Applicability

7011.0010 APPLICABILITY OF STANDARDS OF PERFORMANCE.

Subpart 1. **Existing facility.** An owner or operator of an existing emission facility shall comply with all applicable state air pollution control rules for existing emission facilities.

Subp. 2. **New facility.** An owner or operator who constructs, modifies, or reconstructs an emission facility shall comply with the New Source Performance Standards, if applicable, or the standards of performance for a new emission facility set forth in the state air pollution control rules.

Subp. 3. **Exception.** For the purpose of the state air pollution control rules, the use of an alternative type of fuel or raw material is not a modification if the existing facility was designed to accommodate the alternative type of fuel or raw material. An emission facility is considered to be designed to accommodate an alternative type of fuel or raw material if that use could be accomplished under the facility's construction specifications as amended prior to the change.

Subp. 4. **Opacity standards.** The opacity standards in an applicable requirement apply at all times except during periods of start-up, shutdown, and malfunction, and as otherwise provided in an applicable requirement or compliance document as defined in parts 7007.0100 and 7017.2005. The exemption for periods of start-up, shutdown, and malfunction applies only if:

A. at all times, including periods of start-up, shutdown, or malfunction, the owner or operator, to the extent practicable, maintains and operates the affected emission facility and air pollution control equipment in a manner consistent with good operating practice for the installed equipment design. Determination of whether acceptable operating and maintenance procedures are being used shall be based on, among other information, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source;

B. the owner or operator complies with parts 7019.1000 and 7019.2000 in the event of a shutdown, breakdown, or malfunction; and

C. the applicable requirement or compliance document does not state that the opacity standard applies during such conditions.

Subp. 5. **Transition to new opacity averaging method.** All permits issued before July 27, 1998, are amended to reflect the amendments to this chapter adopted on July 27, 1998, that are related to opacity averaging and excursions.

7011.0020 CIRCUMVENTION.

No owner or operator may install or use a device or means that conceals or dilutes emissions, which would otherwise violate a federal or state air pollution control rule, without reducing the total amount of pollutant emitted.

SA: MS s 116.07 subd 4

HIST: 8 SR 2275; 18 SR 614

7011.0060 DEFINITIONS.

Subpart 1. Scope. The definitions in parts 7005.0100 and 7007.0100 apply to the terms used in parts 7011.0060 to 7011.0080 unless the terms are defined in this part. The definitions in this part apply to the terms used in parts 7011.0060 to 7011.0080.

Subp. 2. Hood. "Hood" means a shaped inlet to a pollution control system that does not totally surround emissions from an emissions unit, that is designed to capture and discharge the air emissions through ductwork to control equipment, and that conforms to the design and operating practices recommended in "Industrial Ventilation - A Manual of Recommended Practice, American Conference of Governmental Industrial Hygienists, ~~Lansing, Michigan~~." This document is subject to frequent change.

Subp. 3. Control equipment manufacturer. "Control equipment manufacturer" means a person that manufactures and sells control equipment, if at least 50 percent of the dollar value of the annual control equipment sales are made to persons who are not a subsidiary, division, or subdivision of the control equipment manufacturer.

Subp. 4. Listed control equipment. "Listed control equipment" means the control equipment at a stationary source listed in part 7011.0070, subpart 1, Table A.

Subp. 5. Total enclosure. "Total enclosure" means an enclosure that completely surrounds emissions from an emissions unit such that all emissions are captured and discharged through ductwork to control equipment.

7011.0061 INCORPORATION BY REFERENCE.

For the purpose of parts 7011.0060 to 7011.0080, the document, Industrial Ventilation - A Manual of Recommended Practice, American Conference of Governmental Industrial Hygienists, 6500 Glenway Avenue, Building D-7, Cincinnati, OH, 45211-4438 (1984), is incorporated by reference. American Conference of Governmental Industrial Hygienists is the author and publisher. This document is available through the Minitex interlibrary loan system (University of Minnesota Library). This document is subject to frequent change.

7011.0065 APPLICABILITY.

Subpart 1. Applicability. The owner or operator of a stationary source shall comply with parts 7011.0060 to 7011.0080 if the owner or operator used the control equipment efficiencies for listed control equipment established pursuant to part 7011.0070 to calculate potential to emit, from emissions units that discharge through the listed control equipment, to:

A. determine what type of permit is required, pursuant to part 7007.0150, subpart 4, item B;

B. determine what type of amendment to a part 70 or state permit is required, pursuant to part 7007.1200;

C. qualify for an insignificant modification under part 7007.1250; or

D. qualify for registration permit option D under part 7007.1130.

Subp. 2. Exceptions to applicability. Notwithstanding subpart 1, the owner or operator of a stationary source need not comply with parts 7011.0060 to 7011.0080, if:

A. nonuse of the listed control equipment is specifically allowed in a part 70, state, or general permit issued under chapter 7007; or

B. the listed control equipment is at a stationary source that would not require a permit under chapter 7007, even if the emission reductions from the listed control equipment at the stationary source are not considered in the stationary source's potential emissions.

