculations

10.1 Standard Sample Volume:

$$V_o = \frac{17.71 V_m P_b}{T_m}$$

where:

V_o = corrected sample volume, SDCF at 70°F and 29.92 in Hg.
 T_m = average meter temperature, °R, (°F+460)
 V_m = uncorrected meter volume, ft³
 P_b = barometric pressure, inches Hg.
17.71 = constant correcting to standard conditions (5300R) (29.92 inches Hg)

10.2 Hydrogen Sulfide concentration:

$$C_{H_2S} = \frac{W \times 15.43}{V_o}$$

where:

C_{H_2S} = Hydrogen sulfide concentration,
grains/SCDF

W = total weight of hydrogen sulfide
in the impinger catch, for each run, grams

15.43 = factor converting grams to grains

11. Reporting

11.1 Report the data indicated on Figure IV-86.

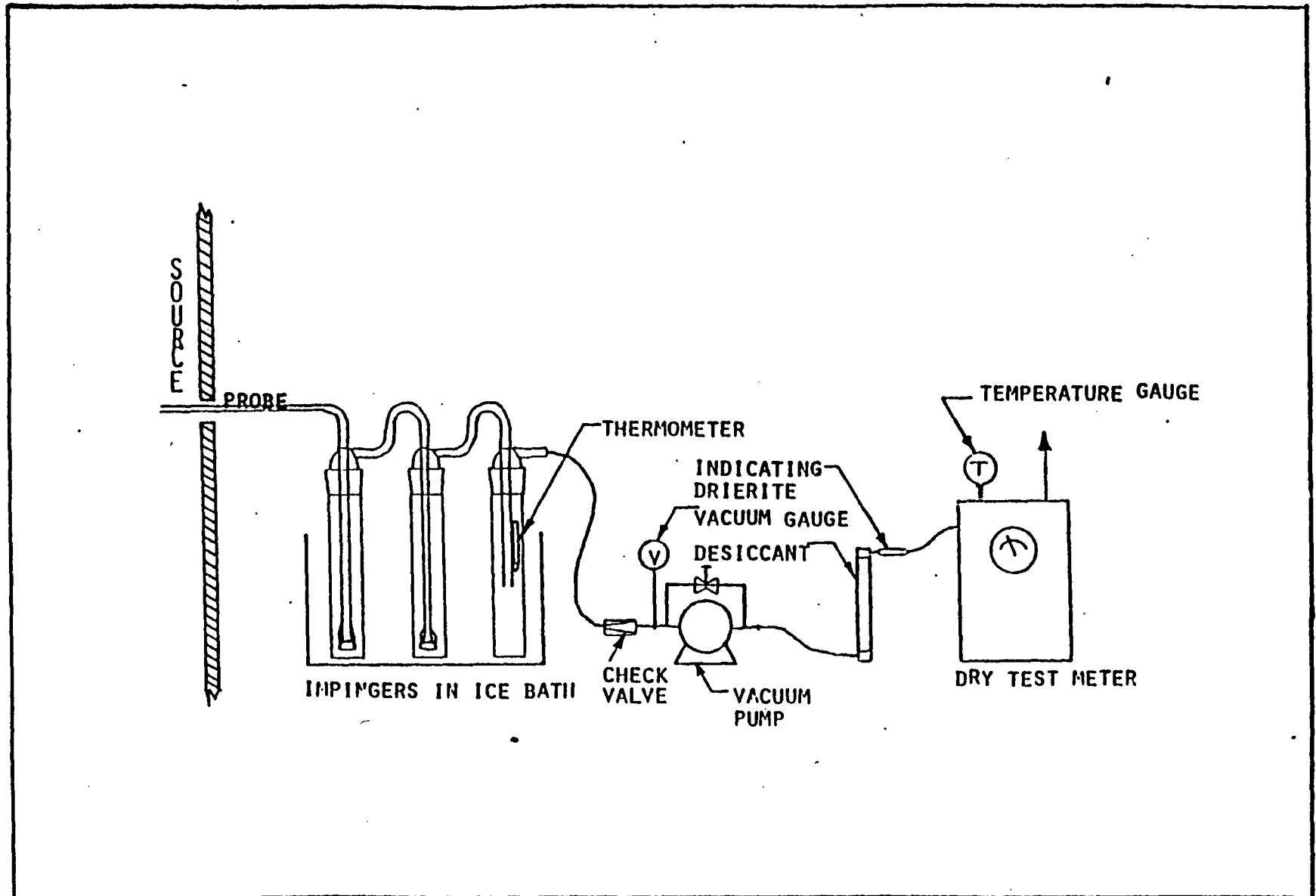


FIG. IV-84

HYDROGEN SULFIDE SAMPLING TRAIN

SUMMARY OF SOURCE TEST RESULTS

SOURCE INFORMATION		
Firm Name and Address	Firm Representative and Title	
	Phone No.	Report No.
Conditions During Tests	Source:	Test Date:
	Operates hr/day & days/yr	Test Times:
Operating Parameters		Run A:
		Run B:
		Run C:

Test Results and Comments

<u>METHOD</u>	<u>TEST</u>	<u>RUN A</u>	<u>RUN B</u>	<u>RUN C</u>	<u>AVG.</u>
ST-28	Hydrogen Sulfide, gr/SDCF				

MANUAL OF PROCEDURES

VOLUME V

CONTINUOUS EMISSION MONITORING
POLICY AND PROCEDURES

Manual of Procedures
VOLUME V
Continuous Emission Monitoring
Policy and Procedures

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Continuous Emission Monitoring

Policy and Procedures

1. Introduction

The purpose of this Volume of Manual of Procedures is to advise persons subject to the Regulations of the Bay Area Air Quality Management District of the requirements which must be met by continuous emission monitoring installations.

This volume is an elaboration of the requirements in the Regulations and has been adopted by the Board of Directors of this District. Persons failing to comply with its provisions will be subject to penalty action as provided for in the Health and Safety Code of the State of California.

2. Applicability.

The procedures set forth in this Volume are applicable to the requirements for those monitors specified by District regulations. Generally, these regulations are designed to fulfill the requirements of State and Federal Law, i.e., Sections 42700 of the California Health and Safety Code along with California Air Resources Board Resolution 75-59 and Title 40, U.S. Code of Federal Regulations, Part 51, Appendix P. and Part 60.

These documents are available to the public. Persons subject to these monitoring requirements are encouraged to obtain them and review their contents.

3. Instrumentation.

3.1 General

The Air Pollution Control Officer (APCO) shall approve plans and specifications for monitor selection and placement.

In all cases where gaseous monitors are installed it will be necessary to determine mass emission rates. Flow rate may be determined either by installing a stack gas velocity monitor or by calculations. Any such calculations must be clear, easy to verify, and of demonstrated reliability.

All monitors on sources subject to an emission standard shall be equipped with an analog chart recorder. Chart speeds shall be such that violations of the standard are readily discernible.

The instrument span shall be two to four times the anticipated stack concentration. If necessary to provide a clear record of any violations, the instruments shall be dual range with automatic attenuation and an event marker to indicate span on the chart recorder.

In certain situations it may be possible to use a single monitor on a combination of sources or, in the case of an extractive system, to use one monitoring system on multiple sources. The APCO will approve any such applications on a case-by-case basis.

3.2 Specifications

Factors taken into consideration when the APCO evaluates a proposed monitor installation will be the performance specifications shown in Appendices A, B, and C, if applicable, and the state of the art.

3.3 Placement

The monitoring location shall be such that a representative sample is obtainable. The APCO may provide alternates to these requirements in cases of hardship or physical impossibility.

4. Installation Schedules

Occasionally additional monitors may be required by written notification from the APCO. For the purpose of installation scheduling, the effective date shall be the date of the letter from the APCO.

The following timetable shall apply to such installations.

4.1 Submittal of Plans and Specifications

A person shall respond to the Air Pollution Control Officer in writing within 45 days from the date of notification that a monitor is required. Such response shall include the plans and specifications of monitor selection and placement and shall include a descriptive brochure from the manufacturer containing performance specifications and an engineering drawing depicting the placement.

4.2 Proof of Intent to Purchase

Within 45 days of the date of notification by APCO of approval of plans and specifications, a person shall furnish the Air Pollution Control Officer documentary proof of intent to purchase, in the form of a copy of a purchase order.

4.3 Completion of Installation

Within 180 days of submission of Intent to Purchase the installation the preliminary field calibration shall have been completed; and the Air Pollution Control Officer so notified.

4.4 Completion of Testing Requirements

Within 45 days of completion of installation, all required tests shall have been completed and reported to the APCO. It may be preferable that part of the required testing be done by the manufacturer at the factory.

4.5 Time Extensions

Time extensions may be granted at the discretion of the APCO.

5. Operation

5.1 General

Instrument malfunctions are to be reported on the monthly report indicating times, type and a brief description of the repairs. Periods of inoperation greater than 24 hours must be reported by phone to the District dispatcher by the following working day, followed by notification of completion of repairs. Repairs must be made as soon as possible. Downtimes in excess of fifteen days shall be deemed a failure to monitor.

A record shall be maintained for each monitor describing maintenance, calibration and inspection.

The Source Test Section of this District will conduct periodic, Field Accuracy tests to assure proper maintenance and accuracy.

5.2 Calibration

Daily calibration and span checks shall be made as recommended by the manufacturer, except for velocity sensing instrumentation which shall be calibrated on a monthly basis. Daily records shall be kept and adjustments shall be made if the drift is greater than ten percent of the applicable emission standard or, if none applies, ten percent of span.

Calibration gases shall be traceable to NBS standards where such reference gases are available. Every three months from the date of manufacture, gases must be re-analyzed by the reference methods indicated in the Appendices, unless the manufacturer guarantees a longer shelf life. Gases should not be used after their stated shelf life has expired. For extractive systems, the calibration gases must be introduced as close to the tip of the probe as possible.

5.3. Maintenance

All monitoring systems shall be maintained in a good state of repair. At the discretion of the APCO, either complete performance

specification tests or field accuracy tests may be required after repairs have been made on the system.

6. Testing Requirements

Testing requirements depend on the type of monitor and source. Performance tests shall be conducted at the completion of installation and preliminary field calibrations. A copy of the test results shall be furnished to the APCO and one copy shall be retained in owners file.

6.1 Performance Specification Tests

Performance Specification Tests are detailed tests designed to insure that an instrument meets performance specifications for accuracy, zero and span drift, response time and stability. These tests are required on the following monitors on indicated sources.

<u>Monitor</u>	<u>SOURCES</u>
SO ₂	Fossil Fuel Fired Steam Generators, H ₂ SO ₄ plants
NO ₂	Fossil Fuel Fired Steam Generators, HNO ₃ plants
O ₂ ^x or CO ₂	Fossil Fuel Fired Steam Generators.
Opacity	All

Applicable Performance Specification Test Procedures are appended as A, B, and C. These procedures are identical to EPA Performance Specification Tests 1,2 add 3.

6.2 Field Accuracy Tests

Field Accuracy Tests are a portion of the Performance Specification Test which are designed to insure the accuracy of the monitoring system. They are applicable to all systems except transmissometers. The accuracy requirement is that the monitoring system must be within $\pm 20\%$ or 10% of the applicable emission standard, whichever is greater, when compared to the Field Accuracy Test Procedure. This means that not only the component monitors, but also, the resultant mass emission rate must meet this specification.

Field Accuracy Test Procedure is shown as Appendix D.

7. Records Retention

All persons subject to monitoring requirements must maintain a file of all pertinent information, emission measurements, system performance specification and field accuracy tests, calibration checks; adjustments and maintenance.

These records must be retained for not less than two years and made available to the APCO upon request. Source Test personnel may inspect them during periodic Field Accuracy Tests.

8. Reports

8.1 Performance Specification Test Report

This test is to be conducted by the person responsible for the installation. One copy of the test results is to be furnished to the APCO upon completion. The APCO will notify the person of the acceptability of the report.

8.2 Field Accuracy Test Report

This test may be conducted either by the person responsible for the monitor or the APCO. Copies of the test results are to be furnished by either party to the other upon completion of the test.

8.3 Report of Excesses

Any indicated excess of any emission standard to which the stationary source is required to conform, as indicated by the monitoring device, shall be reported by the operator of the source by telephone to the District dispatcher within 96 hours after such occurrence. The report should include the nature, extent, cause and corrective action taken.

For the purpose of determining an indicated excess in the case of a gaseous pollutant an excess will be considered to have occurred if the average of any clock hour exceeds the standard, except for start-up of sulfuric acid plants. Prior to July 31, 1981, sulfur dioxide emissions during start-up of sulfuric acid plants shall be averaged over the first six hours of operation for purposes of determining compliance. After July 31, 1981, the start-up averaging time shall be four hours.

In the case of opacity, an indicated excess will be considered to have occurred if any cumulative period over three minutes within any clock hour was in excess of the opacity standard.

Where computerized data processing systems are used the APCO may approve alternate requirements.

8.4 Monthly Monitoring Report

The data from monitors required by this District will be used as proof of violations of applicable emission standards, to relate sources to ground level monitoring excesses and provide emission inventory information. Therefore, the emissions to be reported will vary with the type of monitor. The following is a list of the type of emissions that must be reported for each pollutant:

<u>Pollutant</u>	<u>Emission Type</u>
Opacity	Excesses only
NO _x	Mass Emission Rate (Ton/day) plus NO _x concentration at 3% O ₂ for Regulated boilers.
SO ₂	Average 24 hour concentration, maximum one hour concentration, Mass Emission rate, Tons/day, and emissions based on production rate.

All concentration data is to be reported on a dry basis. A water monitor is not necessary for the dry basis calculation. Data from previous tests, process parameters or calculations may be used.

In addition to the emission data, the monthly monitoring report shall include:

- a: the date and time identifying each period the system was inoperative, except for daily calibrations, and the nature of the repairs.
- b: A Summary of the excesses including a negative declaration if applicable.

The monthly calibration data on the flow sensor need not be reported and is to be kept available in files.

An example of the reporting format is shown as Appendix E.

This report is due within 30 days after the end of the month.

PERFORMANCE SPECIFICATION . TEST 1

Performance Specification 1 - Performance specifications and specification test procedures for transmissometer systems for continuous measurement of the opacity of stack emissions.

