United States Environmental Protection Agency
General Permit or Permit by Rule for New or Modified Minor Sources of Air Pollution in Indian Country

https://www.epa.gov/tribal-air/tribal-minor-new-source-review

Background Document: Air Quality Permit by Rule for New or Modified True Minor Source Petroleum Dry Cleaning Facilities in Indian Country

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1. Petroleum Dry Cleaning Source Category Definition

A petroleum dry cleaning facility may consist of dry cleaning dryers, washers, filters, stills, settling tanks, and boilers. Dry cleaning facilities normally use either petroleum solvents or perchloroethylene (PCE) as the cleaning solvents. The final Air Quality Permit by Rule for New or Modified True Minor Source Petroleum Dry Cleaning Facilities in Indian Country only covers dry cleaning facilities that are located at true minor New Source Review (NSR) sources and use petroleum solvents.

2. Source Category Characterization

Dry cleaning involves the cleaning of fabrics with nonaqueous organic solvents. The dry cleaning process requires three steps: (1) washing the fabric in solvent, (2) spinning to extract excess solvent, and (3) drying by tumbling in a hot air stream. There are two general types of cleaning fluids that are used in the industry: petroleum solvents and synthetic solvents. Petroleum solvents, such as Stoddard or 140-F, are inexpensive combustible hydrocarbon mixtures similar to kerosene. Synthetic solvents, such as PCE, are nonflammable, but are more expensive halogenated hydrocarbons.

There are two basic types of dry cleaning machines, transfer and dry-to-dry machines. Transfer machines accomplish washing and drying in separate machines. Dry cleaning as a batch process in transfer machines can result in a large amount of volatile organic compounds (VOC) or hazardous air pollutant (HAP) emissions due to vaporization of solvent during the transfer process. Dry-to-dry machines are single units that perform all of the washing, extraction, and drying operations. Since cleaning and drying take place in the same compartment of dry-to-dry machines, significant amounts of VOC and HAP emissions are eliminated from dry-to-dry machines (AP-42, Chapter 4.1-Dry Cleaning). Most petroleum dry cleaning machines in operation today are "dry-to-dry" machines (EPAs Memo 2010).

3. State Minor Source Permit Programs

The U.S. Environmental Protection Agency (EPA) researched state government websites for general permits and permits by rule for this source category, examined them for applicability to a permit for Indian Country, and used appropriate elements in the development of the documents and regulations in the Permit by Rule for this source category. The EPA has identified the following states and local governments that have specific NSR minor programs (such as general permits, registrations, permits by rule, etc.) for dry cleaning facilities using petroleum solvent, PCE, or both: Arizona, New Jersey, Ohio, Oklahoma, Pennsylvania, Washington, and Maricopa County in Arizona. The requirements for the state permitting programs related to dry cleaning facilities are summarized in Attachment A. Permits from these states were chosen for examination because of characteristics they possess:

- Readily available;
- Clear throughput limits; and
- Organization of the regulations followed the typical form for federal NSR permits:
    - Limitations and standards,
    - Monitoring, testing, recordkeeping, and reporting requirements.

For the 7 state programs reviewed, 5 of them have solvent usage limits and this limit ranges from 1,000 gallons/year to 6,800 gallons/year. Assuming that the VOC content of the solvents used is 8.34 lbs/gallon, these solvent usage limits are equivalent to VOC emission limitations of 4.17 tons per year (tpy) to 28.4 tpy. The state permit program for Oklahoma does not have a solvent usage limit but contains a VOC emission limitation of 100 tpy and a HAP emission limitation of less than 10 tpy for a single HAP and less than 25 tpy of all HAPs combined. Therefore, the VOC emission limitations for the programs reviewed range from 4.17 tpy to 100 tpy.

In addition to the solvent usage limit and VOC emission limitation, the state programs include the NSPS, Subpart JJJ (Standards of Performance for Petroleum Dry Cleaners) requirements for petroleum dry cleaning facilities and NESHAP, Subpart M (National Perchloroethylene Air Emission Standards for Dry Cleaning Facilities) requirements for PCE machines. For state permit programs in Arizona, the permits also include capacity limits for fuel combustion units, such as limiting the maximum capacity for each boiler to less than 10 MMBtu/hour.