7011.0070 LISTED CONTROL EQUIPMENT AND CONTROL EQUIPMENT EFFICIENCIES.

Subpart 1. **Listed control equipment efficiencies.** Unless a part 70, state, or general permit specifies a different control efficiency, the owner or operator of a stationary source must at all times attain at least the control efficiency listed in Table A for each piece of listed control equipment at the stationary source. The applicable control efficiency for a type of listed control equipment and a given pollutant is determined by whether air emissions are discharged to the control equipment through a hood or through a total enclosure. The control equipment efficiencies in Table A do not apply to any hazardous air pollutant. The owner or operator of a stationary source that is subject to the control efficiencies given for hoods in Table A must evaluate, on a form provided by the commissioner, whether the hood conforms to the design and operating practices recommended in "Industrial Ventilation - A Manual of Recommended Practice, American Conference of Governmental Industrial Hygienists, ~~Lansing, Michigan,~~" and must include with the permit application the certification required in subpart 3.

CONTROL EQUIPMENT EFFICIENCY-TABLE A

ID#	CONTROL EQUIPMENT DESCRIPTION	POLLUTANT	CONTROL EFFICIENCY	
			TOTAL ENCLOSURE	HOOD
	PM CONTROL CATEGORY-CYCLONES means a device where airflow is forced to spin in a vortex through a tube			
007	Centrifugal Collector (cyclone)-high efficiency means: a cyclonic device with parameters stated in drawing 1 and table 1	PM,PM-10	80%	64%
008	Centrifugal Collector (cyclone)-medium efficiency means: a cyclonic device with parameters stated in drawing 1 and table 1	PM,PM-10	50%	40%
009	Centrifugal Collector (cyclone)-low efficiency means: a cyclonic device with parameters stated in drawing 1 and table 1	PM,PM-10	10%	8%
076	Multiple Cyclone without Fly Ash Reinjection means: a cyclonic device with more than one tube where fly ash is not reinjected	PM,PM-10	80%	NA
077	Multiple Cyclone with Fly Ash Reinjection means: a	PM,PM-10	50%	NA

D#	CONTROL EQUIPMENT DESCRIPTION	POLLUTANT	CONTROL EFFICIENCY	
			TOTAL ENCLO-SURE	HOOD
	cyclonic device with more than one tube where fly ash is reinjected			
085	Wet Cyclone Separator or Cyclonic Scrubbers means: a cyclonic device that sprays water into a cyclone	PM,PM-10	50%	40%
012	PM CONTROL CATEGORY-ELECTROSTATIC PRECIPITATORS means: a control device in which the incoming particulate matter receives an electrical charge and is then collected on a surface with the opposite electrical charge			
	-assumed efficiency for boiler fly ash control	PM-10	40%	NA
	-assumed efficiency for other applications	PM-10	70%	56%
	PM CONTROL CATEGORY-OTHER CONTROLS			
016	Fabric Filter means: a control device in which the incoming gas stream passes through a porous fabric filter forming a dust cake	PM,PM-10	99%	79%
052	Spray Tower means: a control device in which the incoming gas stream passes through a chamber in which it contacts a liquid spray	PM,PM-10	20%	16%
053	Venturi Scrubber means: a control device in which the incoming gas stream passes through a venturi into which a low pressure liquid is introduced	PM,PM-10	90%	72%
055	Impingement Plate Scrubber	PM,PM-10	25%	20%

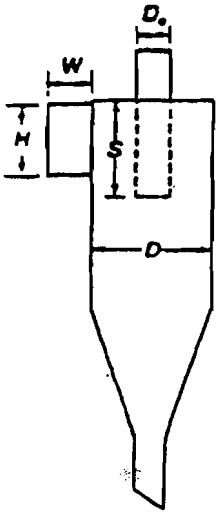
KEY: PROPOSED RULES SECTION — Underlining indicates additions to existing rule language. ~~Strike outs~~ indicate deletions from existing rule language. If a proposed rule is totally new, it is designated "all new material." ADOPTED RULES SECTION — Underlining indicates additions to proposed rule language. ~~Strike outs~~ indicate deletions from proposed rule language.

ID#	CONTROL EQUIPMENT DESCRIPTION	POLLUTANT	CONTROL EFFICIENCY TOTAL ENCLOSURE	CONTROL EFFICIENCY HOOD
	means: a control device in which the incoming gas stream passes a liquid spray and is then directed at high velocity into a plate			
058	Mat or Panel Filter means: a control device in which the incoming gas stream passes through a panel of coarse fibers. Panels are removable for cleaning or replacement and provide little resistance to air flow	PM,PM-10	92%	NA
~~061~~	~~Dust Suppression by Water Spray means: the application of water to a surface or material to maintain a minimum moisture content level of 2% to prevent particles from becoming airborne~~	~~PM,PM-10~~	~~40%~~	~~NA~~
	VOC CONTROL CATEGORY			
019	Afterburners (thermal or catalytic oxidation) means: a device used to reduce VOCs to the products of combustion through thermal (high temperature) oxidation or catalytic (use of a catalyst) oxidation in a combustion chamber	VOC	95%	76%
023	Flaring or Direct Combustor means: a device in which air, combustible organic waste gases, and supplementary fuel (if needed) react in the flame zone (e.g., at the flare tip) to destroy the VOCs	VOC	98%	78%
	~~NO_x CONTROL CATEGORY OTHER CONTROLS~~			
~~024~~	~~Modified Furnace or Burner Design (low NO_x burner) means: a burner that is designed or modified to produce fuel rich and lean zones to reduce NO_x formation through the reduction of the flame temperature and available oxygen~~	~~NO_x~~	~~35%~~	~~NA~~
	~~Staged Combustion means:~~			