1. Principle and Applicability

1.1 Principle. The opacity of particulate matter in stack emissions is measured by a continuously operating emission measurement system. These systems are based upon the principle of transmissometry which is a direct measurement of the attenuation of visible radiation (opacity) by particulate matter in a stack effluent. Light having specific spectral characteristics is projected from a lamp across the stack of a pollutant source to a light sensor. The light is attenuated due to absorption and scatter by the particulate matter in the effluent. The percentage of visible light attenuated is defined as the opacity of the emission. Transparent stack emissions that do not attenuate light will have a transmittance of 100 or an opacity of 0. Opaque stack emissions that attenuate all of the visible light will have a transmittance of 0 or an opacity of 100 percent. The transmissometer is evaluated by use of neutral density filters to determine the precision of the continuous monitoring system. Tests of the system are performed to determine zero drift, and response time characteristics of the system.

1.2 Applicability. This performance specification is applicable to the continuous monitoring systems specified in the subparts for measuring opacity of emissions. Specification for continuous measurement of visible emissions are given in terms of design, performance, and installation parameters, installation requirements, and data computation procedures for evaluating the acceptability of the continuous monitoring systems subject to approval by the APCO.

2. Apparatus

2.1 Calibrated Filters. Optical filters with neutral spectral characteristics and known optical densities to visible light of screens known to produce specified optical densities. Calibrated filters with accuracies certified by the manufacturer to within ± 3 percent opacity shall be used. Filters required are low, mid, and high-range filters with nominal optical densities as follows when the transmissometer is spanned at opacity levels specified by applicable subparts:

Span Value (percent opacity)	Calibrated filter optical densities with equivalent opacity in parenthesis		
	Low Range	Mid-Range	High-Range
50	0.1 (20)	0.2 (37)	0.3 (50)
60	.1 (20)	.2 (37)	.3 (50)
70	.1 (20)	.3 (50)	.4 (60)
80	.1 (20)	.3 (50)	.6 (75)
90	.1 (20)	.4 (60)	.7 (80)
100	.1 (20)	.4 (60)	.9 (87 1/2)

It is recommended that filter calibrations be checked with a well-collimated photopic transmissometer of known linearity prior to use. The filters shall be of sufficient size to attenuate the entire light beam of the transmissometer.

2.2 Data Recorder. Analog chart recorder or other suitable device with input voltage range compatible with the analyzer system output. The resolution of the recorder's data output shall be sufficient to allow completion of the test procedures within this specification.

2.3 Opacity measurement System. An in-stack transmissometer (folded or single path) with the optical design specifications designated below, associated control units and apparatus... to keep optical surfaces clean.

3. Definitions.

3.1 Continuous Monitoring System. The total equipment required for the determination of pollutant opacity in a source effluent. Continuous monitoring systems consist of major subsystems as follows:

3.1.1 Sampling Interface. The portion of a continuous monitoring system for opacity that protects the analyzer from the effluent.

3.1.2 Analyzer. That portion of the continuous monitoring system which senses the pollutant and generates a signal output that is a function of the pollutant opacity.

3.1.3 Data Recorder. That portion of the continuous monitoring system that processes the analyzer output and provides a permanent record of the output signal in terms of pollutant opacity.

3.2 Transmissometer. The portions of a continuous monitoring system for opacity that include the sampling interface and the analyzer.

3.3 Span. The value of opacity at which the continuous monitoring system is set to produce the maximum data display output. The span shall be set at an opacity specified in each applicable subpart.

3.4 Calibration Error. The difference between the opacity reading indicated by the continuous monitoring system and the known values of a series of test standards. For this method the test standards are a series of calibrated optical filters or screens.

3.5 Zero Drift. The change in continuous monitoring system output over a stated period of time of normal continuous operation when the pollutant concentration at the time of the measurements is zero.

3.6 Calibration Drift. The change in the continuous monitoring system output over a stated period of time of normal continuous operation when the pollutant concentration at the time of the measurements is the same known upscale value.

3.7 System Response. The time interval from a step change in opacity in the stack at the input to the continuous monitoring system to the time at which 95 percent of the corresponding final value is reached as displayed on the continuous monitoring system data recorder.

3.8 Operational Test Period. A minimum period of time over which a continuous monitoring system is expected to operate within certain performance specifications without unscheduled maintenance, repair, or adjustment.

3.9 Transmittance. The fraction of incident light that is transmitted through an optical medium of interest.

3.10 Opacity. The fraction of incident light that is attenuated by an optical medium of interest. Opacity (O) and transmittance (T) are related as follows:

$$O = 1 - T$$

3.11 Optical Density. A logarithmic measure of the amount of light that it attenuated by an optical medium of interest. Optical density (D) is related to the transmittance and opacity as follows:

$$D = -\log_{10}T$$

$$D = -\log_{10} (1-O)$$

3.12 Peak Optical Response. The wave-length of maximum sensitivity of the instrument.

3.13 Mean Spectral Response. The wave-length which bisects the total area under the curve obtained pursuant to paragraph 9.2.1

3.14 Angle of View. The maximum (total) angle of radiation detection by the photodetector assembly of the analyzer.

3.15 Angle of Projection. The maximum (total) angle that contains 95 percent of the radiation projected from the lamp assembly of the analyzer.

3.16 Pathlength. The depth of effluent in the light beam between the receiver and the transmitter of the single-pass transmissometer, or the depth of effluent between the transceiver and reflector of a double-pass transmissometer. Two pathlengths are referenced by this specification:

3.16.1 Monitor Pathlength. The depth of effluent as the installed location of the continuous monitoring system.

3.16.2 Emission Outlet Pathlength. The depth of effluent at the location emissions are released to the atmosphere.

4. Installation Specification.

4.1 Location. The transmissometer must be located across a section of duct or stack that will provide a particulate matter flow through the optical volume of the transmissometer that is representative of the particulate matter flow through the duct or stack. It is recommended that the monitor pathlength or depth of effluent for the transmissometer include the entire diameter of the duct or stack. In installations using a shorter pathlength, extra caution must be used in determining the measurement location representative of the particulate matter flow through the duct or stack.

4.1.1 The transmissometer location shall be downstream from all particulate control equipment.

4.1.2 The transmissometer shall be located as far from bends and obstructions as practical.

4.1.3 A transmissometer that is located in the duct or stack following a bend shall be installed in the plane defined by the bend where possible.

4.1.4 The transmissometer should be installed in an accessible location.

4.1.5 When required by the APCO, the owner or operator of a source must demonstrate that the transmissometer is located in a section of duct or stack where a representative particulate matter distribution exists. The determination shall be accomplished by examining the opacity profile of the effluent as a series of positions across the duct or stack while the plant is in operation at maximum or reduced operating rates or by other tests acceptable to the APCO.

4.2 Slotted Tube. Installations that require the use of a slotted tube shall use a slotted tube of sufficient size and blackness so as not to interfere with the free flow of effluent through the entire optical volume of the transmissometer or reflect light into the transmissometer photodetector. Light reflections may be prevented by using blackened baffles within the slotted tube to prevent the lamp radiation from impinging upon the tube walls, by restricting the angle of projection of the light and the angle of view of the photo-

detector assembly to less than the cross-sectional area of the slotted tube, or by other methods. The owner or operator must show that the manufacturer of the monitoring system has used appropriate methods to minimize light reflections for systems using slotted tubes.

4.3 Data Recorder Output. The continuous monitoring system output shall permit expanded display of the span opacity on a standard 0 to 100 percent scale. Since all opacity standards are based on the opacity of the effluent exhausted to the atmosphere the system output shall be based upon the emission outlet pathlength and permanently recorded. For affected facilities whose monitor pathlength is different from the facility's emission outlet pathlength, a graph shall be provided with the installation to show the relationships between the continuous monitoring system recorded opacity based upon the emission outlet pathlength and the opacity of the effluent at the analyzer location (monitor pathlength). Tests for measurement of opacity that are required by this performance specification are based upon the monitor pathlength. The graph necessary to convert the data recorder output to the monitor pathlength basis shall be established as follows:

$$\log (1-O_1) = (l_1/l_2) \log (1-O_2)$$

where:

O_1 = the opacity of the effluent based upon l_1 .

O_2 = the opacity of the effluent based upon l_2 .

l_1 = the emission outlet pathlength.

l_2 = the monitor pathlength.

5. Optical Design Specifications.

The optical design specifications set forth in Section 6.1 shall be met in order for a measurement system to comply with the requirements of this method.

6. Determination of Conformance with Design Specifications.

6.1.1 Peak Spectral Response. The peak spectral response of the continuous monitoring systems shall occur between 500 nm and 600 nm. Response at any wavelength below 400 nm or above 700 nm shall be less than 10 percent of the peak response of the continuous monitoring system.

6.1 The continuous monitoring system for measurement of opacity shall be demonstrated to conform to the design specifications set forth as follows:

6.1.2 Mean Spectral Response. The mean spectral response of the continuous monitoring system shall occur between 500 nm and 600 nm.

6.1.3 Angle of View. The total angle of view shall be no greater than 5 degrees.

6.1.4 Angle of Projection. The total angle of projection shall be no greater than 5 degrees.

6.2 Conformance with requirements under Section 6.1 of this specification may be demonstrated by the owner or operator of the affected facility or by the manufacturer of the opacity measurement system. Where conformance is demonstrated by the manufacturer, certification that the tests were performed, a description of the test procedures, and the test results shall be provided by the manufacturer... If the source owner or operator demonstrates conformance, the procedures used and results obtained shall be reported.

6.3 The general test procedures to be followed to demonstrate conformance with Section 6 requirements are given as follows: (These procedures will not be applicable to all designs and will require modification in some cases. Where analyzer and optical design is certified by the manufacturer to conform with the angle of view or angle of projection specifications the respective procedures may be omitted.)

6.3.1 Spectral Response. Obtain spectral data for detector, lamp, and filter components used in the measurement system from their respective manufacturers.

6.3.2 Angle of View. Set the receiver up as specified by the manufacturer. Draw an arc with radius of 3 meters. Measure the receiver response to a small (less than 3 centimeters) non-directional light source at 5-centimeter intervals on the arc for 26 centimeters on either side of the detector centerline. Repeat the test in the vertical direction.

6.3.3 Angle of Projection. Set the projector up as specified by the manufacturer. Draw an arc with radius of 3 meters. Using a small photoelectric light detector (less than 3 centimeters), measure the light intensity at 5-centimeter intervals on the arc for 26 centimeters on either side of the light source centerline of projection. Repeat the test in the vertical direction.

7. Continuous Monitoring System Performance Specifications.

The continuous monitoring system shall meet the performance specifications in Table 1-1 to be considered acceptable under this method.

TABLE 1-1. Performance Specifications

Parameter	Specifications
a. Calibration error	≤ 3 pct opacity. ¹
b. Zero drift (24h)	≤ 2 pct opacity. ¹
c. Calibration drift (24 h)	≤ 2 pct opacity. ¹
d. Response time	10 s (maximum)
e. Operational test period	168 h.

¹ Expressed as sum of absolute mean value and the 95 pct confidence interval of a series of tests.

8. Performance Specification Test Procedures. The following test procedures shall be used to determine conformance with the requirements of paragraph 7:

8.1 Calibration Error and Response Time Test. These tests are to be performed prior to installation of the system on the stack and may be performed at the affected facility or at other locations provided that proper notification is given. Set up and calibrate the measurement system as specified by the manufacturer's written instructions for the monitor pathlength to be used in the installation. Span the analyzer as specified in applicable subparts.

8.1.1 Calibration Error Test. Insert a series of calibration filters in the transmissometer path at the midpoint. A minimum of three calibration filters (low, mid, and high-range) selected in accordance with the table under paragraph 2.1 and calibrated within 3 percent must be used. Make a total of five nonconsecutive readings for each filter. Record the measurement system output readings in percent opacity. (See Figure 1-1).

8.1.2 System Response Test. Insert the high-range filter in the transmissometer path five times and record the time required for the system to respond to 95 percent of final zero and high-range filter values. (See Figure 1-2).

8.2 Field Test for Zero Drift and Calibration Drift. Install the continuous monitoring system on the affected facility and perform the following alignments:

8.2.1 Preliminary Alignments. As soon as possible after installation and once a year thereafter when the facility is not in operation perform the following optical and zero alignments:

8.2.1.1 Optical Alignment. Align the light beam from the transmissometer upon the optical surfaces located across the effluent (i.e., the retroreflector or photodetector as applicable) in accordance with the manufacturer's instructions.

8.2.1.2 Zero Alignment. After the transmissometer has been optically aligned and the transmissometer mounting is mechanically stable (i.e., no movement of the mounting due to thermal contraction of the stack, duct, etc.) and a clean stack condition has been determined by a steady zero opacity condition, perform the zero alignment. This alignment is performed by balancing the continuous monitor system response so that any simulated zero check coincides with an actual zero check performed across the monitor pathlength of the clean stack.

8.2.1.3 Span. Span the continuous monitoring system at the opacity specified in subparts and offset the zero setting at least 10 percent of span so that negative drift can be quantified.

8.2.2 Final Alignments. After the preliminary alignments have been completed and the affected facility has been started up and reaches normal operating temperature, re-check the optical alignment in accordance with 8.2.1.1 of this specification. If the alignment has shifted, realign the optics, record any detectable shift in the opacity measured by the system that can be attributed to the optical realignment, and notify the APCO. This condition may not be objectionable if the affected facility operates within a fairly constant and adequately narrow range of operating temperatures that does not produce significant shifts in optical alignment during normal operation of the facility. Under circumstances where the facility operations produce fluctuations in the effluent gas temperature that result in significant misalignments, the APCO may require improved mounting structures or another location for installation of the transmissometer.

8.2.3 Conditioning Period. After completing the post-startup alignments, operate the system for an initial 168-hour conditioning period in a normal operational manner.