4. Requirements for Permits by Rule

4.1 Documents for Permits by Rule

The EPA developed a standardized set of permit documents in support of the Permit by Rule for dry cleaning facilities. These consist of the following documents:

- Questionnaire: Assists the facility owner or operator in determining whether they are eligible for the Permit by Rule;
- Screening Processes for Threatened and Endangered Species and Historic Properties: For the permits by rule, we have separated the screening processes from the Notification of Coverage Forms and created a separate document, "Procedures to Address Threatened and Endangered Species and Historic Properties for New or Modified True Minor Sources in Indian Country Seeking Air Quality Permits by Rule";
- Notification for Coverage under the Permit by Rule: States the criteria for qualification, gathers technical information on the source, facility location, and source contact, requests information on the facility, the facility's actual emissions for those sources undergoing modifications, and requests that the source certify they will comply with the requirements, which are included in the rule for dry cleaning facilities at 40 CFR 49.163;
- Instructions: Guides the applicant in filling out the Notification of Coverage under the Permit by Rule;
- Air Quality Permit by Rule, Terms and Conditions: Contains the requirements and regulations with which the source must comply. The emission limitations, monitoring, recordkeeping and reporting requirements are in the permit, including requirements for sources located in nonattainment areas. (Note that all of the requirements and regulations with which the source must comply in a permit by rule are included in the rulemaking action the EPA has taken for this source category at 40 CFR 49.163.); and
- Potential to Emit (PTE) Calculator Spreadsheet: Allows applicants to calculate their PTE, based on owner

inputs of the specific equipment present at their source, assuming continuous operation throughout the year. The PTE Calculator spreadsheet generates potential emissions, based on these inputs. The spreadsheet illustrates the correlation between equipment, raw material throughput, and emissions.

4.2 Exemption and Qualification for Permits by Rule

Facilities applying for the Permit by Rule must meet the following criteria:

- Must be a true minor NSR source; and
- Be able to comply with the emissions limitations established for the Permit by Rule.

New facilities with a PTE (or modifications to existing facilities with an emissions increase) lower than the minor NSR thresholds specified in the provisions of the Federal Indian Country Minor NSR Rule at 40 CFR 49.153 are exempt from the minor NSR program. The minor NSR thresholds are listed in Table 1 below. Facilities applying for the Permit by Rule may calculate their PTE using the PTE calculator provided to determine if their project is below these thresholds and, thus, exempt from the minor NSR program.

Table 1: Minor NSR Thresholds in 40 CFR 49.153

Pollutant	Attainment Area	Nonattainment Area
Carbon Monoxide (CO)	10 tpy	5 tpy
Particulate Matter	10 tpy	5 tpy
PM_{10}	5 tpy	1 tpy
$PM_{2.5}$	3 tpy	0.6 tpy
Sulfur Dioxide (SO_2)	10 tpy	5 tpy
Nitrogen Oxides (NO_X)	10 tpy	5 tpy
VOC	5 tpy	2 tpy

Under current EPA policy, only true minor NSR sources qualify for the Permit by Rule. Therefore, facilities will be required to compare their PTE to the NSR major source thresholds to determine if they qualify for the Permit by Rule. The NSR major source threshold for attainment areas is 250 tpy of any criteria pollutant. The NSR major source thresholds for nonattainment areas are summarized in Table 2 below:

Table 2: NSR Major Source Thresholds for Nonattainment Areas

Pollutant	Nonattainment Classification	NSR Major Source Threshold
Ozone	Marginal	100 tpy of VOC or NO_X
	Moderate	100 tpy of VOC or NO_X
	Serious	50 tpy of VOC or NO_X
	Severe	25 tpy of VOC or NO_X
	Extreme	10 tpy of VOC or NO_X
PM_{10}	Moderate	100 tpy
	Serious	70 tpy
CO	Moderate	100 tpy
	Serious	50 tpy
SO_2, NO_2, $PM_{2.5}$	No nonattainment classification	100 tpy

If the facility's PTE is above the NSR major source threshold of 250 tpy, or above any applicable nonattainment

area thresholds listed in Table 2 (for any pollutant for which the area in which the source is locating or modifying is designated nonattainment), then the facility does not qualify for the Permit by Rule. The following documents are available to assist sources in the screening and application process:

- Questionnaire;
- Notification for Coverage under the Permit by Rule;
- Instructions for the Notification for Coverage under the Permit by Rule; and
- PTE calculator.