ID#	CONTROL EQUIPMENT DESCRIPTION	POLLUTANT	CONTROL EFFICIENCY	
			TOTAL ENCLO-SURE	HOOD
~~025A~~	~~Over Fire Air means: a burner in which 10 to 30% of the combustion air is supplied through ports that are above the grate or hearth~~	~~NO_x~~	~~30%~~	~~NA~~
~~025B~~	~~Reburning means: a burner in which a secondary fuel is injected above the primary combustion zone~~	~~NO_x~~	~~40%~~	~~NA~~
~~026~~	~~Flue Gas Recirculation means: a burner in which a portion of the flue gases are diverted from the exhaust stream and reintroduced into the primary combustion zone~~	~~NO_x~~	~~30%~~	~~NA~~
~~028~~	~~Steam or Water Injection means: a burner in which water or steam is injected into the primary combustion zone~~	~~NO_x~~	~~40%~~	~~NA~~
~~029~~	~~Low Excess Air Firing means: a burner in which the amount of excess air in the combustion chamber is reduced~~	~~NO_x~~	~~30%~~	~~NA~~

KEY: PROPOSED RULES SECTION — Underlining indicates additions to existing rule language. ~~Strike outs~~ indicate deletions from existing rule language. If a proposed rule is totally new, it is designated "all new material." ADOPTED RULES SECTION — Underlining indicates additions to proposed rule language. ~~Strike outs~~ indicate deletions from proposed rule language.

Drawing 1



SOURCE: Lapple, 1951.

Table 1
Cyclone Type

	~~High Efficiency~~		~~Conventional (Medium Efficiency)~~		~~High Throughput (Low Efficiency)~~	
~~Ratio of dimensions~~	~~(1)~~	~~(2)~~	~~(3)~~	~~(4)~~	~~(5)~~	~~(6)~~
~~Body diameter, D/D~~	~~1.0~~	~~1.0~~	~~1.0~~	~~1.0~~	~~1.0~~	~~1.0~~
~~Height of inlet, H/D~~	~~0.5~~	~~0.44~~	~~0.5~~	~~0.5~~	~~0.75~~	~~0.8~~
~~Width of inlet, W/D~~	~~0.2~~	~~0.21~~	~~0.25~~	~~0.25~~	~~0.375~~	~~0.35~~
~~Diameter of gas exit, D/D~~	~~0.5~~	~~0.4~~	~~0.5~~	~~0.5~~	~~0.75~~	~~0.75~~
~~Length of vortex finder, S/D~~	~~0.5~~	~~0.5~~	~~0.625~~	~~0.6~~	~~0.875~~	~~0.85~~

~~Length of body, L/D~~	~~1.5~~	~~1.4~~	~~2.0~~	~~1.75~~	~~1.5~~	~~1.7~~
~~Length of cone, L/D~~	~~2.5~~	~~2.5~~	~~2.0~~	~~2.0~~	~~2.5~~	~~2.0~~
~~Diameter of dust outlet, D/D~~	~~0.375~~	~~0.4~~	~~0.25~~	~~0.4~~	~~0.375~~	~~0.4~~

~~Sources: Column (1) and (5), Stairmand, 1951; columns (2), (4), and (6), Swift, 1969; and column (3), Lapple, 1951.~~

Ratio Dimensions	High Efficiency	Medium Efficiency	Low Efficiency
Height of inlet, H/D	≤0.44	≥0.5 and ≤0.8	≥0.8
Width of inlet, W/D	≤0.2	≥0.2 and ≤0.375	≥0.375
Diameter of gas exit, D_e/D	≤0.4	≥0.4 and ≤0.75	≥0.75
Length of vortex finder, S/D	≤0.5	≥0.5 and ≤0.875	≥0.875

If one or more of the "ratio dimensions," as listed in table 1, are in a different efficiency category (high, medium, low), then the lowest efficiency category shall be applied.

7011.0070 LISTED CONTROL EQUIPMENT AND CONTROL EQUIPMENT EFFICIENCIES.

Subp. 2. Alternative control equipment efficiencies; control efficiencies for hazardous air pollutants. The owner or operator of a stationary source may use an alternative control equipment efficiency for the control equipment listed in subpart 1, if the actual control efficiency has been verified by a performance test approved by the commissioner under parts 7017.2001 to 7017.2060. The owner or operator ~~of a~~ stationary source may use a control equipment efficiency for listed control equipment for a hazardous air pollutant, if the control efficiency has been verified by a performance test approved by the commissioner under parts 7017.2001 to 7017.2060. The request for the alternative control efficiency may be made through a permit application for a part 70, state, registration, or general permit, or in a required notice or application submitted under parts 7007.1150 to 7007.1500. The owner or operator of a stationary source must attain at all times the alternative control efficiency for a piece of listed control equipment at the stationary source established under this subpart.

Subp. 3. **Certification for hoods.** The certification required by subpart 1 for hoods shall be signed by an engineer, and shall state as follows:

"I certify under penalty of law that I have evaluated the aforementioned hood(s) and that the (each) hood conforms to the design and operating practices recommended in "Industrial Ventilation - A Manual of Recommended Practice, American Conference of Governmental Industrial Hygienists~~, Lansing, Michigan~~.""