8.2.4 Operational Test Period. After completing the conditioning period, operate the system for an additional 168-hour period retaining the zero offset. The system shall monitor the source effluent at all times except when being zeroed or calibrated. At 24-hour intervals the zero and span shall be checked according to the manufacturer's instructions. Minimum procedures used shall provide a system check of the analyzer internal mirrors and all electronic circuitry including the lamp and photodetector assembly and shall include a procedure for producing a simulated zero opacity condition and a simulated upscale (span) opacity condition as viewed by the receiver. The manufacturer's written instructions may be used providing that they equal or exceed these minimum procedures: Zero and span the transmissometer, clean all optical surfaces exposed to the effluent, realign optics, and make any necessary adjustments to the calibration of the system daily. These zero

and calibration adjustments and optical realignments are allowed only at 24-hour intervals or at such shorter intervals as the manufacturer's written instructions specify. Automatic corrections made by the measurement system without operator interventions are allowed at any time. The magnitude of any zero or span drift adjustments shall be recorded. During this 168-hour operational test period, record the following at 24-hour intervals: (a) the zero reading and span readings after the system is calibrated (these readings should be set at the same value at the beginning of each 24-hour period); (b) the zero reading after each 24 hours of operation, but before cleaning and adjustment; and (c) the span reading after cleaning and zero adjustment, but before span adjustment. (See Figure 1-3).

9. Calculation, Data Analysis, and Reporting.

9.1 Procedure for Determination of Mean Values and Confidence Intervals.

9.1.1 The mean value of the data set is calculated according to equation 1-1.

$$X = \frac{1}{n} \sum_{i=1}^n X_i$$

Equation 1-1

where x_i = absolute value of the individual measurements.

= sum of the individual values.

X = mean value, and

n = number of data points.

9.1.2 The 95 percent confidence interval (two-sided) is calculated according to equation 1-2:

$$C.I.95 = \frac{t_{.975}}{n\sqrt{n-1}} \sqrt{n(\sum x_i^2) - (\sum x_i)^2}$$

Equation 1-2

where

x_i = sum of all data points,

$t_{.975}$ = $t_1 - \alpha/2$ and

C.I.95 = 95 percent confidence interval estimate of the average mean value.

Values for $t_{.975}$

n	$t_{.975}$	n	$t_{.975}$
2	12.706	10	2.262
3	4.303	11	2.228
4	3.182	12	2.201
5	2.776	13	2.179
6	2.571	14	2.160
7	2.477	15	2.145
8	2.365	16	2.131
9	2.306		

The values in this table are already corrected for $n-1$ degrees of freedom. Use n equal to the number of samples as data points.

9.2 Data Analysis and Reporting.

9.2.1 Spectral Response. Combine the spectral data obtained in accordance with paragraph 6.3.1 to develop the effective spectral response curve of the transmissometer. Report the wavelength at which the peak response occurs, the wavelength at which the mean response occurs, and the maximum response at any wavelength below 400 nm and above 700 nm expressed as a percentage of the peak response as required under paragraph 6.2

9.2.2 Angle of View. Using the data obtained in accordance with paragraph 6.3.2, calculate the response of the receiver as a function of viewing angle in the horizontal and vertical directions (26 centimeters of arc with a radius of 3 meters equal 5 degrees). Report relative angle of view curves as required under paragraph 6.2.

9.2.3 Angle of Projection. Using the data obtained in accordance with paragraph 6.3.3, calculate the response of the photoelectric detector as a function of projection angle in the horizontal and vertical directions. Report relative angle of projection curves as required under paragraph 6.2.

9.2.4 Calibration Error. Using the data from paragraph 8.1 (figure 1-1), subtract the known filter opacity value from the value shown by the measurement system for each of the 15 readings. Calculate the mean and 95 percent confidence interval of the five different values at each test filter value according to equations 1-1 and 1-2. Report the sum of the absolute mean difference and the 95 percent confidence interval for each of the three test filters.

Figure 1-1, Calibration Error Test

Calibrated Neutral Density Filter Data
(See paragraph 8.1.1)

Low Range _____ % opacity Span Value _____ % opacity	Mid Range _____ % opacity	High Range _____ % Opacity	
Date of Test _____		Location of Test _____	
Calibrated Filter ¹	Analyzer Reading % Opacity	Differences ² % Opacity	
1.	_____	_____	
2.	_____	_____	
3.	_____	_____	
4.	_____	_____	
5.	_____	_____	
6.	_____	_____	
7.	_____	_____	
8.	_____	_____	
9.	_____	_____	
10.	_____	_____	
11.	_____	_____	
12.	_____	_____	
13.	_____	_____	
14.	_____	_____	
15.	_____	_____	
	Low	Mid	High
Mean Difference	_____	_____	_____
Confidence Interval	_____	_____	_____
Calibration error = Mean Difference ³ +C.I.	_____	_____	_____
¹ Low, mid or high range			
² Calibration filter opacity - analyzer reading			
³ Absolute value			

9.2.5 Zero Drift. Using the zero opacity values measured every 24 hours during the field test (paragraph 8.2), calculate the differences between the zero point after cleaning, aligning, and adjustment, and the zero value 24 hours later just prior to cleaning, aligning, and adjustment. Calculate the mean value of these points and the confidence interval using equations 1-1 and 1-2. Report the sum of the absolute mean value and the 95 percent confidence interval.

9.2.6 Calibration Drift. Using the span value measured every 24 hours during the field test, calculate the differences between the span value after cleaning, aligning, and adjustment of zero and span, and the span value 24 hours later just after cleaning, aligning, and adjustment of zero and before adjustment of span. Calculate the mean value of these points and the confidence interval using equations 1-1 and 1-2. Report the sum of the absolute mean value and the confidence interval.

9.2.7 Response Time. Using the data from paragraph 8.1, calculate the time interval from filter insertion to 95 percent of the final stable value for all upscale and downscale traverses. Report the mean of the 10 upscale and downscale test times.

9.2.8 Operational Test Period. During the 168-hour operational test period, the continuous monitoring system shall not require any corrective maintenance, repair, replacement, or adjustment other than that clearly specified as required in the manufacturer's operation and maintenance manuals as routine and expected during a one-week period. If the continuous monitoring system is operated within the specified performance parameters and does not require corrective maintenance, repair, replacement, or adjustment other than as specified above during the 168-hour test period, the operational test period shall have been successfully concluded. Failure of the continuous monitoring system to meet these requirements shall call for a repetition of the 168-hour test period. Portions of the tests which were satisfactorily completed need not be repeated. Failure to meet any performance specification(s) shall call for a repetition of the one-week operational test period and that specific portion of the tests required by paragraph 8 related to demonstrating compliance with the failed specification. All maintenance and adjustments required shall be recorded. Output readings shall be recorded before and after all adjustments.

10 References.

10.1 "Experimental Statistics," Department of Commerce, National Bureau of Standards Handbook 91, 1963 pp. 3-31, paragraphs 3-3.1.4.

10.2 "Performance Specifications for Stationary-Source Monitoring Systems for Gases and Visible Emissions," Environmental Protection Agency, Research Triangle Park, N.C., EPA-650/7-74-013, January 1974.

Date of Test _____		Location of Test _____	
Span Filter _____		% Opacity	
Analyzer Span Setting _____		% Opacity	
Upscale	1. _____	Seconds	
	2. _____	Seconds	
	3. _____	Seconds	
	4. _____	Seconds	
	5. _____	Seconds	
Downscale	1. _____	Seconds	
	2. _____	Seconds	
	3. _____	Seconds	
	4. _____	Seconds	
	5. _____	Seconds	
Average response _____		Seconds	

Figure 1-2. Response Time Test

PERFORMANCE SPECIFICATION TEST 2

Performance Specification 2 - Performance specifications and specification test procedures for Monitors of SO₂ and NO_x from stationary sources.

1. Principle and Applicability.

1.1 Principle. The concentration of sulfur dioxide or oxides of nitrogen pollutants in stack emissions is measured by a continuously operating emission measurement system. Concurrent with operation of the continuous monitoring system, the pollutant concentrations are also measured with reference methods (Appendix A). An average of the continuous monitoring system data is computed for each reference method testing period and compared to determine the relative accuracy of the continuous monitoring system. Other tests of the continuous monitoring system are also performed to determine calibration error, drift, and response characteristics of the system.

1.2 Applicability. This performance specification is applicable to evaluation of continuous monitoring systems for measurement of nitrogen oxides or sulfur dioxide pollutants. Tests specifications contain test procedures, installation requirements, and data computation procedures for evaluating the acceptability of the continuous monitoring systems.

2. Apparatus.

2.1 Calibration Gas Mixtures. Mixtures of known concentration of pollutant gas in a diluent gas shall be prepared. The pollutant gas shall be sulfur dioxide or the appropriate oxide(s) of nitrogen specified by paragraph 6 and within subparts. For sulfur dioxide gas mixtures, the diluent gas may be air or nitrogen. For nitric oxide (NO) gas mixtures, the diluent gas shall be oxygen-free (<10ppm) nitrogen, and for nitrogen dioxide (NO₂) gas mixtures the diluent gas shall be air. Concentrations of approximately 50 percent and 90 percent of span are required. The 90 percent gas mixture is used to set and to check the span and is referred to as the span gas.

2.2 Zero Gas. A gas certified by the manufacturer to contain less than 1 ppm of the pollutant gas or ambient air may be used.

2.3 Equipment for measurement of the pollutant gas concentration using the reference method specified in the applicable standard.

2.4 Data Recorder. Analog chart recorder or other suitable device with input voltage range compatible with analyzer system output. The resolution of the recorder's data output shall be sufficient to allow completion of the test procedures within the specification.

2.5 Continuous monitoring system for SO₂ or NO_x pollutants as applicable.

3. Definitions.

3.1 Continuous Monitoring System. The total equipment required for the determination of a pollutant gas concentration in a source effluent. Continuous monitoring systems consist of major subsystems as follows:

3.1.1 Sampling Interface. That portion of an extractive continuous monitoring system that performs one or more of the following operations: acquisition, transportation, and conditioning of a sample of the source effluent or that portion of an in-situ continuous monitoring system that protects the analyzer from the effluent.

3.1.2 Analyzer. That portion of the continuous monitoring system which senses the pollutant gas and generates a signal output that is a function of the pollutant concentration.

3.1.3 Data Recorder. That portion of the continuous monitoring system that provides a permanent record of the output signal in terms of concentration units.

3.2 Span. The value of pollutant concentration at which the continuous monitoring system is set to produce the maximum data display output. The span shall be set at the concentration specified in each applicable subpart.

3.3 Accuracy (Relative). The degree of correctness with which the continuous monitoring system yields the value of gas concentration of a sample relative to the value given by a defined reference method. This accuracy is expressed in terms of error, which is the difference between the paired concentration measurements expressed as a percentage of the mean reference value.

3.4 Calibration Error. The difference between the pollutant concentration indicated by the continuous monitoring system and the known concentration of the test gas mixture.

3.5 Zero Drift. The change in the continuous monitoring system output over a stated period of time of normal continuous operation when the pollutant concentration at the time for the measurements is zero.

3.6 Calibration Drift. The change in the continuous monitoring system output over a stated time period of normal continuous operations when the pollutant concentration at the time of the measurements is the same known upscale value.

3.7 Response Time. The time interval from a step change in pollutant concentration at the input to the continuous monitoring system to the time at which 95 percent of the corresponding final value is reached as displayed on the continuous

monitoring system data recorder.

3.8 Operational Period. A minimum period of time over which a measurement system is expected to operate within certain performance specifications without unscheduled maintenance, repair, or adjustment.

3.9 Stratification. A condition identified by a difference in excess of 10 percent between the average concentration in the duct or stack and the concentration at any point more than 1.0 meter from the duct or stack wall.

4. Installation Specifications. Pollutant continuous monitoring systems (SO₂ and NO_x) shall be installed at a sampling location where measurements can be made which are directly representative (4.1), or which can be corrected so as to be representative (4.2) of the total emissions from the affected facility. Conformance with this requirement shall be accomplished as follows:

4.1 Effluent gases may be assumed to be nonstratified if a sampling location eight or more stack diameters (equivalent diameters) downstream of any air in-leakage is selected. This assumption and data correction procedures under paragraph 4.2.1 may not be applied to sampling locations upstream of an air preheater in a stream generating facility under Subpart D of this part. For sampling locations where effluent gases are either demonstrated (4.3) or may be assumed to be nonstratified (eight diameters), a point (extractive systems) or path (in-situ systems) of average concentration may be monitored.

4.2 For sampling locations where effluent gases cannot be assumed to be nonstratified (less than eight diameters) or have been shown under paragraph 4.3 to be stratified, results obtained must be consistently representative (e.g. a point of average concentration may shift with load changes) or the data generated by sampling at a point (extractive systems) or across a path (in-situ systems) must be corrected (4.2.1 and 4.2.2) so as to be representative of the total emissions from the affected facility. Conformance with this requirement may be accomplished in either of the following ways:

4.2.1 Installation of a diluent continuous monitoring system (O₂ or CO₂ as applicable) in accordance with the procedures under paragraph 4.2 of Performance Specification 3 of this appendix. If the pollutant and the diluent monitoring systems are not of the same type (both extractive or both in-situ), the extractive system must use a multipoint probe.

4.2.2 Installation of extractive pollutant monitoring systems using multipoint sampling probes or in-situ pollutant monitoring systems that sample or view emissions which are consistently representative of the total emissions for the entire

cross section. The Administrator may require data to be submitted to demonstrate that the emissions sampled or viewed are consistently representative for several typical facility process operating conditions.

4.3 The owner or operator may perform a traverse to characterize any stratification of effluent gases that might exist in a stack or duct. If no stratification is present, sampling procedures under paragraph 4.1 may be applied even though the eight diameter criteria is not met.

4.4. When single point sampling probes for extractive systems are installed within the stack or duct under paragraphs 4.1 and 4.2.1, the sample may not be extracted at any point less than 1.0 meter from the stack or duct wall. Multipoint sampling probes installed under paragraph 4.2.2 may be located at any points necessary to obtain consistently representative samples.

5. Continuous Monitoring System Performance Specifications.

The continuous monitoring system shall meet the performance specifications in Table 2-1 to be considered acceptable under this method.

TABLE 2-1. PERFORMANCE SPECIFICATIONS

Parameter	Specification
1. Accuracy ¹	< 20 pct of the mean value of the reference method test data.
2. Calibration error ¹	< 5 pct of each (50 pct, 90 pct) calibration gas mixture value.
3. Zero drift (2h) ¹	2 pct of span
4. Zero drift (24h) ¹	Do.
5. Calibration drift (2h) ¹	Do.
6. Calibration drift (24h) ¹	2.5 pct. of span
7. Response time	15 min maximum.
8. Operational period	168 h minimum

¹ Expressed as sum of absolute mean value plus 95 pct confidence interval of a series of tests.