For facilities not exempt from the minor NSR program and having a PTE below the NSR major source thresholds, the facilities will further evaluate if they meet the throughput limits and operating requirements established in this Permit by Rule. The specific requirements for the Permit by Rule are discussed in Sections 4.3 and 4.4. The emissions associated with the throughput limits are lower than the NSR major source thresholds and were derived as described below in Section 5.

4.3 Specific Permit Requirements for Permits by Rule

The terms and conditions of the Permit by Rule are based on the required permit content and analyses in the Federal Indian Country Minor NSR Rule. The required permit content is listed in 40 CFR 49.155(a) – *What information must my permit include?* Below we describe the basis for the permit conditions.

40 CFR 49.155(a)(1) – General Requirements

The rule establishes general requirements that each permit must identify: the effective date of the permit; the date by which the owner/operator must commence construction in order for the permit to remain valid; the emission units subject to the permit and their associated emission limitations; and monitoring, recordkeeping, and reporting requirements to assure compliance with the emission limitations. The Permit by Rule contains all of this required information, except for the emission units subject to the permit. Because of the nature of permits by rule we believe it is more appropriate to identify the emission units covered by the Permit by Rule in the Notification of Coverage. Each permit contains a separate section that specifically identifies the emission limitations and standards, monitoring and testing, recordkeeping, and reporting and notification requirements. The General Terms and Conditions in the Permit by Rule are a standardized set of boilerplate conditions included with permits by rule.

40 CFR 49.155(a)(2) – Emission Limitations

The permit must contain the emission limitations determined by the reviewing authority under 40 CFR 49.154(c) for each affected emissions unit. 40 CFR 49.154(c) – *How will the reviewing authority determine the emission limitations that will be required in my permit?* – identifies the case-by-case control technology review that must be used by the reviewing authority to determine the appropriate level of control. In carrying out the case-by-case control technology review, the reviewing authority must consider the following factors:

1. Local air quality conditions;
2. Typical control technology or other emission reduction measures used by similar sources in surrounding areas;
3. Anticipated economic growth in the area; and
4. Cost-effective emission reduction alternatives.

In addition, the reviewing authority must require a numerical limit on the quantity, rate or concentration of emissions for each regulated NSR pollutant emitted by each affected emissions unit, for which such a limit is

technically feasible. The emission limitation required may also be included as pollution prevention techniques, design standards, equipment standards, work practices, operational standards or any combination thereof. However, the emission limitations must assure that each affected emission unit will comply with all requirements of 40 CFR parts 60, 61, and 63, as well as any federal or tribal implementation plans that apply to the unit. Finally, the emission limitations required may not rely on a stack height that exceeds good engineering practice or any other dispersion technique, except as allowed by 40 CFR 51.118(b). To address the requirements for establishing emission limitations the following considerations were used for setting the limits in the Permit by Rule for petroleum dry cleaners:

1. Local air quality conditions – To address this requirement, the Permit by Rule sets more stringent limits on solvent use for sources located in any ozone nonattainment area and additional operational requirements for sources located in serious, severe, or extreme ozone nonattainment areas.

2. Typical control technology or other emission reduction measures used by similar sources in surrounding areas – For sources locating in attainment areas we looked at the control requirements specified by 40 CFR parts 60, 61 and 63. These regulations establish minimum technology and emission limitations that must be met nationally and also meet the requirements of 40 CFR 49.154(c)(4) to ensure compliance with parts 60, 61, and 63. For this permit rule we considered regulations that apply to the equipment at petroleum dry cleaners:

    - The NSR Rule (40 CFR 49.155(a));
    - Existing applicable NSPS regulations: 40 CR Part 60, Subpart JJJ, Standards of Performance for Petroleum Dry Cleaners;
    - The South Coast Air Quality Management District (AQMD) rule for Dry Cleaners Using Solvent Other Than Perchloroethylene (South Coast AQMD Rule 1102) for facilities located in ozone nonattainment areas (these regulations cover emissions from facilities that are located at a petroleum dry cleaning plant with a total manufacturer's rated dryer capacity equal to or greater than 84 pounds); and
    - State permit examples.

    Review of the regulations resulted in permit conditions requiring that all petroleum dry cleaning dryers must be solvent recovery dryers and that care must be taken to ensure equipment is operated properly and solvents are properly stored.

    List of requirements from 40 CFR 60 Subpart JJJ included in the Permit by Rule:

    - 40 CFR 60.622(a) – requirement for solvent recovery dryer;
    - 40 CFR 60.622(b) – requirement for solvent filter; and
    - 40 CFR 60.622(c) – requirement for leak inspections and posting a label on the dryer.