7011.0075 CONTROL EQUIPMENT GENERAL REQUIREMENTS.

Subpart 1. **Operation of control equipment.** The owner or operator of a stationary source shall operate all listed control equipment located at the stationary source whenever operating the emission units controlled by the listed control equipment in compliance with parts 7011.0060 to 7011.0080. Unless specifically allowed by a part 70, state, or general permit, each piece of listed control equipment shall at all times be operated in the range established by the control equipment manufacturer's specifications for each monitoring parameter listed in part 7011.0080, or within the operating parameters set by the commissioner as the result of the most recent performance test ~~approved by the commissioner~~ conducted to determine control efficiency under parts 7017.2001 to .7017.2060 if those are more restrictive.

Subp. 2. **Maintenance of control equipment.** The owner or operator of a stationary source shall maintain each piece of listed control equipment according to the control equipment manufacturer's specifications, shall comply with source-specific maintenance requirements specified in a part 70, state, or general permit, and shall perform the following on each piece of listed control equipment:

A. maintain an ~~adequate~~ inventory of spare parts ~~for components~~ that are subject to ~~sudden failure or~~ frequent replacement ~~due to wear~~, as required by the manufacturing specification or documented in records under items H and I;

B. train staff on the operation and monitoring of control equipment and troubleshooting, and train and require staff to respond to indications of malfunctioning equipment, including alarms~~, abnormal temperature indications, noises, and odors~~ and other indicators of abnormal operation;

C. thoroughly inspect all control equipment at least annually, or as required by the manufacturing specification (this often requires shutting down temporarily);

D. inspect~~, at least~~ monthly, or as required by the manufacturing specification, components that are subject to wear or plugging ~~including~~, for example: bearings, belts, hoses, fans, nozzles, orifices, and ducts;

E. inspect~~, at least~~ quarterly, or as required by the manufacturing specification, components that are not subject to wear including structural components, housings, ducts, and hoods;

F. check~~, at least~~ daily, or as required by the manufacturing specification, monitoring equipment ~~including~~, for example: pressure gauges, chart recorders, temperature indicators, and recorders;

G. calibrate~~, at least~~ annually, or as required by the manufacturing specification, all monitoring equipment; ~~and~~

H. maintain a record of activities conducted in items A to G consisting of the activity completed, the date the activity was completed, and any corrective action taken ~~(including any action taken to prevent a reoccurrence of any incident requiring corrective action)~~; and

I. maintain a record of parts replaced, repaired, or modified for the previous five years.

Subp. 3. **Installation of monitoring equipment.** The owner or operator of a stationary source shall install monitoring equipment to measure the operating parameters of all listed control equipment as specified by part 7011.0080 or by source specific monitoring requirements specified in a part 70, state, or general permit. The monitoring equipment must be installed prior to operation of any new process equipment controlled by the control equipment or, for stationary sources in operation on the effective date of this part, by the application deadline listed in part 7007.0350, subpart 1, item A. The owner or operator of a stationary source shall operate the monitoring equipment for each piece of listed control equipment at all times the listed control equipment is required to operate ~~under subpart 1~~ in compliance with part 7011.0075.

Subp. 4. Shutdown and breakdown procedures. In the event of a shutdown of listed control equipment, or a breakdown of listed control equipment, the owner or operator of a stationary source shall comply with part 7019.1000.

Subp. 5. **Deviation of listed control equipment from operating specifications.** The owner or operator of a stationary source shall report to the commissioner deviations from any monitored operating parameter as required by part 7011.0080. "Deviation" means any recorded reading outside of the specification or range of specifications allowed by subpart 1 or established by a part 70, state, or general permit. This report shall be on a form approved by the commissioner. For any given calendar quarter, and within 30 days after the end of the quarter, the owner or operator shall:

A. for pollution control equipment parameters measured on a continuous basis, submit a monitoring report if there are deviations for more than five percent of the emissions ~~units~~ unit's operating time in that quarter; and

B. for pollution control equipment parameters measured periodically, submit a monitoring report if there are deviations for more than five percent of the measurements of a subject parameter of the control equipment operating in that quarter.

Subp. 6. Demonstration of control equipment efficiency. The owner or operator shall, upon request of the commissioner or the administrator, conduct a performance test under parts 7017.2001 to 7017.2060 to determine the efficiency of the control equipment. In addition to the reasons specified in part 7017.2020, subpart 1, the commissioner or the administrator may make such a request to verify that the control equipment at a stationary source is attaining the efficiency determined in part 7011.0070.

Subp. 7. Recalculation of potential to emit.

A. The owner or operator shall recalculate the potential to emit of the stationary source under part 7007.0150, subpart 4, or under part 7007.1200 for amendments to part 70 or state permits, if the owner or operator becomes aware of any information indicating that the calculation originally performed under part 7007.0150, subpart 4, or 7007.1200, would change because the listed control equipment is not as efficient as originally assumed under part 7011.0070 or changes have been made to decrease the listed control equipment's efficiency. The owner or operator shall submit this recalculation to the commissioner within 30 days of becoming aware of the information.

B. The owner or operator shall, upon request of the commissioner or the ~~administrator~~, recalculate the potential to emit of the stationary source under part 7007.0150, subpart 4, or part 7007.1200 for amendments to part 70 and state permits, and submit the recalculation to the commissioner or the administrator by the date specified in the request.