6. Performance Specification Test Procedures. The following test procedures shall be requirements of paragraph 5. For NO_x analyzers that oxidize nitric oxide (NO) to nitrogen dioxide (NO_2), the response time test under paragraph 6.3 of this method shall be performed using nitric oxide (NO) span gas. Other tests for NO_x continuous monitoring systems under paragraph 6.1 and 6.2 and all tests for sulfur dioxide systems shall be performed using the pollutant span gas specified by each subpart.

6.1 Calibration Error Test Procedure. Set up and calibrate the complete continuous monitoring system according to the manufacturer's written instructions. This may be accomplished either in the laboratory or in the field.

6.1.1 Calibration Gas Analyses. Triplicate analyses of the gas mixtures shall be performed within two weeks prior to use using Reference Methods 6 for SO_2 and 7 for NO_x . Analyze each calibration gas mixture (50%, 90%) and record the results on the example sheet shown in Figure 2-1. Each sample test result must be within 20 percent of the averaged result or the tests shall be repeated. This step may be omitted for non-extractive monitors where dynamic calibration gas mixtures are not used. (6.1.2).

6.1.2 Calibration Error Test Procedure. Make a total of 15 nonconsecutive measurements by alternately using zero gas and each calibration gas mixture concentration (e.g., 0%, 50%, 0%, 90%, 50%, 90%, 50%, 0%, etc.). For nonextractive continuous monitoring systems, this test procedure may be performed by using two or more calibration gas cells whose concentrations are certified by the manufacturer to be functionally equivalent to these gas concentrations. Convert the continuous monitoring system output readings to ppm and record the results on the example sheet shown in Figure 2-2.

6.2 Field Test for Accuracy (Relative), Zero Drift, and Calibration Drift. Install and operate the continuous monitoring system in accordance with the manufacturer's written instructions and drawings as follows:

6.2.1 Conditioning Period. Offset the zero setting at least 10 percent of the span so that negative zero drift can be quantified. Operate the system for an initial 168-hour conditioning period in normal operating manner.

6.2.2 Operational Test Period. Operate the continuous monitoring system for an additional 168-hour period retaining the zero offset. The system shall monitor the source effluent at all times except when being zeroed, calibrated, or backflushed.

6.2.2.1 Field Test for Accuracy (See Appendix D).

6.2.2.2 Field Test for Zero Drift and Calibration Drift. For extractive systems, determine the values given by zero and span gas pollutant concentrations at two-hour intervals until 15 sets of data are obtained. For nonextractive measurement systems, the zero value may be determined by mechanically producing a zero condition that provides a system check of the analyzer internal mirrors and all electronic circuitry including the radiation source and detector assembly or by inserting three or more calibration gas cells and computing the zero point from the upscale measurements. If this latter technique is used, a graph(s) must be retained by the owner or operator for each measurement system that shows the relationship between the upscale measurements and the zero point. The span of the system shall be checked by using a calibration gas cell certified by the manufacturer to be functionally equivalent to 50 percent of span concentration. Record the zero and span measurements (or the computed zero drift) on the example data sheet shown in Figure 2-4. The two-hour periods over which measurements are conducted need not be consecutive but may not overlap. All measurements required under this paragraph may be conducted concurrent with tests under paragraph 6.2.2.1.

6.2.2.3 Adjustments. Zero and calibration corrections and adjustments are allowed only at 24 hour intervals or at such shorter intervals as the manufacturer's written instructions specify. Automatic corrections made by the measurement system without operator intervention or initiation are allowable at any time. During the entire 168-hour operational test period, record on the example sheet shown in Figure 2-5 the values given by zero and span gas pollutant concentrations before and after adjustment at 24-hour intervals.

6.3 Field Test for Response Time.

6.3.1 Scope of Test. Use the entire continuous monitoring system as installed, including sample transport lines if used. Flowrates, line diameters, pumping rates, pressures (do not allow the pressurized calibration gas to change the normal operating pressure in the sample line), etc., shall be at the nominal values for normal operation as specified in the manufacturer's written instructions. If the analyzer is used to sample more than one pollutant source (stack), repeat this test for each sampling point.

6.3.2 Response Time Test Procedure. Introduce zero gas into the continuous monitoring system sampling interface or as close to the sampling interface as possible. When the system output reading has stabilized, switch quickly to a known concentration of pollutant gas. Record the time from concentration switching to 95 percent of final stable response. For non-extractive monitors, the highest available calibration gas concentration shall be switched into and out of the sample path and response times recorded. Perform this test sequence three (3) times. Record the results of each test on the example sheet shown in Figure 2-6.

7. Calculations, Data Analysis and Reporting.

7.1 Procedure for determination of mean values and confidence intervals.

7.1.1 The mean value of a data set is calculated according to equation 2-1.

$$\bar{X} = \frac{1}{n} \sum_{i=1}^n X_i$$

Equation 2-1.

where:

X_i = absolute value of the measurements

\sum = sum of the individual values

\bar{X} = mean value, and

n = number of data points

7.1.2 The 95 percent confidence interval (two-sided) is calculated according to equation 2-2:

$$C.I._{.95} = \frac{t_{.975}}{\sqrt{n}} \frac{\sqrt{n(\sum X_i^2) - (\sum X_i)^2}}{n-1}$$

Equation 2-2.

where:

$\sum X_i$ = sum of all data points

$t_{.975}$ = $t_{\alpha/2}$, and

$C.I._{.95}$ = 95 percent confidence interval estimate of the average mean value.

VALUES FOR $t_{.975}$

n	$t_{.975}$
2	12.706
3	4.303
4	3.182
5	2.776
6	2.571
7	2.447
8	2.365
9	2.306
10	2.262
11	2.228
12	2.201
13	2.176
14	2.160
15	2.145
16	2.131

The values in this table are already corrected for n-1 degrees of freedom. Use n equal to the number of samples as data points.

7.2 Data Analysis and Reporting

7.2.1 Accuracy (See Appendix D).

7.2.2 Calibration Error. Using the data from paragraph 6.1, subtract the measured pollutant concentration determined under paragraph 6.1.1 (Figure 2-1) from the value shown by the continuous monitoring system for each of the five readings at each concentration measured under 6.1.2 (Figure 2-2). Calculate the mean of these difference values and the 95 percent confidence intervals according to equations 2-1 and 202. Report the calibration error (the sum of the absolute value of the mean difference and the 95 percent confidence interval) as a percentage of each respective calibration gas concentration. Use example sheet shown in Figure 2-2.

7.2.3 Zero Drift (2-hour). Using the zero concentration values measured each two hours during the field test, calculate the differences between consecutive two-hour readings expressed in ppm. Calculate the mean difference and the confidence interval using as the sum of the absolute mean value and the confidence interval as a percentage of span. Use example sheet shown in Figure 2-4.

7.2.4 Zero Drift (24 Hour). Using the zero concentration values measured every 24 hours during the field test, calculate the differences between the zero point after zero adjustment and the zero value 24 hours later just prior to zero adjustment. Calculate the mean value of these points and the confidence interval using equations 2-1 and 2-2. Report the zero drift (the sum of the absolute mean and confidence interval) as a percentage of span. Use example sheet shown in Figure 2-5.

7.2.5 Calibration Drift (2-hour). Using the calibration values obtained at two-hour intervals during the field test, calculate the differences between consecutive two-hour readings expressed as ppm. These values should be corrected for the corresponding zero drift during that two-hour period. Calculate the mean and confidence interval of these corrected difference values using equations 2-1 and 2-2. Do not use the differences between non-consecutive readings. Report the calibration drift as the sum of the absolute mean and confidence interval as a percentage of span. Use the example sheet shown in Figure 2-4.

7.2.6 Calibration Drift (24 hour). Using the calibration values measured every 24 hours during the field test, calculate the differences between the calibration concentration reading after zero and calibration adjustment, and the calibration concentration reading 24 hours later after zero adjustment but before calibration adjustment. Calculate the mean value of these differences and the confidence interval using

equations 2-1 and 2-2. Report the calibration drift (the sum of the absolute mean and confidence interval) as a percentage of span. Use the example sheet shown in Figure 2-5.

7.2.7 Response Time. Using the charts from paragraph 6.3, calculate the time interval from concentration switching to 90 percent to the final stable value for all upscale and downscale tests. Report the mean of the three upscale test times and the mean of the three downscale test times. The two average times should not differ by more than 15 percent of the slower time. Report the slower time as the system response time. Use the example sheet shown in Figure 2-6.

7.2.8 Operational Test Period. During the 168-hour performance and operational test period, the continuous monitoring system shall not require any corrective maintenance repair, replacement, or adjustment other than that clearly specified as required in the operation and maintenance manuals as routine and expected during a one-week period. If the continuous monitoring system operates within the specified performance parameters and does not require corrective maintenance, repair, replacement or adjustment other than as specified above during the 168 hour test period, the operational period will be successfully concluded. Failure of the continuous monitoring system to meet this requirement shall call for a repetition of the 168-hour test period. Portions of the test which were satisfactorily completed need not be repeated. Failure to meet any performance specifications shall call for a repetition of the one-week performance test period and that portion of the testing which is related to the failed specification. All maintenance and adjustments required shall be recorded. Output readings shall be recorded before and after all adjustments.

8. References.

8.1 "Monitoring Instrumentation for the Measurement of Sulfur Dioxide in Stationary Source Emissions," Environmental Protection Agency, Research Triangle Park, N.C., February 1973.

8.2 "Instrumentation for the Determination of Nitrogen Oxides Content of Stationary Source Emissions," Environmental Protection Agency, Research Triangle Park, N.C., Volume 2, APTD-0942, January 1972.

8.3 "Experimental Statistics," Department of Commerce, Handbook 91, 1963, pp. 3-31, paragraphs 3-3.1.4.

8.4 "Performance Specifications for Stationary-Source Monitoring Systems for Gases and Visible Emissions," Environmental Protection Agency, Research Triangle Park, N.C., EPA-650/2-74-013, January 1974.

Date _____ Reference Method Used _____

Mid-Range Calibration Gas Mixture

Sample 1 _____ ppm

Sample 2 _____ ppm

Sample 3 _____ ppm

Average _____ ppm

High-Range (span) Calibration Gas Mixture

Sample 1 _____ ppm

Sample 2 _____ ppm

Sample 3 _____ ppm

Average _____ ppm

Figure 2-1. Analysis of Calibration Gas Mixtures

Figure 2-2. Calibration Error Determination

Calibration Gas Mixture Data (From Figure 2-1)

Mid (50%) _____ ppm High (90%) _____ ppm

Run #	Calibration Gas Concentration, ppm	Measurement System Reading, ppm	Differences, ¹ ppm
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			

	Mid	High
Mean difference	_____	_____
Confidence interval	+ _____	+ _____
Calibration error =	$\frac{\text{Mean difference}^2 + \text{C.I.} \times 100}{\text{Average Calibration Gas Concentration}}$	

¹Calibration gas concentration - measurement system reading
²Absolute value

Figure 2-3. Accuracy Determination (SO₂ and NO_x)

Test No.	Date and Time	Reference Method Samples					Analyzer 1-hour Average (ppm)*		Difference (ppm)	
		SO ₂ Sample 1 (ppm)	NO _x Sample 1 (ppm)	NO _x Sample 2 (ppm)	NO _x Sample 3 (ppm)	NO _x Average (ppm)	SO ₂	NO _x	SO ₂	NO _x
1										
2										
3										
4										
5										
6										
7										
8										
9										
Mean reference method test value (SO ₂)		Mean reference method test value (NO _x)					Average of the differences			
Mean differences** = _____ ppm (SO ₂), = _____ ppm (NO _x).										
95% Confidence intervals = ± _____ ppm (SO ₂), = ± _____ ppm (NO _x)										
Accuracies = $\frac{\text{Mean difference (absolute value)} + 95\% \text{ confidence interval}}{\text{Mean reference method value}} \times 100 = \text{ } \%$ (SO ₂), = $\text{ } \%$ (NO _x)										
* Explain and report method used to determine integrated averages.										
** Meah differences = the average of the differences minus the mean reference method test value.										

Figure 2-4. Zero and Calibration Drift (2 Hour)

Data Set No.	Time		Date	Zero Reading	Zero Drift (zero)	Span Reading	Span Drift (Span)	Calibration Drift (Span-Zero)
	Begin	End						

1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								

33

Zero Drift = Mean Zero Drift* _____ + CI (Zero) _____ ÷ Span x 100 = _____.

Calibration Drift = Mean Span Drift* _____ + CI (Span) _____ x Span x 100 = _____.

*Absolute Value.

Date of Test _____

Span Gas Concentration _____ ppm

Analyzer Span Setting _____ ppm

⋮

Upscale 1 _____ seconds
 2 _____ seconds
 3 _____ seconds

Average upscale response _____ seconds

1 _____ seconds
2 _____ seconds
3 _____ seconds

Average downscale response _____ seconds

System average response time (slower time) = _____ seconds

% deviation from slower system average response = $\frac{\text{average upscale minus average downscale}}{\text{slower time}} \times 100\% = \underline{\hspace{2cm}}$

Figure 2-6. Response Time

PERFORMANCE SPECIFICATION TEST 3

Performance Specification 3 - Performance specifications and specification test procedures for monitors of CO₂ and O₂ from stationary sources.

1. Principle and Applicability.

1.1 Principle. Effluent gases are continuously sampled and are analyzed for carbon dioxide or oxygen by a continuous monitoring system. Tests of the system are performed during a minimum operating period to determine zero drift, calibration drift, and response time characteristics.

1.2 Applicability. This performance specifications is applicable to evaluation of continuous monitoring systems for measurement of carbon dioxide or oxygen. These specifications contain test procedures, installation requirements, and data computation procedures for evaluating the acceptability of the continuous monitoring systems subject to approval by the APCO. . . . Sampling may include either extractive or non-extractive (in-situ) procedures.