3. Anticipated economic growth in the area – The reviewing authority may consider anticipated economic growth when determining whether coverage under the Permit by Rule is justifiable. Considering, however, that the Permit by Rule sets emission standards that are consistent with what is required for petroleum dry cleaners across the country in both attainment and non-attainment areas, we expect that this will rarely be a factor.

4. Cost-effective emission reduction alternatives – The Permit by Rule sets emission standards that are

consistent with what is required for petroleum dry cleaners across the country, based on the ozone attainment status where the source is locating. As such, the chosen technologies are considered widely available and consideration of more cost-effective alternatives is not necessary at this time. We intend to periodically review technology costs in the future to determine when more stringent, cost-effective technologies become widely available.

40 CFR 49.155(a)(3) – Monitoring Requirements
The Permit by Rule must include monitoring that is sufficient to assure compliance with the emission limitations that apply to the source. The Permit by Rule requires regular inspection of dry cleaning dryers and maintenance.

40 CFR 49.155(a)(4) – Recordkeeping Requirements
The Permit by Rule must include recordkeeping that is sufficient to assure compliance with the emission limitations and monitoring requirements, including certain statements listed in 40 CFR 49.155(a)(4)(i) and (ii). In addition to the recordkeeping requirements in 40 CFR 49.155(a)(4)(i), the Permit by Rule also requires records of required inspection and maintenance of dry cleaning equipment and quantities and types of dry cleaning solvents used.

40 CFR 49.155(a)(5) – Reporting Requirements
The Permit by Rule includes the reporting requirements listed in 40 CFR 49.155(a)(5)(i) and (ii) related to annual reports and reporting of deviations.

40 CFR 49.155(a)(6) – Severability Clause
The Permit by Rule includes a severability clause to ensure the continued validity of the other portions of the permit in the event of a challenge to a portion of the permit.

40 CFR 49.155(a)(7) – Additional Provisions
The Permit by Rule contains the additional provisions required for each permit. These conditions are found in the General Provisions of the Permit by Rule.

4.3.1 Requirements for Sources Located in Nonattainment Areas

There are additional requirements for sources located in nonattainment areas that go beyond those found in the NSPS requirements. Since some tribes are located in ozone nonattainment areas, additional requirements to reduce/control the VOC emissions (precursor for ozone) from petroleum dry cleaning facilities located in ozone nonattainment areas are necessary. In order to develop the additional requirements for petroleum dry cleaning facilities in ozone nonattainment areas, the EPA has reviewed the policy and procedures developed by the South Coast Air Quality Management District and will include part of the requirements contained in California Air Quality Rule for Dry Cleaners Using Solvent Other Than Perchloroethylene (South Coast AQMD Rule 1102) into this Permit by Rule for petroleum dry cleaning facilities located in serious, severe, or extreme ozone nonattainment areas. These additional requirements include equipment specifications for dry cleaning system, specifications for closed-loop machines, and leak check and repair requirements. The specific requirements are included in Attachment B of this document and in Attachment C to the Permit by Rule.

4.4 Information on Completing Screening Processes Prior to Submitting a Notification of Coverage under the Permit by Rule

In order to be covered under this Permit by Rule, owners and operators must satisfactorily complete the screening processes for their source that are specified for threatened and endangered species and historic

properties. The document entitled "Procedures to Address Threatened and Endangered Species and Historic Properties for New or Modified True Minor Sources in Indian Country Seeking Air Quality Permits by Rule" contains the EPA's guidance to assist sources in completing these processes.

5. Emission Limitations[1] and Surrogate Throughput Limits

5.1 Developing the Surrogate Limits and Limitations

The EPA developed solvent usage emissions limitations as surrogates for establishing ton per year emissions limitations for sources in both attainment areas and nonattainment areas. The solvent usage limits in the Permit by Rule reflect the emission rates that are listed in Table 3 for petroleum dry cleaning facilities located in ozone nonattainment and ozone attainment areas. The selected emission rate for sources located in attainment areas is consistent with state programs. The selected emission rate for sources located in nonattainment areas is suggested by the EPA.