7011.0080 MONITORING AND RECORD KEEPING FOR LISTED CONTROL EQUIPMENT.

The owner and operator of a stationary source shall comply with the monitoring and record keeping required for listed control equipment by the table in this part. The owner or operator shall maintain the records required by this part for a minimum of five years from the date the record was made. For hoods, the owner shall maintain at the stationary source the engineer's evaluation of each hood required in part 7011.0070, as well as a monthly record of the fan rotation speed, fan power draw, or face velocity of each hood, or other comparable air flow indication method.

EPA Identification Number(s)	Pollution Control Equipment Type	Monitoring Parameter(s)	Record Keeping Requirement
007, 008, 009, 076, 077	Centrifugal collector (cyclone)	Pressure drop	Record pressure drop every 24 hours if in operation
011A, 011B, 012A, 012B	Electrostatic precipitator	Primary and secondary voltage; primary and	Record each parameter every 24 hours if in operation

		secondary current; sparking rate; and number of fields on-line	
016	Fabric filter (bag house)	Pressure drop	Record pressure drop every 24 hours if in operation
052	Spray tower	Liquid flow rate and pressure drop	Record each parameter every 24 hours if in operation
053, 055	Venturi scrubber, impingement plate scrubber	Pressure drop and liquid flow rate	Record each parameter every 24 hours if in operation
058A, 058B	HEPA and other wall filters	Condition of the filters, including, but not limited to, alignment, saturation, and tears and holes	Record of filter(s) condition every 24 hours if in operation
~~061~~	~~Dust suppression by water spray~~	~~Test moisture content daily~~	~~Record moisture content daily~~
085	Wet cyclone separator	Pressure drop; and water pressure	Record each parameter every 24 hours if in operation
019	Thermal incinerator	Combustion temperature or inlet and outlet temperatures	Continuous hard copy readout of temperatures or manual readings every 15 minutes
019	Catalytic incinerator	Inlet and outlet temperatures; and catalyst bed reactivity as per manufacturer's specifications	Continuous hard copy readout of temperatures or manual readings every 15 minutes; and results of catalyst bed reactivity
023	Flaring	Temperature indicating	Continuous hard copy readout

		presence of a flame	of temperatures or manual readings every 15 minutes
~~024~~	~~Modified furnace or burner design (low NO_x burner)~~	~~Continuous monitoring of the air-to-fuel ratio at each fuel and/or air port~~	~~Hard copy records of continuous monitoring~~
~~025A~~	~~Staged combustion - over-fire air~~	~~Continuous monitoring of the air-to-fuel ratio at each fuel and/or air port~~	~~Hard copy records of continuous monitoring~~
~~025B~~	~~Staged combustion - reburning~~	~~Continuous monitoring of the air-to-fuel ratio at each fuel and/or air port~~	~~Hard copy records of continuous monitoring~~
~~026~~	~~Flue gas recirculation~~	~~Continuous monitoring of the amount of flue gas recirculated to the burner windbox~~	~~Hard copy records of continuous monitoring~~
~~028~~	~~Steam or water injection~~	~~Continuous monitoring of the fuel consumption and the ratio of water to fuel being fired~~	~~Hard copy records of continuous monitoring~~
~~029~~	~~Low excess air firing~~	~~Continuous monitoring of the percent of excess air introduced into the boiler~~	~~Hard copy records of continuous monitoring~~

7011.0100 SCOPE.
The standards of performance in parts 7011.0100 to 7011.0115 apply to any emission facility for which a specific standard of performance has not been promulgated in another rule.
SA: MS s 116.07 subd 4
HIST: 18 SR 614

7011.0105 VISIBLE EMISSION RESTRICTIONS FOR EXISTING FACILITIES.

No owner or operator of an existing emission facility to which parts 7011.0100 to 7011.0115 are applicable shall cause to be discharged into the atmosphere from the facility any gases which exhibit greater than 20 percent opacity; except for one six-minute period per hour of not more than 33 percent opacity. An exceedance of this opacity standard occurs whenever any one-hour period contains two or more six-minute periods during which the average opacity exceeds 20 percent or whenever any one-hour period contains one or more six-minute periods during which the average opacity exceeds 33 percent. For the purposes of this part, "existing emission facility" means an emission facility on which construction, modification, or reconstruction did not commence after January 31, 1977.

7011.0110 VISIBLE EMISSION RESTRICTIONS FOR NEW FACILITIES.
No owner or operator of a new emission facility to which parts 7011.0100 to 7011.0115 are applicable shall cause to be discharged into the atmosphere from the facility any gases which exhibit greater than 20 percent opacity.
SA: MS s 116.07 subd 4
HIST: 18 SR 614

7011.0115 PERFORMANCE TESTS.
Unless another method is approved by the agency, any person required to submit performance tests for emission facilities for which parts 7011.0100 to 7011.0115 are applicable shall utilize Method 9 for visual determination of opacity.
SA: MS s 116.07 subd 4
HIST: 18 SR 614

7011.0150 PREVENTING PARTICULATE MATTER FROM BECOMING AIRBORNE.

No person shall cause or permit the handling, use, transporting, or storage of any material in a manner which may allow avoidable amounts of particulate matter to become airborne.