2. Apparatus.

2.1 Continuous Monitoring System for Carbon Dioxide or Oxygen.

2.2 Calibration Gas Mixtures. Mixture of known concentrations of carbon dioxide or oxygen in nitrogen or air. Midrange and 90 percent of span carbon dioxide or oxygen concentrations are required. The 90 percent of span gas mixture is to be used to set and check the analyzer span and is referred to as span gas. For oxygen analyzers, if the span is higher than 21 percent O₂, ambient air may be used in place of the 90 percent of span calibration gas mixture. Triplicate analyses of the gas mixture (except ambient air) shall be performed within two weeks prior to use using Reference Method 3 or this part.

2.3 Zero Gas. A gas containing less than 100 ppm of carbon dioxide or oxygen.

2.4 Data Recorder. Analog chart recorder or other suitable device with input voltage range compatible with analyzer system output. The resolution of the recorder's data output shall be sufficient to allow completion of the test procedures within this specification.

3. Definitions.

3.1 Continuous Monitoring System. The total equipment required for the determination of carbon dioxide or oxygen in a given source effluent. The system consists of three major subsystems:

3.1.1 Sampling Interface. That portion of the continuous monitoring system that performs one or more of the following operations: delineation, acquisition, transportation, and conditioning of a sample of the source effluent or protection of the analyzer from the hostile aspects of the sample or source environment.

3.1.2 Analyzer. That portion of the continuous monitoring system which senses the pollutant gas and generates a signal output that is a function of the pollutant concentration.

3.1.3 Data Recorder. That portion of the continuous monitoring system that provides a permanent record of the output signal in terms of concentration units.

3.2 Span. The value of oxygen or carbon dioxide concentration at which the continuous monitoring system is set that produces the maximum data display output. For the purposes of this method, the span shall be set no less than 1.5 to 2.5 times the normal carbon dioxide or normal oxygen concentration in the stack gas of the affected facility.

3.3 Midrange. The value of oxygen or carbon dioxide concentration that is representative of the normal conditions in the stack gas of the affected facility at typical operating rates.

3.4 Zero Drift. The change in the continuous monitoring system output over a stated period of time of normal continuous operation when the carbon dioxide or oxygen concentration at the time for the measurements is zero.

3.5 Calibration Drift. The change in the continuous monitoring system output over a stated time period of normal continuous operation when the carbon dioxide or oxygen continuous monitoring system is measuring the concentration of span gas.

3.6 Operational Test Period. A minimum period of time over which the continuous monitoring system is expected to operate within certain performance specifications without unscheduled maintenance, repair, or adjustment.

3.7 Response Time. The time interval from a step change in concentration at the input to the continuous monitoring system to the time at which 95 percent of the corresponding final value is displayed on the continuous monitoring system data recorder.

4. Installation Specification.

Oxygen or carbon dioxide continuous monitoring systems shall be installed at a location where measurements are directly representative of the total effluent from the affected facility or representative of the same effluent sampled by a SO₂ or NO_x continuous monitoring system. This requirement shall be complied with by use of applicable requirements in Performance Specification 2 of this appendix as follows:

4.1 Installation of Oxygen or Carbon Dioxide Continuous Monitoring Systems Not Used to Convert Pollutant Data. A sampling location shall be selected in accordance with the procedures under paragraphs 4.2.1 or 4.2.2, or Performance Specification 2 of this appendix.

4.2 Installation of Oxygen or Carbon Dioxide Continuous Monitoring Systems Used to Convert Pollutant Continuous Monitoring System Data to Units of Applicable Standards. The diluent continuous monitoring system (oxygen or carbon dioxide) shall be installed at a sampling location where measurements that can be made are representative of the effluent gases sampled by the pollutant continuous monitoring system(s). Conformance with this requirement may be accomplished in any of the following ways:

4.2.1 The sampling location for the diluent system shall be near the sampling location for the pollutant continuous monitoring system such that the same approximate point (s) (extractive systems) or path (in-situ systems) in the cross section is sampled or viewed.

4.2.2 The diluent and pollutant continuous monitoring systems may be installed at different locations if the effluent gases at both sampling locations are nonstratified as determined under paragraphs 4.1 or 4.3, Performance Specification 2 of this appendix and there is no in-leakage occurring between the two sampling locations. If the effluent gases are stratified at either location, the procedures under paragraph 4.2.2, Performance Specification 2 of this appendix shall be used for installing continuous monitoring systems at that location.

5. Continuous Monitoring System Performance Specification.

The continuous monitoring system shall meet the performance specifications in Table 3-1 to be considered acceptable under this method.

6. Performance Specification Test Procedures.

The following test procedures shall be used to determine conformance with the requirements of paragraph 4. Due to the wide variation existing in analyzer designs and principles of operation, these procedures are not applicable to all analyzers. Where this occurs, alternative procedures, subject to the approval of the APCO, may be employed. Any such alternative procedures must fulfill the same purposes (verify response, drift, and accuracy) as the following procedures, and must clearly demonstrate conformance with specifications in table 2-1.

6.1 Calibration Check. Establish a calibration curve for the continuous monitoring system using zero, midrange, and span concentration gas mixtures. Verify that the resultant curve of analyzer reading compared with the calibration gas value is consistent with the expected response curve as described by the analyzer manufacturer. If the expected response curve is not produced, additional calibration gas measurements shall be made, or additional steps undertaken to verify the accuracy of the response curve of the analyzer.

6.2 Field Test for Zero Drift and Calibration Drift. Install and operate the continuous monitoring system in accordance with the manufacturer's written instructions and drawings as follows:

Table 3-1. Performance Specifications

Parameter	Specification
1. Zero drift (2h) ¹	0.4 pct O ₂ or CO ₂
2. Zero drift (24h) ¹	0.5 pct O ₂ or CO ₂
3. Calibration drift (2h) ¹	0.4 pct O ₂ or CO ₂
4. Calibration drift (24h) ¹	0.5 pct O ₂ or CO ₂
5. Operational period	168 h minimum
6. Response time	10 min.

¹Expressed as sum of absolute mean value plus 95 pct confidence interval of a series of tests.

6.2.1 Conditioning Period. Offset the zero setting at least 10 percent of span so that negative zero drift may be quantified. Operate the continuous monitoring system for an initial 168-hour conditioning period in a normal operational manner.

6.2.2 Operational Test Period. Operate the continuous monitoring system for an additional 168 hour period maintaining the zero offset. The system shall monitor the source effluent at all times except when being zeroed, calibrated, or backpurged.

6.2.3 Field Test for Zero Drift and Calibration Drift. Determine the values given by zero and midrange gas concentrations at two-hour intervals until 15 sets of data are obtained. For non-extractive continuous monitoring systems, determine the zero value given by a mechanically produced zero condition or by computing the zero value from upscale measurements using calibrated gas cells certified by the manufacturer. The midrange checks shall be performed by using certified calibration gas cells functionally equivalent to less than 50 percent of span. Record these readings on the example sheet shown in Figure 2-1. These two-hour periods need not be consecutive but may not overlap. In-situ CO₂ or O₂ analyzers which cannot be fitted with a calibration gas cell may be calibrated by alternative procedures acceptable to the APCCO. Zero and calibration corrections and adjustments are allowed only at 24-hour intervals or at such shorter intervals as the manufacturer's written instructions specify. Automatic corrections made by the continuous monitoring system without operator intervention or initiation are allowable at any time. During the entire 168-hour test period, record the values given by zero and span gas concentrations before and after adjustment at 24 hour intervals in the example sheet shown in Figure 3-2.

6.3 Field Test for Response Time.

6.3.1 Scope of Test.

This test shall be accomplished using the continuous monitoring system as installed including sample transport lines if used. Flow rates, line diameters, pumping rates, pressures (do not allow the pressurized calibration gas to change the normal operating pressure in the sample line), etc., shall be at the nominal values for normal operation as specified in the manufacturer's written instructions. If the analyzer is used to sample more than one source (stack), this test shall be repeated for each sampling point.

6.3.2 Response Time Test Procedure

Introduce zero gas into the continuous monitoring system sampling interface or as close to the sampling interface as possible. When the system output reading has stabilized, switch quickly to a known concentration of gas at 90 percent of span. Record the time from concentration switching to 95 percent of final stable response. After the system response has stabilized at the upper level, switch quickly to a zero gas. Record the time from concentration switching to 95 percent of final stable response. Alternatively, for nonextractive continuous monitoring systems, the highest available calibration gas concentration shall be switched into and out of the sample path and response times recorded. Perform this test sequence three (3) times. For each test, record the results on the data sheet shown in Figure 3-3.

7. Calculations, Data Analysis, and Reporting.

7.1 Procedure for determination of mean values and confidence intervals.

7.1.1 The mean value of a data set is calculated according to equation 3-1.

$$\bar{x} = \frac{1}{n} \sum_{i=1}^n x$$

Equation 3-1

where:

x_i = absolute value of the measurements,

Σ = sum of the individual values,

\bar{x} = mean value, and

n = number of data points.

7.2.1 The 95 percent confidence interval (two-sided) is calculated according to equation 3-2:

$$C.I._{.95} = \frac{t_{.975}}{n\sqrt{n-1}} \sqrt{n(\Sigma x_1^2) - (\Sigma x_1)^2}$$

Equation 3-2.

where:

ΣX = sum of all data points,

$t_{.975}$ = $t_1 - \alpha/2$, and

$C.I._{.95}$ = 95 percent confidence interval estimates of the average mean value.

Values for $t_{.975}$

n	$t_{.975}$
2	12.706
3	4.303
4	3.182
5	2.766
6	2.571
7	2.447
8	2.365
9	2.306
10	2.262
11	2.228
12	2.201
13	2.179
14	2.160
15	2.145
16	2.131

The values in this table are already corrected for $n-1$ degrees of freedom. Use n equal to the number of samples as data points.

7.2 Data Analysis and Reporting.

7.2.1 Zero Drift (2 hour). Using the zero concentration values measured each two hours during the field test, calculate the differences between the consecutive two-hour readings expressed in ppm. Calculate the mean difference and the confidence interval using equations 3-1 and 3-2. Record the sum of the absolute mean value and the confidence interval on the data sheet shown in Figure 3-1.

7.2.2 Zero Drift (24 hour). Using the zero concentration values measured every 24 hours during the field test, calculate the difference between the zero point after zero adjustment and the zero value 24 hours later just prior to zero adjustment. Calculate the mean value of these points and the confidence interval using equations 3-1 and 3-2. Record the zero drift (the sum of the absolute mean and confidence interval) on the data sheet shown in Figure 3-2.

7.2.3 Calibration Drift (2 hour). Using the calibration values obtained at two-hour intervals during the field test, calculate the differences between consecutive two-hour readings expressed as ppm. These values should be corrected for the corresponding zero drift during that two-hour period. Calculate these corrected difference values using equations 3-1 and 3-2. Do not use the differences between non-consecutive readings. Record the sum of the absolute mean and confidence interval upon the data sheet shown in Figure 3-1.

7.2.4 Calibration Drift (24 hours). Using the calibration values measured every 24 hours during the field test, calculate the differences between the calibration concentration reading after zero and calibration adjustment and the calibration concentration reading 24 hours later after zero adjustment but before calibration adjustment. Calculate the mean value of these differences and the confidence interval using equations 3-1 and 3-2. Record the sum of the absolute mean and confidence interval on the data sheet shown in Figure 3-2.

7.2.5 Operational Test Period. During the 168-hour performance and operational test period, the continuous monitoring system shall not receive any corrective maintenance, repair, replacement, or adjustment other than that clearly specified as required in the manufacturer's written operation and maintenance manuals as routine and expected during a one-week period. If the continuous monitoring system operates within the specified performance parameters and does not require corrective maintenance, repair, replacement or adjustment other than as specified above during the 168-hour test period, the operational period will be successfully concluded. Failure of the continuous monitoring system to meet this requirement shall call for a repetition of the 168 hour test period. Portions of the test which were satisfactorily completed need not be repeated. Failure to meet any performance specifications shall call for a repetition of the one-week performance test period and that portion of the testing which is related to the failed specification. All maintenance and adjustments required shall be recorded. Output readings shall be recorded before and after all adjustments.

7.2.6 Response Time. Using the data developed under paragraph 5.3, calculate the time interval from concentration switching to 95 percent to the final stable value for all upscale and downscale tests. Report the mean of the three upscale test times and the mean of the three downscale test times. The two average times should not differ by more than 15 percent of the slower time. Report the slower time as the system response time. Record the results on Figure 3-3.

8. References.

8.1 "Performance Specifications for Stationary Source Monitoring Systems for Gases and Visible Emissions", Environmental Protection Agency, Research Triangle Park, N.C., EPA-650/2-74-013, January 1974.

8.2 "Experimental Statistics," Department of Commerce, National Bureau of Standards Handbook 91, 1963, pp. 3-31, paragraphs 3-3.1.4.

Figure 3-1. Zero and Calibration Drift (2 hour)

Data Set No	Time		Date	Zero Reading	Zero Drift (Zero)	Span Reading	Span Drift (Span)	Calibration Drift (Span - Zero)
	Begin	End						
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								

44

Zero Drift = Mean Zero Drift* _____ + CI (Zero) _____ = _____.

Calibration Drift = Mean Span Drift* _____ + DI (Span) _____ = _____.

* Absolute Value.

)

)

)

Date of Test _____

Span Gas Concentration _____ ppm

Analyzer Span Setting _____ ppm

- Upscale
1. _____ seconds
 2. _____ seconds
 3. _____ seconds

Average upscale response _____ seconds

- Downscale
1. _____ seconds
 2. _____ seconds
 3. _____ seconds

Average downscale response _____ seconds

System average response time (slower time) = _____ seconds

% deviation from slower system average response = $\frac{\text{Average upscale minus average downscale}}{\text{slower time}} \times 100\%$

= _____

Figure 3-3. Response

FIELD ACCURACY TEST
PROCEDURE FOR CONTINUOUS EMISSION MONITORS

1. Applicability

1.1 This procedure is used to evaluate the accuracy of continuous mass emission monitoring systems for sulfur dioxide, nitrogen oxides, carbon monoxide, carbon dioxide, oxygen or any other gaseous compounds whose monitoring may be required by the Bay Area Air Quality Management District. Both the accuracy of the gas species concentration analyzer and the accuracy of the stack gas flow rate monitor are tested.

2. Principle

2.1 A continuous gas sample, representative of atmospheric emissions, is extracted from the source and conditioned to remove moisture and particulate material. A small portion of the conditioned sample is passed through a continuous analyzer sensitive to the species of interest. The average concentration of the specie determined over 90 minutes is compared with a similar reading determined by the continuous emission monitoring system.