Table 3: Emission Rates Used to Determine Emission Limitations for Petroleum Dry Cleaning Facilities

Pollutant of Concern	Ozone Nonattainment Areas	Ozone Attainment, Unclassifiable or Attainment/Unclassifiable Areas	Source of Emissions
VOC	7 tpy	25 tpy	Dry cleaning units and steam boilers

Table 4 contains the throughput limits for the Permit by Rule for petroleum dry cleaning facilities located in ozone nonattainment and ozone attainment, unclassifiable or attainment/unclassifiable areas that are surrogates for the ton per year emission rates listed in Table 3. The EPA developed the solvent usage limits for sources in both attainment, unclassifiable or attainment/unclassifiable and nonattainment areas based on (1) the emission rates in Table 3 and (2) assumptions about the equipment configuration at a typical source.

Table 4: Surrogate Throughput Emission Limitations for Petroleum Dry Cleaning Facilities

Throughput Limit	Ozone Nonattainment Areas	Ozone Attainment, Unclassifiable or Attainment/Unclassifiable Areas
Cleaning Solvent Usage	1,300 gallons/year	5,600 gallons/year

5.2 Emission Limitations

Two considerations form the basis for the upper eligibility limitations for permits by rule:

1. Are there any EPA regulation-based emission limitations?
2. Where do state programs establish eligibility limits?

[1] The definition of emission limitation used in this Background Document is the one provided in the Federal Indian Country NSR rule (described in Section 4.3) and includes requirements established by the reviewing authority that relate to the operation of a source, which allows for the use of production throughput limits.

5.2.1 EPA Regulation-Based Emissions Limitations

There are no specific EPA regulation-based emissions limitations for petroleum dry cleaning facilities. In general, facilities in attainment areas with a PTE of any criteria pollutant equal or greater than 250 tpy are NSR major sources. Facilities with a PTE of any criteria pollutant equal to or greater than 100 tpy or HAP emissions greater than 10 tpy for a single HAP and 25 tpy for total HAPs are subject to Title V operating permit program. However, most dry cleaning facilities have actual emissions for criteria pollutants much less than 100 tpy.

5.2.2 State Program Limitations

The EPA researched the similar type of permits developed by Maricopa County in Arizona and the states of Arizona, New Jersey, Ohio, Oklahoma, Pennsylvania, and Washington and the results are summarized in Attachment A. The VOC emission limitations for these state programs range from 4.25 to 100 tpy. Basing the permit emissions limitations on the upper VOC value of 25 tpy for attainment areas is within the range of the state permit programs reviewed.

5.3 Calculating the Throughput Limits

The EPA determined the solvent usage emission limitations by calculating the annual usage rates that would be equivalent to the ton per year emissions rates selected in Table 3. VOC is mainly emitted from the use of cleaning solvents at dry cleaning facilities but is also emitted from combustion units (such as the boilers used to provide steam). The following assumptions are adopted for this calculation:

- The VOC content of all the solvents applied is assumed to be 8.34 lbs/gallon (worst case scenario);
- Only natural gas, propane, and butane are used in the fuel combustion units at the affected facilities; and
- The total heat input capacity of all the fuel combustion units at the affected facilities is 30 MMBtu/hour. Based on the emissions factors in AP-42 for combustion units, the VOC emissions from the combustion units are 1.44 tpy. This capacity limit was selected because it is consistent with the boiler capacity limit established in the state general permit program developed by Maricopa County in Arizona (See Attachment A).

Attachment C contains example calculations showing how solvent usage limits in Table 4 corresponds to the VOC emission limitations in both ozone attainment and ozone nonattainment areas as shown in Table 3.

References:

2008 National Emission Inventory Data, U.S. Environmental Protection Agency.
http://www.epa.gov/ttn/chief/net/2008inventory.html

40 CFR 49.151 – 40 CFR 49.165, Federal Minor New Source Review (NSR) Program in Indian Country.
http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&sid=ffc06a883374e41e6772cd842b1ac2d4&tpl=/ecfrbrowse/Title40/40cfr49_main_02.tpl

40 CFR Part 60, Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units.
http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&sid=4502b9bec7883393acc0ba9745803908&rgn=div6&view=text&node=40:6.0.1.1.1.12&idno=40

40 CFR Part 60, Subpart JJJ - Standards of Performance for Petroleum Dry Cleaners.
http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&sid=a4ffb0a8d823382f497b95a61ef26817&rgn=div6&view=text&node=40:6.0.1.1.1.75&idno=40

40 CFR Part 63, Subpart M - National Perchloroethylene Air Emission Standards for Dry Cleaning Facilities.
http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&sid=6a37e67cbe4f9c3ec15b1bf1635016be&rgn=div6&view=text&node=40:9.0.1.1.1.13&idno=40

AP 42, Fifth Edition, Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources.
http://www.epa.gov/ttn/chief/ap42/

U.S. Environmental Protection Agency, DRAFT, "Petroleum Solvent Dry Cleaning Industry Profile," Graham Gibson and Colin Hayes, ERG; August 4, 2010.