No person shall cause or permit a building or its appurtenances or a road, or a driveway, or an open area to be constructed, used, repaired, or demolished without applying all such reasonable measures as may be required to prevent particulate matter from becoming airborne. The commissioner may require such reasonable measures as may be necessary to prevent particulate matter from becoming airborne including, but not limited to, paving or frequent clearing of roads, driveways, and parking lots; application of dust-free surfaces; application of water; and the planting and maintenance of vegetative ground cover.

SA: MS s 116.07 subd 4

HIST: L 1987 c 186 s 15; 18 SR 614

7011.0500 DEFINITIONS.

Subpart 1. **Scope.** As used in parts 7011.0500 to 7011.0550, the following words shall have the meanings defined herein.

Subp. 2. **Actual heat input.** "Actual heat input" means the number of Btu per hour (cal/hr) determined by multiplying the gross heating value of the fuel by the rate of fuel burned.

Subp. 3. **Coal refuse.** "Coal refuse" means waste products of coal mining, cleaning, and coal preparation operations (e.g. culm, gob, etc.) containing coal, matrix material, clay, and other organic and inorganic material.

Subp. 4. **Derating.** "Derating" means limitation of heat input and corresponding steam output capacity.

Subp. 5. **Direct heating equipment.** "Direct heating equipment" means a furnace, kiln, dryer, or other combustion equipment used in the burning of a fossil fuel for the purpose of processing a material where the products of combustion have direct contact with the heated material.

Subp. 6. **Distillate oil.** "Distillate oil" means grades of oils known as No. 1 and No. 2, as defined in the A.S.T.M. D 396 (1973).

Subp. 7. **Fossil fuel.** "Fossil fuel" means natural gas, petroleum, coal, wood, peat, and any form of solid, liquid, or gaseous fuel derived from such materials for the purpose of creating useful heat.

Subp. 8. **Gross heating value.** "Gross heating value" means the gross calorific value (cal/g or Btu/lb) of the fuel combusted as determined by A.S.T.M. test methods D 2015-66(72) for solid fuels; D 1826-64(70) for gaseous fuels, and D 240-64(73) for liquid fuels.

Subp. 9. **Indirect heating equipment.** "Indirect heating equipment" means a furnace, a boiler, or other unit of combustion equipment used in the process of burning fossil fuel for the purpose of producing steam, hot water, hot air, or other hot liquid, gas, or solid, where the products of combustion do not have direct contact with the heated medium.

Subp. 10. **Rated heat input.** "Rated heat input" means the number of Btu per hour (cal/hr) which the manufacturer has determined to be the continuous rated capability of the indirect heating equipment, or, where the rated heat input is not specified by the manufacturer, the number of Btu per hour (cal/hr) determined by dividing the rated heat output by the overall thermal efficiency.

Subp. 11. **Residual oil.** "Residual oil" means grades of oils known as No. 4, No. 5 (light), No. 5 (heavy), and No. 6, as listed in A.S.T.M. D 396 (1973).

Subp. 12. **Steam generating unit.** "Steam generating unit" means indirect heating equipment used to produce steam.

SA: MS s 116.07 subd 4

HIST: 18 SR 614

7011.0505 DETERMINATION OF APPLICABLE STANDARDS OF PERFORMANCE.

Subpart 1. **Scope.** Parts 7011.0500 to 7011.0550 shall apply to indirect heating equipment for which a standard of performance has not been promulgated in a specific rule.

Subp. 2. **Rated heat input.** The applicable standards of performance in part 7011.0545 or 7011.0550 shall be determined by using the rated heat input of the specific indirect heating equipment and the total rated heat inputs of all indirect heating equipment and all direct heating equipment of one owner or operator at that particular location.

Subp. 3. **Simultaneous burning of different fuels.** Simultaneous burning of different fuels:

A. When different fossil fuels are burned simultaneously in any combination, the applicable sulfur dioxide standard shall be determined by proration using the following formula:

$$w = \frac{y(a) + z(b)}{x + y + z}$$

where:

w is the maximum allowable emissions of sulfur dioxide gases in lbs per million Btu (nanograms/joule);

x is the percentage of total heat input derived from gaseous fossil fuel;

y is the percentage of total heat input derived from liquid fossil fuel;

z is the percentage of total heat input derived from solid fossil fuel;

a is the allowable SO_2 standard for liquid fossil fuels expressed in lbs per million Btu (nanograms/joule); and

b is the allowable SO_2 standard for solid fossil fuels expressed in lbs per million Btu (nanograms/joule).

B. When different fossil fuels are burned simultaneously in any combination, the applicable nitrogen oxides standard shall be determined by proration using the following formula:

$$w = \frac{x(c) + y(a) + z(b)}{x + y + z}$$

where:

w, x, y, and z mean the same as in the formula in item A, for determining the applicable sulfur dioxide standard;

a is the allowable NO_x standard for liquid fossil fuels expressed in lbs per million Btu (nanograms/joule);

b is the allowable NO_x standard for solid fossil fuels expressed in lbs per million Btu (nanograms/joule); and

c is the allowable NO_x standard for gaseous fossil fuels expressed in lbs per million Btu (nanograms/joule).