2.2 Carbon dioxide and carbon monoxide are analyzed by non-dispersive infra-red spectroscopy (NDIR). Sulfur dioxide is analyzed by ultraviolet (UV) absorption spectroscopy. Oxides of nitrogen are analyzed as NO by chemiluminescent detection. Oxygen is analyzed by galvanic measurement at a sample/fuel cell interface.

2.3 A pitot tube is used to measure the velocity pressure in the stack, from which the stack gas volumetric flow rate is calculated.

3. Interferences

3.1 The various analytical methods have potential interferences as described below.

3.1.1 Carbon dioxide - methanol, ethanol and water.
(No interferences exist with the analyzer mentioned in 1.1.1)

3.1.2 Carbon monoxide - cyanogen, methyl azide

3.1.3 Nitrogen oxides - other nitrogen compounds (except ammonia)

3.1.4 Sulfur dioxide - elemental sulfur, sulfur trioxide, carbon disulfide.

3.1.5 Oxygen - halogens and halogenated compounds.

3.2 If interferences are anticipated with the use of any method herein, the Source Test Section of the BAAPCD should be consulted or else an alternate method(s) as described in MOP., Vol IV, Source Test Policy and Procedures shall be used.

4. Sampling Ports and Facilities

1.1 Sampling ports and facilities shall be provided for purposes of field accuracy tests of continuous monitoring systems according to the requirements of Sections 2.3 and 2.4 of "Source Test Policy" in Manual of Procedures, Vol IV, Source Test Policy and Procedures.

5. Apparatus

5.1 Instrumentation

5.1.1 The analyzers, by test species, are indicated below.

5.1.1.1 Carbon dioxide - Use Infrared Industries Inc. Infrared Gas Analyzer Model 703, or equivalent.

5.1.1.2 Carbon Monoxide - Use MSA Co. LIRA Model 202 carbon monoxide analyzer, or equivalent.

5.1.1.3 Oxides of nitrogen - Use Thermo Electron Corporation chemiluminiscent Analyzer Model 10A, or equivalent.

5.1.1.4 Sulfur dioxide - Use E.I. DuPont de Nemours and Co. Photometric Analyzer Model 400, or equivalent.

5.1.1.5 Oxygen - Use Teledyne Analytical Instruments Model 326 Analyzer, or equivalent.

5.1.2 Potentiometric recorder - The recorder monitors and records the continuous output from the analyzers.

5.2 Sample conditioning, zero air, and span gas system.(Figure 1)

5.2.1 Materials and construction - Except as specified, all valves, fittings, lines and other sample-contacting surfaces shall be Teflon or stainless steel.

5.2.2 Sample probe - Use a borosilicate glass tube fitted at the downstream end with a tubing connector. The length of the probe shall be at least equal to the radius of the stack being tested. If stack temperature exceeds 800°F., substitute quartz for the borosilicate tube. Other sample probes are acceptable subject to prior approval by the Source Test Section.

5.2.3 Moisture condensers - Use modified Greenberg-Smith Impingers with the Impaction plate removed and the inlet tube shortened to 3 or 4 inches. At least two condensers shall be connected in series. Other condensers are acceptable if they are as efficient as Impingers.

5.2.4 Ice bath - Immerse the condensers in an ice bath during sampling.

5.2.5 Particulate filter - Use a Balston type 95 holder with grade B filter, or equivalent, in the sample system.

5.2.6 Pumps - Use leak-free, Teflon-lined diaphragm pumps, Thomas Industries Model No. 908CA18TFE, or equivalent, in the sample and zero air systems. The pumps must have a free-flow capacity of at least 28 liters/min (1.0 CFM).

5.2.7 Back pressure regulator - Use a back-pressure regulator to maintain sample and zero gas pressures to the analyzers at 5 psig.

5.3 Zero Air System (Figure 1)

5.3.1 This system provides clean dry atmospheric air for analyzer calibration.

5.3.2 Gas scrubber - Use a bed of silica gel, Ascarite (or soda-lime), and charcoal to remove moisture, carbon dioxide, and hydrocarbons from the zero air system.

5.4 Span gas-cylinder of appropriate species with inert balance at a concentration between 20% and 80% of full scale on the analyzer. The concentration shall be traceable to primary standards.

5.5 Velocity Measurement - Refer to Source Test Procedure ST-17, (M.O.P., Vol IV).

6. Pre-Test Procedures

6.1 Instrument warm-up - time shall be per manufacturer's recommendation or until stability is achieved.

6.2 Leak Test - The sampling system shall be leak-tested by turning on the sample pump, plugging the probe and ascertaining that the sample pressure to the analyzer falls to zero. Other leak tests are acceptable subject to prior approval by the Source Test Section.

6.3 Calibration, Zero - Zero air shall be introduced at the manufacturer's recommended flow rate, and the analyzer shall be zero-adjusted, except the oxygen analyzer shall be adjusted to read 20.9%.

6.4 Calibration, Span - Span gas shall be introduced at the rate in 6.3, and the analyzer span shall be accordingly adjusted (except the oxygen analyzer.)

6.5 Concentration Traverse - The stack shall be traversed with the probe to determine whether the concentration of any of the species of interest is radially variant. The probe shall be positioned at approximately 1/5, 2/5, 3/5, 4/5 and 5/5 of the stack diameter, long enough at each point to record a representative measure of the concentration of each test species. If the concentration of any test species varies at any single point by over 10% of the average over all points, the stack shall be traversed during sampling according to paragraph 7.2.

7. Sampling

7.1 Sampling shall be done continuously for a 90 minute period. The analyzer(s) shall be zero and span-checked at the beginning and end of the test period according to paragraphs 6.3 and 6.4.

7.2 If stack traversing is necessary (see paragraph 6.5), the traverse points shall be as specified in Source Test Procedure ST-18 (M.O.P., Vol. IV). Each traverse point shall be sampled for an equal length of time.

7.3 The continuous emission monitor shall not be adjusted during the test period.

8. Auxiliary Tests

8.1 Water Vapor - The moisture content of the stack gas shall be measured once during the field accuracy test period according to Source Test Procedure ST-23 (M.O.P., Vol. IV) unless it is reliably known by other means.

8.2 Stack Gas Flowrate - The flow rate shall be determined according to Source Test Procedure ST-17 once during the test period. The exact time intervals during which the stack velocity pressure is measured shall be recorded on the stack flow rate monitor chart.

9. Calculations (each test period)

9.1 The calculations herein assume that the stack monitors report data at actual stack (wet) conditions.

9.2 The time-averaged (dry basis) test concentration of each species, C_T , shall be computed.

9.3 The stack gas water vapor content, $H(\%)$, shall be computed as in Source Test Procedure ST-23.

9.4 The test standard dry stack gas flowrate, Q_0 , shall be computed as in Source Test Procedure ST-17.

9.5 The time-averaged concentration (actual basis) of each species as measured by the continuous monitor(s), C_M , shall be computed.

9.6 The average monitor concentration(s) shall be changed to a dry basis as:

$$C'_M = \frac{C_H \times 100}{100 - H}$$

9.7 The actual stack gas flow rate as reported by the monitor at the time of the velocity pressure test shall be corrected to standard dry conditions as

$$Q'_M = \frac{Q_M \times 530^\circ R \times P \times 100}{29.92 \text{ In. Hg} \times T \times (100 - H)}$$

where: Q_M = actual stack gas flow rate as reported by monitor, CFM.

P = stack static pressure, inches of Hg. (abs)

T = stack temperature, $^\circ R$.

10. Reporting

10.1 The data indicated in Table I shall be reported for each test period and as the average of the test periods.

NOTE: SPAN GAS SYSTEM NOT APPLICABLE TO ST-14

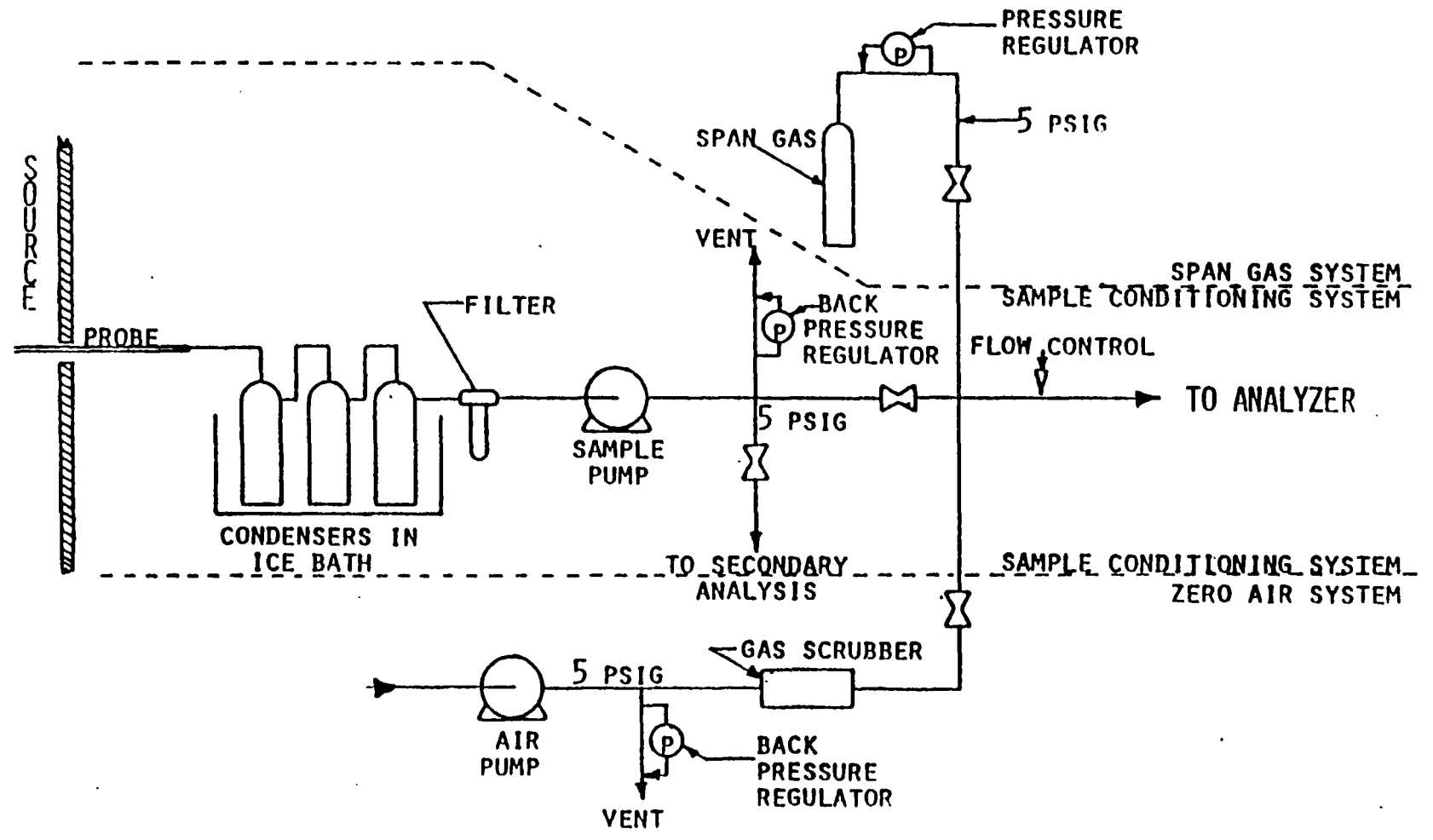


FIGURE 1.
SAMPLE CONDITIONING, ZERO AIR AND SPAN GAS SYSTEMS

TABLE 1 - Field Accuracy Reporting Data

Firm Name and Address:

Firm Representative and Title:

Source:

Testing Firm and Personnel:

Test Date:

Test Times: Run A Run B Run C

Test Method used on each component Tested:

SO₂
NO_x
CO₂
O₂

Summary of Field Accuracy Results:

	Test Method Results				Source Monitor Results			
	Run A	Run B	Run C	Avg.	Run A	Run B	Run C	Avg.
Flowrate, SDCFM								
Water Content %								
SO ₂ , ppm (dry)								
SO ₂ , lb/hr.								
NO _x , ppm (dry)								
NO _x (as NO ₂) lb/hr.								
CO ₂ , % (dry)								
O ₂ , % (dry)								

BAY AREA
AIR QUALITY MANAGEMENT DISTRICT
MONTHLY CONTINUOUS EMISSION MONITORING REPORT

COMPANY:

SOURCE:

MONTH:

POLLUTANT:

1. EMISSION DATA

DAY	AVERAGE 24Hr. CONCENTRATION, ppm	MINIMUM 1 Hr. CONCENTRATION, ppm	DAILY MASS EMISSION, TONS	EMISSION BASED ON PRODUCTION*
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				

*For Sulfuric Acid plants and Sulfur Recovery Units use pounds per short ton of production based on a daily average. This data requirement is not applicable to other sources or those emission points serving multiple sources.

II. STATEMENT OF EXCESS EMISSIONS
(Negative declaration Required, Including Opacity)

DATE	TIME	DURATION	MAGNITUDE	REMARKS

III. MONITOR MALFUNCTION

DATE	TIME	DURATION	PROBLEM/CORRECTIVE ACTION

Signature and Date

MANUAL OF PROCEDURES
VOLUME VI
AIR MONITORING PROCEDURES

MANUAL OF PROCEDURES
VOL. VI
AIR MONITORING PROCEDURES
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1. GROUND LEVEL MONITORING FOR SULFUR DIOXIDE AND HYDROGEN SULFIDE

REF: Regs. 1-510
9-1-501, 9-1-604
9-2-501, 9-2-601

1.1 General. This section outlines the procedures to be used for atmospheric sampling of hydrogen sulfide and sulfur dioxide concentrations in order to fulfill requirements of Regulation 9-1-110.2 and Regulation 9-2-301.

1.2 Instrumentation. When required under Regulation 9-1-501 or Regulation 9-2-501, the person responsible for emissions shall provide recording instrumentation at not less than three sites chosen to monitor the ambient air in the area surrounding the emission source and one meteorological station to record wind speed and direction. Additional instruments may be required in specific cases where necessary to meet the intent of the appropriate section. The instruments must be sufficient in number to give reasonable assurance that any ground level limits exceeding those permitted will be detected. All analytical instrumentation must be capable of detecting ground level concentrations which exceed the allowable limits. All instrumentation shall be continuous and equipped with a strip chart recorder.