South Coast Air Quality Rule 1102- Dry Cleaners Using Solvent Other Than Perchloroethylene.
http://www.aqmd.gov/rules/reg/reg11/r1102.pdf

Attachment A – Summary of the State Permitting Programs for Dry Cleaning Facilities

State	Permit Type	Type of Facilities Covered	Emission Limitation	VOC Containing Materials (Solvent & Coating) Usage Limit	Other Limitations	Weblink
AZ	General Permit	PCE Dry Cleaning	N/A	< 2,100 gallons/year for PCE	< 10 MMBtu/hour for each boiler; and NESHAP, Subpart M.	http://www.azdeq.gov/environ/air/permits/do_wnload/gndryapp.pdf
AZ-Maricopa County	General Permit	Both Petroleum and PCE Dry Cleaning	N/A	< 2,100 gallons/year of PCE < 6,800 gallons/year of petroleum solvents	Limit to dry-to-dry PCE machines; < 10 MMBtu/hour for each boiler; < 36 MMBtu/hour for all boilers; < 260 hp for all emergency generators; and NESHAP, Subpart M.	http://www.maricopa.gov/aq/divisions/permit_engineering/docs/pdf/Dry%20Cleaner%20Gen eral%20Permit.pdf
NJ	General Permit	Petroleum Dry Cleaning	VOC < 4.25 tpy	< 1,000 gallons/year	Limit to dry-to-dry machine; and No PCE.	http://www.epa.ohio.gov/dapc/genpermit/dry_cleaning.aspx
OH	General Permit	PCE Dry Cleaning	N/A	< 2,100 gallons/year of PCE	Limit to dry-to-dry PCE machines; and NESHAP, Subpart M.	http://www.epa.ohio.gov/dapc/genpermit/dry_cleaning.aspx
OK	General Permit	Both Petroleum and PCE Dry Cleaning	VOC < 100 tpy HAP < 10/25 tpy	N/A	NSPS, Subpart JJJ for new units; NESHAP, Subpart M; Not use thermal devices for control; and No use of TCE or CFC-113.	http://www.deq.state.ok.us/AQDnew/resources/factsheets/dryclean.html
PA	General Permit	Both Petroleum and PCE Dry Cleaning	VOC < 50 tpy VOC < 25 tpy for selected counties HAP < 10/25 tpy	N/A	NSPS, Subpart JJJ for new units.	http://www.dep.state.pa.us/dep/deputate/air_waste/aq/permits/gp.htm
WA	General Order	PCE Dry Cleaning	N/A	< 2,100 gallons for PCE	Limit to dry-to-dry PCE machines; and NESHAP, Subpart M.	http://apps.ecy.wa.gov/permithandbook/permitdetail.asp?id=116

Attachment B – Petroleum Dry Cleaning Facilities

For facilities located in serious, severe, or extreme ozone nonattainment areas, the permittee shall operate and maintain the solvent dry cleaning system in accordance with the requirements specified below and in accordance with the manufacturer's recommendations:

Section 1: General Specifications

1. For any dry cleaning system that is equipped with cartridge filters containing paper or carbon or a combination thereof, the cartridge filters shall be fully drained in sealed filter housing for at least 24 hours before removal.

2. All parts of the dry cleaning system where solvent may be exposed to the atmosphere or workroom shall be kept closed at all times except when access is required for proper operation and maintenance.

3. Wastewater evaporators shall be operated to ensure that no liquid solvent or visible emulsion is allowed to vaporize to the atmosphere.

Section 2: Additional Specification for Closed-Loop Machines

A *closed-loop machine* means dry cleaning equipment in which washing, extraction, and drying is performed within the same single unit and which re-circulates and recovers the solvent-laden vapor.

4. A *closed-loop machine* shall not exhaust to the atmosphere or workroom during operation except when the vacuum pump exhausts to maintain a continuous vacuum.

5. For any *closed-loop machine* that is not equipped with a locking mechanism, the operator shall not open the door of a closed-loop machine prior to completion of the drying cycle.