Subp. 4. **Exception.** When lignite or a solid fossil fuel containing 25 percent by weight, or more, of coal refuse is

burned in combination with gaseous, liquid, or other solid fossil fuel, the standard of performance for nitrogen oxides shall not apply.
SA: MS s 116.07 subd 4
HIST: 18 SR 614

7011.0510 STANDARDS OF PERFORMANCE FOR EXISTING INDIRECT HEATING EQUIPMENT.

Subpart 1. **Particulate matter and sulfur dioxide.** No owner or operator of indirect heating equipment shall cause to be discharged into the atmosphere from said equipment any gases which contain particulate matter or sulfur dioxide in excess of the standards of performance shown in part 7011.0545.

Subp. 2. **Opacity.** No owner or operator of existing indirect heating equipment shall cause to be discharged into the atmosphere from said equipment any gases which exhibit greater than 20 percent opacity, except for one six-minute period per hour of not more than 60 percent opacity. An exceedance of this opacity standard occurs whenever any one-hour period contains two or more six-minute periods during which the average opacity exceeds 20 percent or whenever any one-hour period contains one or more six-minute periods during which the average opacity exceeds 60 percent.

7011.0515 STANDARDS OF PERFORMANCE FOR NEW INDIRECT HEATING EQUIPMENT.

Subpart 1. **Particulate matter, sulfur dioxide, and nitrogen oxides.** No owner or operator of new indirect heating equipment shall cause to be discharged into the atmosphere from said equipment any gases which contain particulate matter, sulfur dioxide, or nitrogen oxides in excess of the standards of performance shown in part 7011.0550.

Subp. 2. **Opacity.** No owner or operator of new indirect heating equipment of greater than 250 million Btu per hour rated heat input shall cause to be discharged into the atmosphere from said equipment any gases which exhibit greater than 20 percent opacity, except for one six-minute period per hour of not more than 27 percent opacity. An exceedance of this opacity standard occurs whenever any one-hour period contains two or more six-minute periods during which the average opacity exceeds 20 percent or whenever any one-hour period contains one or more six-minute periods during which the average opacity exceeds 27 percent.

No owner or operator of new indirect heating equipment of 250 million Btu per hour or less rated heat input shall cause to be discharged into the atmosphere from said equipment any gases which exhibit greater than 20 percent opacity; except for one six-minute period per hour of not more than 60 percent opacity. An exceedance of this opacity standard occurs whenever any one-hour period contains two or more six-minute periods during which the average opacity exceeds 20 percent or whenever any one-hour period contains one or more six-minute periods during which the average opacity exceeds 60 percent.

7011.0520 ALLOWANCE FOR STACK HEIGHT FOR INDIRECT HEATING EQUIPMENT.

Subpart 1. **Requirement.** The owner or operator of any indirect heating equipment shall determine and install a stack of such height that will not cause pollutant concentrations at ground levels to exceed any applicable ambient air quality standard or rule.

Subp. 2. **Methodology.** The determination of the ground level concentrations shall be based upon applicable dispersion calculations approved by the agency.

SA: MS s 116.07 subd 4
HIST: 18 SR 614

7011.0525 HIGH HEATING VALUE.

The high heating value of a fossil fuel shall mean the same as the gross heating value.

SA: MS s 116.07 subd 4
HIST: 18 SR 614

7011.0530 PERFORMANCE TEST METHODS.

Unless another method is approved by the commissioner, any person required to submit performance tests for indirect heating equipment shall utilize the following test methods:

A. Method 1 for selection of sampling site and sample traverses;

B. Method 3 for gas analysis;

C. Method 5 for concentration of particulate matter and the associated moisture content;

D. Method 6 for concentration of SO_2;

E. Method 7 for concentration of NO_x; and

F. Method 9 for visual determination of opacity.

SA: MS s 116.07 subd 4
HIST: L 1987 c 186 s 15; 18 SR 614

7011.0535 PERFORMANCE TEST PROCEDURES.

Subpart 1. **Method 1.** The sampling site, as selected by Method 1, shall be the same for each pollutant during a performance test.

Subp. 2. **Method 5.** For Method 5, the sampling time for each run shall be at least 60 minutes and the minimum sampling volume shall be 0.85 dscm (30 dscf) except that smaller sampling times or volumes, when necessitated by process variables or other factors, may be approved by the agency. The probe and filter holder heating systems in the sampling train shall be set to provide a gas temperature between 120 degrees Celsius and 160 degrees Celsius (250 degrees Fahrenheit and 320 degrees Fahrenheit).

Subp. 3. **Methods 6 and 7.** For Methods 6 and 7, the sampling point in the duct shall be at the center of the cross section or at a point no closer to the walls than 1 m (3.28

feet). For Method 6 the sample shall be extracted at a rate proportional to the gas velocity at the sampling point.

Subp. 4. **Method 6.** For Method 6, the minimum sampling time shall be 20 minutes and the minimum sampling volume 0.02 dscm (0.71 dscf) for each sample. The arithmetic mean of two samples shall constitute one run. Samples shall be taken at approximately 30-minute intervals.

Subp. 5. **Method 7.** For Method 7, each run shall consist of at least four grab samples taken at approximately 15-minute intervals. The arithmetic mean of the samples shall constitute the run value.