1.2.1 Sulfur Dioxide Instrument Specifications. The instruments shall be of a type which will continuously detect and record minute-by-minute fluctuations of concentrations of sulfur dioxide in the range from 0.01 ppm (vol) to 1.00 ppm (vol).

1.2.2 Hydrogen Sulfide Instrument Specifications. The recording instruments shall be of a type which will continuously detect and record minute-by-minute fluctuations of concentrations of H₂S in the range from 0.01 ppm (vol) to 0.10 ppm (vol), or to 0.20 ppm (vol).

1.2.3 Meteorological Instrument Specifications. Meteorological instruments shall be capable of continuously measuring and recording wind direction to within ten degrees of arc, and wind speed to within one mile per hour (mph) at wind speeds less than 25 mph and with a threshold no greater than 3 mph. The width of the wind recording charts shall be adequate to determine the wind components as specified.

1.3 Siting. The instruments shall be installed and operated in locations which adequately represent maximum ground level concentrations of the measured air pollutants. Sites will be chosen to intercept most frequent ground level maximum concentrations, but in conformance with Regulation 1-510. Proper siting will be taken to require that a preponderant downwind exposure over the calendar year be accumulated by the instruments of a given network, during their hours of operation. Downwind exposure exists when the mean wind direction lies in the arc within 22.5 degrees of a direct line from source to monitor. The effective source height and the prevalent stability class associated with the most frequent wind directions are used to calculate the most probable distances for maximum

ground level concentrations. A station may be placed at or within the property line if the location is otherwise acceptable and provided that the person responsible for the stations agrees in writing that such location shall, for the purposes of District requirements, be deemed to be off the property from which the emissions occur.

The wind measuring site (or sites) shall be located at the source or with the ground level monitors. In either case, they must be high enough and openly exposed so as to be free of interference from buildings, trees, or local terrain. Final approval of the siting of ground level monitors and meteorological instrumentation shall be with the APCO.

1.4 Maintenance. Regulation 1-510 requires that the person responsible for monitoring provide care and maintenance in order to assure that the instruments function properly and accurately measure ground level concentrations. A record of consistent instrument downtime may be considered failure to meet this requirement. The APCO may require submission of maintenance records.

1.5 Calibration. Regulation 1-510 requires that the person responsible for monitoring perform periodic calibrations to assure that the instruments provide acceptable monitoring of ground level concentrations. Additionally, a field calibration shall be performed after any relocation of an analyzer or major repair work. For sulfur dioxide the

reference method for calibration is specified in Section 1.5.6 of this volume; for hydrogen sulfide, in Section 1.5.7.

As a quality assurance measure, District personnel will periodically inspect sites, and may perform calibration audits on the ground level monitors to determine accuracy. Accuracy of a calibration is expressed as the deviation between the analyzer response obtained under test conditions and the results of the reference procedure when samples of the same test gas are taken at approximately the same time. Deviation is calculated as a percent of the reference results.

$$\% \text{ Deviation} = \frac{\text{Analyzer value} - \text{Reference value}}{\text{Reference value}} \times 100$$

The acceptable limit for sulfur dioxide analyzer calibrations is $\pm 10\%$ deviation. The acceptable limit for hydrogen sulfide analyzer calibrations is $\pm 15\%$ deviation.

A record of unacceptable calibrations will be considered failure to meet the requirement. The APCO may require submission of calibration records.

1.5.1 Dynamic Calibration Procedure. A dynamic calibration is a performance test of the entire analyzer system under simulated operating conditions. The analyzer system includes the analyzer, recorder and/or data transmission system, and the sampling system with its sample lines and sample filters.

The procedure is to allow the analyzer system to sample a zero air to establish an analyzer zero response (baseline) and to sample test-gas mixtures of known concentration from a calibration gas system (see Fig. 1) to establish an upscale response. A test-gas mixture with concentration approximately equal to midscale of the analyzer range should be used. The reference methods Sulfur Dioxide Analytical Procedure 1.5.6, Hydrogen Sulfide Analytical Procedure 1.5.7 contained in this volume are used to verify test-gas concentrations.

The test-gas concentration and the analyzer response are used in the formula in Calibration 1.5 to determine the percent deviation. The analyzer response is the net reading derived by subtracting the zero response (baseline) from response to the test gas. The analyzer should be corrected to make its response conform to the known test-gas concentration. After adjustments are made, it is necessary to repeat the sampling process to reestablish both the zero and upscale analyzer responses. Linearity and low level response are determined by varying the diluent air calibration gas ratios to provide test gas concentrations throughout the entire range of the analyzer.

1.5.2 Zero (Diluent) Air. Zero air is used to establish a baseline point of reference and as a diluent in preparation of test gas mixtures. This air must be free of any substances which can alter the test gas mixtures or can

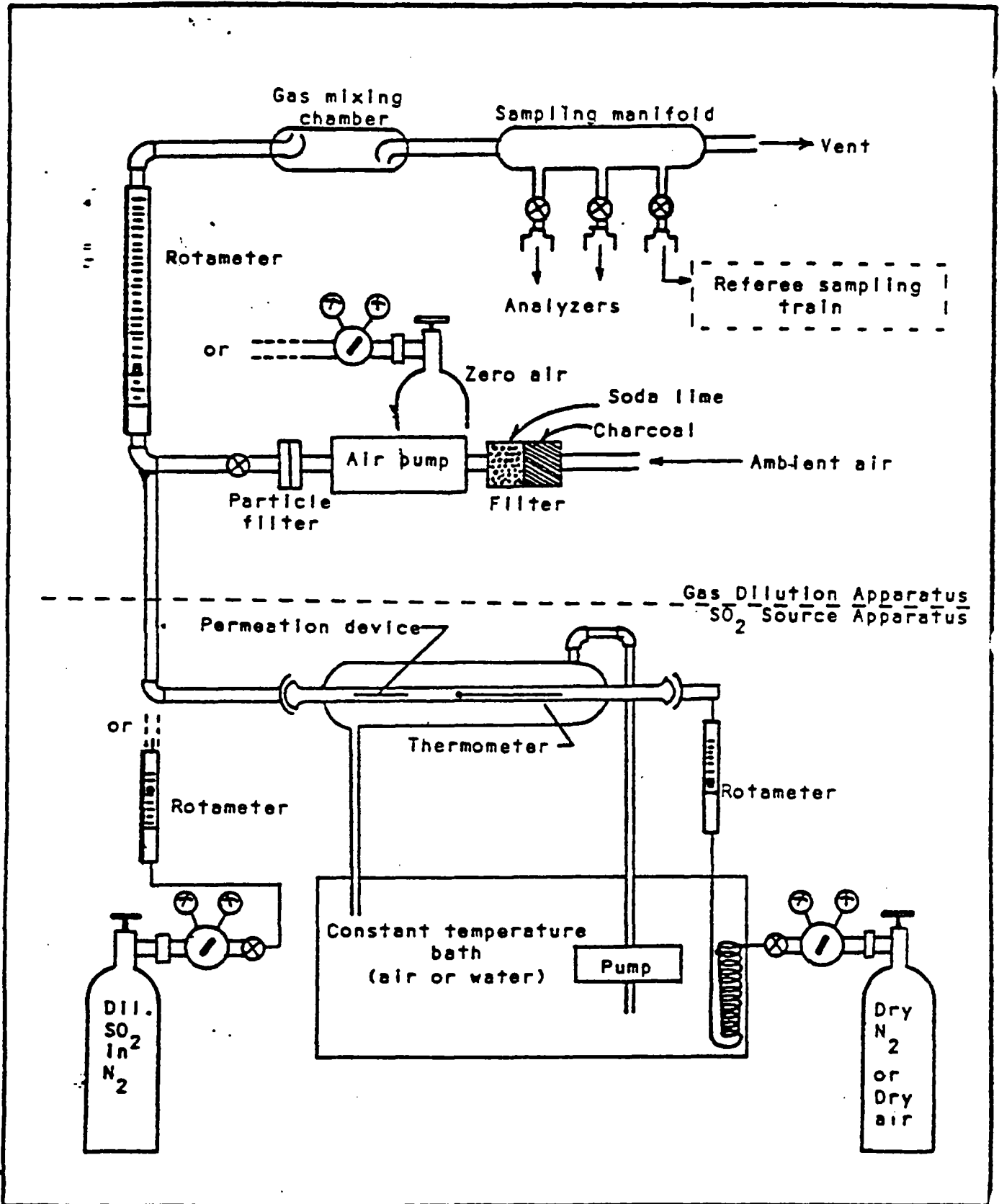


Figure 1.

CALIBRATION GAS SYSTEM

affect the analyzer response or the reference method. Zero air can be obtained in pressurized gas cylinders or by properly filtering and drying air obtained with an air pump.

1.5.3 Calibration Gas System. A calibration gas system consists of a source of diluent air, a source of calibration gas, a mixing chamber and a delivery manifold from which analyzers and reference sampling trains can sample the test gas. The test gas is prepared by thoroughly mixing the calibration gas and diluent air in various known proportions. The calibration gas can be obtained from a permeation device or from a pressurized cylinder containing a suitable concentration of the calibration gas.

The calibration gas system should be positioned as close as is practical to the analyzer and reference sampling apparatus to minimize losses. Sample lines, flow metering devices, mixing chambers, all other parts of the calibration system, as well as the analyzer system should be of materials which will not affect the test gas concentration. All components used in the calibration procedure should be allowed sufficient time to stabilize before reference samples are taken and before analyzer response is determined.

Pressurized Gas Standards

Gas standards in pressurized cylinders can be used as a gas source to be diluted in a calibration gas system or used directly when the concentration is within the operating range of the analyzer. Cylinders can be prepared in the

laboratory or obtained commercially in various concentrations with or without analysis based on reference methods. Such gas standards should be restandardized against the reference method at a minimum of once every six months. Reference samples must be taken each time if a nonstandardized gas source is used in the performance of an instrument calibration.

Permeation Device

A permeation device, based on the diffusion of a gas through a plastic membrane, can be used as a gas source in a calibration gas system. The diffusion rate is a function of temperature and therefore constant temperature must be maintained throughout the calibration. Permeation devices are available commercially with or without analysis based on the reference method. Certified permeation devices should be standardized gravimetrically or against the accepted reference method at a minimum of once every six months. Reference samples must be taken each time if a nonstandardized permeation device is used.

Precautions to be taken with permeation devices include:

- a. Storage of the device in a dry nitrogen atmosphere, preferably between 20 to 25°C.
- b. Use of a dry, analyte-free carrier gas.
- c. Handling of a permeation device only in a well vented atmosphere.
- d. Allowance of a minimum of 24 hours for a permeation to establish temperature equilibrium before use.

1.5.4 Calculations.

a. Conversion Factors

$$\frac{\mu\text{g SO}_2}{2.6 \mu\text{g}/\mu\text{l}} = \mu\text{l SO}_2$$

$$\frac{\mu\text{g H}_2\text{S}}{1.4 \mu\text{g}/\mu\text{l}} = \mu\text{l H}_2\text{S}$$

b. To calculate parts per million concentration from the known emission rate of a permeation device, use the following equation:

$$\text{PPM} = \frac{P}{Q_d}$$

Where: P = permeation rate in $\mu\text{l}/\text{minute}$

Q_d = rate of diluent in liters/minute

c. To calculate parts per million concentration when using a pressurized gas standard, use the following equation:

$$\text{PPM} = \frac{F_1 \times C}{F_1 + F_0}$$

Where: F₀ = diluent air flow in ml/minute

F₁ = calibration gas flow in ml/minute

C = concentration of calibration gas in ppm

1.5.5 Calibration Records. Calibration records shall be maintained containing the information necessary to determine test gas concentrations and to determine the percent deviation of an analyzer's response to known test-gas concentrations.

1.5.6 Sulfur Dioxide Reference Procedure

Principle

The method is based on the absorption of sulfur dioxide contained in a dilute calibration stream by a solution of sodium tetrachloromercurate (TCM). A stable complex is formed, which is then reacted with formaldehyde pararosaniline resulting in a colored pararosaniline derivative. The optical density, spectrophotometrically, is proportional to the amount of sulfur dioxide initially absorbed.

Reagents

1. Absorbing Solution (TCM)

Dissolve 27.2 g of mercuric chloride and 11.7 g of sodium chloride in distilled water and dilute to 1 liter. The absorbing reagent is stable for 6 months.

2. Pararosaniline Hydrochloride Solution

Dissolve 0.15 g of pararosaniline in 1 liter of distilled water containing 81 ml of concentrated hydrochloric acid. Mix well and allow to stand for two days before using. A new standard curve should be prepared for each new batch. This reagent is stable for 6 months.

3. Formaldehyde Solution 0.2%

Dilute 0.5 ml of 37% formaldehyde solution to 100 ml with distilled water. This solution should be prepared prior to use.

Apparatus

1. Midget impingers, such as Ace Glass Inc. Cat. No 7531.
2. Air pump with flow control and with a minimum capacity of 2 liters per minute through a midget impinger.
3. Spectrophotometer, suitable for measurement at 560 ± 25 nm.
4. Flowmeter, 0 to 2 liter per minute range.
5. Stopwatch.

Sample Collection

1. Preset the air pump to a flowrate of approximately 1 liter per minute. Prepare the sampling train by connecting the flowmeter to the sample manifold (Fig. 1, 1.5.3).
2. Pipet 10.0 ml of absorbing solution into a midget impinger. Connect the impinger to the flowmeter, and attach the air pump to the exit tube of the impinger.
3. When the calibration stream is stable and at the desired concentration level, start the air pump and the stopwatch. Immediately make the minor adjustment for a desired flow rate of 1.0 liter/min. and maintain flow for a time interval sufficient to collect from 5 to 13 μg of SO_2 . For stream concentrations approaching or greater than 1.0 ppm, a flow rate of 0.5 liter per minute may be used.