6. For any *closed-loop machine* that is equipped with a locking mechanism, the operator shall not inactivate the locking mechanism and open the door of a closed-loop machine prior to completion of the drying cycle.

Section 3: Leak Check and Repair Requirements

7. No less frequently than monthly, the owner or operator shall inspect the dry cleaning system for liquid and vapor leaks, including, but not limited to, the following:

    a. Hose connections, unions, couplings, valves, and flanges;
    b. Machine door gasket and seating of the machine cylinder;
    c. Filter head gasket and seating;
    d. Pumps;
    e. Base tanks and storage containers;
    f. Water separators;
    g. Filter sludge recovery;
    h. Seals and gaskets of distillation unit(s);
    i. Diverter valves;

j. Saturated lint from lint trap basket;
k. Button trap lid;
l. Cartridge or other types of filters;
m. Seals, gaskets and the diverter valve of the refrigerated condenser;
n. Exhaust stream ducts;
o. Lint trap ducts; and,
p. Gaskets and ducts of the carbon adsorber.

8. To inspect for a vapor leak, the operator shall use at least one of the following techniques:

   a. Soap bubble technique in accordance with the procedures in EPA Method 21, Section 4.3.3 – Alternative Screening Procedure; or
   b. A non-halogenated hydrocarbon detector; or
   c. A portable hydrocarbon analyzer or an alternative method approved by the reviewing authority.

9. To inspect for a liquid leak, the operator shall visually inspect the equipment for liquid leaking in a visible mist or at the rate of more than one drop every three minutes.

10. Any liquid leak or vapor leak that has been detected by the operator shall be repaired within three (3) working days of detection. If repair parts are not available at the facility, the parts shall be ordered within two working days of detecting such a leak and the operator shall provide written notification to the reviewing authority that explains the reason(s) for delaying the leak repair. Such repair parts shall be installed within five working days after receipt. A facility with a leak that has not been repaired by the end of the seventh (7th) working day after detection shall not operate the dry cleaning equipment, until the leak is repaired.

Attachment C –
Emissions Calculations for Solvent Usage Limits

Assumptions:

(1) The VOC content of all the solvents applied is assumed to be 8.34 lb/gallon (worst case scenario);

(2) Only natural gas, propane, and butane are used in the fuel combustion units at the affected facilities; and

(3) The total heat input capacity of all the fuel combustion units at the affected facilities is 10 MMBtu/hour.

(1) Solvent Usage Limit for Ozone Attainment Areas: 5,600 gallons per year (see Table 4)

VOC Emissions from Solvent Usage

= Annual solvent consumption limit x VOC content x lbs to tons conversion
= 5,600 gallons/year x 8.34 lbs/gallon x 1 ton/2,000 lbs
= 23.35 tpy

VOC Emissions from Combustion Units

= Maximum heat capacity of the combustion units x fuel heat content x emission factor x 8,760 hours/year x lbs to tons conversion
= 30 MMBtu/hour x (1 kgal/91.5 MMBtu) x 1 (lb/kgal) x 8,760 hours/year x 1 ton/2,000 lbs
= 1.44 tpy

(Note: Emission factor is for propane combustion, which is the worst case scenario among using NG, propane, and butane)

Total VOC Emissions from the Affected Petroleum Dry Cleaning Facility

= VOC Emissions from solvent usage + VOC emissions from combustion units
= 23.35 tpy + 1.44 tpy
= 24.79 tpy

(2) Solvent Usage Limit for Ozone Nonattainment Areas: 1,300 gallons per year (see Table 4)

VOC Emissions from Solvent Usage

= Annual solvent consumption limit x VOC content x lbs to tons conversion
= 1,300 gallons/year x 8.34 lbs/gallon x 1 ton/2,000 lbs
= 5.42 tpy

VOC Emissions from Combustion Units

= Max. Heat capacity of the combustion units x fuel heat input x emission factor x 8,760 hours/year x lbs to tons conversion
= 30 MMBtu/hour x (1 kgal/91.5 MMBtu) x 1 (lb/kgal) x 8,760 hours/year x 1 ton/2,000 lbs
= 1.44 tpy

(Note: Emission factor is for propane combustion, which is the worst case scenario among using NG, propane, and butane)

Total VOC Emissions from the Affected Petroleum Dry Cleaning Facility

= VOC Emissions from solvent usage + VOC emissions from combustion units
= 5.42 tpy + 1.44 tpy
= 6.86 tpy