4. Take at least two samples for each calibration point.

Analysis

1. To the contents of each impinger add 1.0 ml of 0.2% formaldehyde solution and 1.0 ml of pararosaniline hydrochloride solution. Thoroughly mix and allow 30 minutes for color development.
2. Prepare a 10.0 ml reagent blank in the same manner as the collected samples.
3. With the spectrophotometer at 560 nm, set the reagent blank at 100% transmission.
4. Read the % transmission of each sample and from a standard curve, obtain the total micrograms of SO₂ collected.

Preparation of Standard Curve

1. Dissolve 0.4000 g of sodium meta bisulfite (Assay 65.5% as SO₂) in distilled water and bring to 1 liter in a 1 liter volumetric flask. This yields a solution of approximately 260 µg of SO₂/ml.
2. Standardize using standard solutions of iodine and thiosulfate (Ref. 2).
3. Make proper dilutions with TCM absorbing solution to obtain a working standard containing 2.6 µg SO₂ per ml.
4. Add respectively 0, 1.0, 2.0, 3.0, 4.0, and 5.0 ml of the working standard to a series of graduated test tubes. Add sufficient volumes of absorbing solution to make 10.0 ml of total volume.

5. Develop color as described above in the Analysis Section.
6. Plot % transmission vs. micrograms SO₂ on semi-logarithmic graph paper to obtain the standard curve.

Calculations

$$\text{PPM SO}_2 = \frac{\mu\text{g SO}_2 \text{ From Standard Curve}}{\text{Sample Vol. (in liters)} \times 2.6}$$

References

1. West, P., Gaeke, Anal. Chem. 28, 1816-19, 1956.
2. Kolthoff and Sandell, Textbook of Quantitative Inorganic Analysis, Third Edition, 1952, MacMillan Co.

1.5.7 Hydrogen Sulfide Reference Procedure

Principle

The method is based on the absorption of hydrogen sulfide, contained in a dilute calibration stream, by a suspension of cadmium hydroxide and arabino galactan. The formed cadmium sulfide is then reacted with N-N Dimethyl-P-phenylenediamine dihydrochloride and ferric chloride to make methylene blue. The methylene blue formed, proportional to the hydrogen sulfide absorbed, is measured spectrophotometrically.

Reagents

1. Absorbing Solution

Dissolve 2.7 g of anhydrous cadmium sulfate and 10 g of arabino galactan in approximately 500 ml of

distilled water. Dissolve 0.3 g of sodium hydroxide in approximately 100 ml distilled water. Mix the two solutions slowly while stirring. Add distilled water to make 1 liter of absorbing solution. The absorbing solution is stable for 3 months.

2. Test Amine Solution

Dissolve 0.375 g of N-N dimethyl-P-phenylenediamine dihydrochloride in 100 ml of 1:1 (v/v) sulfuric acid. The solution is stable for 6 months.

3. Ferric Chloride Solution

Dissolve 100g of $\text{FeCl}_3 \cdot 6 \text{H}_2\text{O}$ in sufficient water to make 100 ml of solution. The solution is stable for 6 months.

Apparatus

1. Midget impingers, such as Ace Glass Inc. Cat. No. 7531.
2. Air pump with flow control and with a minimum capacity of 2 liters per minute through a midget impinger.
3. Spectrophotometer, suitable for measurement at $670 \pm 25 \text{ nm}$.
4. Flowmeter, 0 to 2 liter per minute range.
5. Stopwatch.

Sample Collection

1. Preset the air pump to a flowrate of approximately 1 liter per minute. Prepare the sampling train by connecting the flowmeter to the sample manifold (Fig. 1, 1.5.3).

2. Pipet 10.0 ml of thoroughly shaken absorbing solution into a midget impinger. Connect the impinger to the flowmeter and attach the air pump to the exit tube of the impinger.
3. When the calibration stream is stable and at the desired concentration level, start the air pump and the stopwatch. Immediately make the minor adjustment for a desired flow rate of 0.7 liter/min. and maintain flow for a time interval sufficient to collect from 3 to 8 μg of H_2S .
4. Take at least two samples for each calibration point.

Analysis

1. Add consecutively 0.3 ml of test amine solution, and one drop of ferric chloride solution to the contents of each impinger. Thoroughly mix to insure that the precipitate has been dissolved, and allow 30 minutes for color development.
2. Prepare a 10.0 ml reagent blank in the same manner as the samples.
3. With the spectrophotometer set at 670 nm, set the reagent blank at 100% T.
4. Read the % transmission of each sample and from a standard curve, obtain the total micrograms of H_2S collected.

Preparation of Standard Curve

1. Dry a crystal of $\text{Na}_2\text{S} \cdot 9 \text{H}_2\text{O}$ with clean absorbent paper and break into small pieces.

2. Dissolve 0.71 g of sodium sulfide in distilled water and bring to 1 liter in a 1 liter volumetric flask. This yields a solution containing approximately 100 μg H_2S per ml.
3. Standardize immediately prior to use, using standard solutions of iodine and thiosulfate (Ref. 3).
4. Make proper dilutions with distilled water so as to obtain a working standard solution containing about 10 μg H_2S per ml.
5. Add respectively 0, 0.2, 0.4, 0.6, 0.8, and 1.0 ml of the H_2S working standard to a series of graduated test tubes. Add sufficient volumes of absorbing solution to make 10.0 ml of total volume.
6. Develop color as described above in the Analysis Section.
7. Plot % transmission vs. micrograms H_2S on semi-logarithmic paper to obtain the standard curve.

Calculations

$$\text{PPB } \text{H}_2\text{S} = \frac{\mu\text{g } \text{H}_2\text{S From Standard Curve} \times 10^3}{\text{Sample Vol. (liters)} \times 1.4}$$

References

1. Jacobs, et al, Anal. Chem. 29, 1349, 1957
2. Bamesberger, Adams Environ. Sci. and Tech. 3, 258-61 (1969)
3. Kolthoff and Sandell, Textbook of Quantitative Inorganic Analysis, Third Edition, 1952, MacMillan Co.

1.6 Reporting. Data recorded by the required instrumentation shall be examined at least once every seven days to determine whether the allowable limits have been exceeded, and to determine whether the instrumentation has operated properly. Instrument downtime exceeding a continuous 24 hour period and recorded data exceeding allowable limits shall be reported to the APCO within the next normal working day following examination.

A summary of data obtained during each calendar month shall be submitted to the APCO within 30 days following the end of the month. The summary shall include excesses over allowable limits, mass emission rate from sources, and notations for instrument downtime or other loss of data.

2. ATMOSPHERIC SAMPLING OF GROUND LEVEL LEAD CONCENTRATIONS

REF: Regs. 1-510, 11-1-501,
11-1-602 to 11-1-603

2.1 General. This section outlines the procedures to be used for calculation of mass emission limits and for atmospheric sampling of ground level lead concentrations in order to fulfill requirements of Regulations 11-1-302 and 11-1-303.

2.2 Mass Emission Limitations. Emission limitations required to meet Regulation 11-1-302 shall be determined by use of formulas 4.1 and 5.13, and figures 3-3 and 3-9, in "Workbook of Atmospheric Dispersion Estimates," by D. Bruce Turner, Public Health Service Publication No. 999-AP-26, Revised 1969, published by the U.S. Department of Health, Education and Welfare. In using said equations and figures, a neutral or "D" stability category shall be assumed, a wind shall be assumed that remains throughout the averaging period directed within a 22.5° sector of the compass rose at an average speed of two meters per second, and an ambient air temperature of 293°K shall be assumed.

2.3 Instrumentation. The person responsible for emissions of lead, who has elected to be regulated by Regulation 11-1-303 shall provide, install and maintain not less than four directionally controlled high-volume samplers located in the area surrounding the source and shall provide at least one recording meteorological station equipped to record wind speed and wind direction.

2.3.1 Instrument Specification. High-volume samplers, as described in Appendix B, "Reference Method for the Determination of Suspended Particulates in the Atmosphere (High-Volume Method)", Federal Register, Vol. 36, No. 84, Friday, April 30, 1971, shall be fitted with a control device which will cause the sampler to operate only during those periods when the ambient airflow to the sampler is from a specified sector. Means shall be added to record the elapsed time of sampler operation.

2.3.2 Meteorological Instrument Specifications. Meteorological instruments shall be capable of continuously measuring and recording wind direction to within ten degrees of arc, and wind speed to within one mile per hour (mph) at wind speeds less than 25 mph, and with a threshold no greater than 3 mph. The width of the wind recording charts shall be adequate to determine the wind components as specified.

2.4 Instrument Siting. High-volume samplers shall be positioned in pairs along vectors of wind direction passing over the source. The number of wind vectors required for monitoring of a site shall be determined from a wind rose applicable to the site. The wind rose shall be as described in "Some Applications of Statistics to Meteorology", by Hans Panofsky and Glenn Briar, Mineral Industries Extension Service, Pennsylvania State University, pages 15-16, 1958. Two such wind roses shall be used, one for the period November through April, and one for the period May through October. The requirements of this section apply to each

one independently.

On each wind rose, a primary vector is drawn in the direction of the most frequent winds, and passing through the emission point. This vector is the centerline of a sector of 45° of arc (vector direction plus and minus 22.5°). Similar treatment of at least one additional vector shall be provided to ensure that the sectors as a group encompass at least one-half of the exposure indicated by the wind rose.

A pair of samplers shall be installed along each vector. One shall be upwind, and its data will be used in determining background concentrations; the other shall be downwind, and its data will be used in determining source-impacted concentrations. These samplers shall be located as close as possible to the points at which maximum ground level concentrations are predicted by dispersion analysis to occur most frequently. In no case shall the location of the sampler be on the property on which the emissions occur unless the person responsible for monitoring agrees in writing that such location shall, for the purpose of District requirements, be deemed off the property.

Meteorological instruments shall be placed as close to the emission source as is practicable while providing a reasonably unobstructed exposure to the flow of ambient air.

Positioning of all instruments shall be determined in consultation with the APCO.

2.5 Instrument Operation. The monitoring system shall be operated for 24 consecutive hours, at least once every three days. During this period, meteorological instruments shall be operated continuously; and all samplers in the system shall be ready to operate, and shall operate whenever the wind direction is within the sector for which controls are set. Samplers shall be operated, and samples obtained, in accordance with the specifications as described in Appendix B, "Reference Method for the Determination of Suspended Particulates in the Atmosphere (High-Volume Method)", Federal Register, Vol. 36, No. 84, Friday, April 30, 1971.

2.5.1 Filter Media. Glass-fiber filters having an initial collection efficiency of at least 99 percent for particles of 0.3 μm . diameter are suitable for sample collection.

2.6 Maintenance. Care and maintenance shall be such that the instruments will function properly and record the lead concentrations in the area.

2.7 Calibration. Calibrations shall be performed to assure that the volume of air sampled is accurately known. High-volume sampler calibrations shall be performed by use of the Calibration Procedure in Appendix B - Reference Method for the Determination of Suspended Particulates in the Atmosphere (High-Volume Method), Federal Register, Vol. 36, No. 84, Friday, April 30, 1971 or any equivalent method.

2.8 Analysis. Lead collected on the filters shall be analyzed by Laboratory Procedure No. 4A "Determination of Lead Content in Atmospheric Particulate Matter". The APCO may require submission of filter samples for comparative analysis.

2.8.1 Data Analysis. Arithmetic means of lead concentrations shall be computed from all samples obtained during a thirty day period. Two separate arithmetic means shall be computed, one for all the background samples and one for all samples influenced by the source. All means shall be running means, updated at each subsequent 24-hour sample to include data for a thirty day period.

2.9 Reporting. A summary of data obtained from sampling and analysis and from the meteorological instrumentation, shall be submitted to the APCO within 30 days following the end of the month.

3. ATMOSPHERIC SAMPLING OF GROUND LEVEL BERYLLIUM CONCENTRATIONS

REF: Regs. 1-510,
11-3-602, 11-3-303

3.1 General. This section outlines the procedures to be used for atmospheric sampling of ground level beryllium concentrations.

3.2 Siting. Stationary sources subject to Regulation 11-3-303 shall locate air sampling sites in accordance with a plan approved by the APCO. Sampling sites must be sufficient in number and shall be located in such a manner as is calculated to detect maximum concentrations of beryllium in the ambient air. The APCO may at any time require changes in, or expansion of, the sampling network.

3.3 Sampling Collection. Samples for analysis shall be collected on filter media using an appropriate air mover. Filters having an initial collection efficiency of at least 99 percent for particles of 0.3 μm diameter are suitable for sample collection. The sample must be of sufficient size to accommodate the analytical technique employed.

All monitoring sites shall be operated continuously except for a reasonable time allowance for instrument maintenance and calibration, for changing filters, for repair or replacement of equipment.

3.4 Analysis. Filters shall be analyzed and concentrations calculated within 30 days after sample collection. Refer to Laboratory Procedure 2, "Determination of Beryllium in Effluent and Atmospheric Particulate Matter", contained in this manual, for the analytical procedure.

3.5 Reporting. A summary of data obtained during each calendar month shall be submitted to the APCO within 30 days following the end of the month by registered mail.

4. ATMOSPHERIC SAMPLING OF GROUND LEVEL BERYLLIUM CONCENTRATIONS FROM BERYLLIUM ROCKET MOTOR FIRING.

REF: Regs. 11-4-301,
11-4-302, 11-4-601

4.1 General. This section outlines the procedures to be used for atmospheric sampling of ground level beryllium concentrations from beryllium rocket motor firing.

4.2 Siting. Sources subject to Regulation 11-4-301 shall monitor ambient air concentrations during and after the test site operation, in accordance with a plan approved by the APCO. Sampling locations must be sufficient in number and shall be located in such a manner as calculated to detect maximum concentrations of beryllium in the ambient air.

4.3 Sample Collection. Samples for analysis shall be collected on filter media using an appropriate air mover. Filters having an initial collection efficiency of at least 99 percent for particles of 0.3 μm diameter are suitable for sample collection.

The sample must be of sufficient size to accommodate the analytical technique employed.

4.4 Analysis. All samples shall be analyzed and results shall be calculated within 30 days after samples are taken and before any subsequent rocket motor firing or propellant disposal at the given site. Refer to Laboratory

Procedure 2, "Determination of Beryllium in Effluent and Atmospheric Particulate Matter", for the analytical procedure.

4.5 Reporting. Concentrations measured at all sites shall be reported to the APCO by a registered letter dispatched before the close of the next business day following determination of such results.