Subp. 6. **Nanograms.** For each performance test, the emissions expressed in nanograms/joule (lb/million Btu) shall be determined by the following procedure:

$$E = CF \left(\frac{20.90}{20.9 - \%O_2} \right)$$

where:

A. E = pollutant emission, g/million cal nanograms/joule (lb/million Btu);

B. C = pollutant concentration g/dscm (lb/dscf), determined by Method 5, 6, or 7;

C. $\%O_2$ = oxygen content by volume (expressed as percent), dry basis. Percent oxygen shall be determined by using the integrated sampling procedures of Method 3 and by analyzing the sample with a continuous monitoring system, or with the Orsat analyzer. The sample shall be obtained as follows:

(1) For determination of sulfur dioxide and nitrogen oxides emissions, the oxygen sample shall be obtained at approximately the same point in the duct as used to obtain the samples for Methods 6 and 7 determinations, respectively.

(2) For determination of particulate emissions, the oxygen sample shall be obtained simultaneously by traversing the duct at the same sampling location used for each run of Method 5 in accordance with Method 1, except that 12 sample points shall be used in all cases;

D. F = factor representing a ratio of the volume of dry flue gases generated to the calorific value of the fuel combusted. Values of F are given as follows:

(1) for anthracitic coal according to A.S.T.M. D388-66, $F = 2.723 \times 10^{-7}$ dscm/J (10140 dscf/10^6 Btu);

(2) for subbituminous and bituminous coal according to A.S.T.M. D388-66, $F = 2.637 \times 10^{-7}$ dscm/J (9820 dscf/10^6 Btu); and

(3) For liquid fossil fuels including crude, residual, and distillate oils, $F = 2.476 \times 10^{-7}$ dscm/J (9220 dscf/10^6 Btu); and

(4) For gaseous fossil fuels including natural gas, propane, and butane, $F = 2.347 \times 10^{-7}$ dscm/J (8740 dscf/10^6

Btu).

E. An owner or operator may use the following equation to determine an F factor (dscf/10^6 Btu) in lieu of the F factors specified by item D:

$$F = \frac{10^6[3.64(\%H) + 1.53(\%C) + 0.57(\%S) + 0.14(\%N) - 0.46(\%O)]}{GVH}$$

where:

(1) H, C, S, N, and O are content by weight of hydrogen, carbon, sulfur, nitrogen, and oxygen (expressed as percent), respectively, as determined by ultimate analysis of the fuel fired, dry basis, using A.S.T.M. methods D3168-74 or D3176 (solid fuels) or D240-64(73) (liquid fuels) or computed from results using A.S.T.M. method D1137-53(70), D1945-64(73) or D1946-67(72) (gaseous fuels) as applicable; and

(2) GHV is the gross heating value (Btu/lb dry basis);

F. When combinations of fuels are fired, the F factors determined by item C or D shall be prorated in accordance with the following formula:

$$F = \frac{xF_1 + yF_2 + zF_3}{100}$$

where:

x = the percentage of total heat input derived from gaseous fossil fuel;

y = the percentage of total heat input derived from liquid fossil fuel;

z = the percentage of total heat input derived from solid fossil fuel;

F_1 = the value of F for gaseous fossil fuels according to item D or E;

F_2 = the value of F for liquid fossil fuels according to item D or E; and

F_3 = the value of F for solid fossil fuels according to item D or E;

G. When combinations of fossil fuels are fired, the actual heat input, expressed in cal/hr (Btu/hr), shall be determined during each testing period. The rate of fuels burned during each testing period shall be determined by suitable methods and shall be confirmed by a material balance over the indirect heating system.

Subp. 7. **Alternate method.** When the emission factor cannot be calculated by means of the method outlined in subpart 6, the emission factors for all pollutants for all new and existing indirect heating equipment expressed in nanograms/joule (lb./million Btu) shall be determined by the following procedure:

$$E = \frac{E_t}{Z}$$

where:

E = pollutant emissions, in nanograms/joule (lb./million Btu);

E_t = pollutant emission rate, in nanograms/hr. (lb./hr), determined by Method 5; and

z = actual heat input, in joules/hr., (million Btu/hr).

Subp. 8. **Operation of indirect heating equipment.** The indirect heating equipment shall be operated during the performance test at 90 percent or more of the rated heat input, or at 100 percent of peak operating load if an owner or operator intends to achieve compliance by derating.

SA: MS s 116.07 subd 4

HIST: 18 SR 614

7011.0540 DERATE.

The owner or operator of indirect heating equipment who elects to achieve compliance with an applicable standard of performance by derating shall:

A. advise the commissioner of the agency in writing of the intent to achieve compliance by derating and the capacity level at which the owner or operator intends to operate this equipment;

B. agree to a permit condition in the required operating permit that prohibits operation of the equipment in excess of the derate level;

C. install a boiler steam flow meter to continuously record, indicate, and integrate boiler steam flow, and shall:

(1) submit a written report to the commissioner of the agency within ten days of any excess steam flow occurrence above the specified derate load;

(2) use a one-hour averaging period in determining an excess above derate with corrections for deviations in steam pressure or temperature if required;

(3) submit written yearly reports to the commissioner of the agency confirming that no excesses have occurred during normal operations;

(4) retain and make available for inspection by the agency or its authorized employees or agents steam flow charts for a minimum period of two years following the date of measurement; and

D. an effective method of physical limitation of boiler load shall be submitted for approval by the commissioner of the agency prior to authorization of a boiler derate. Such limitation may include but is not limited to, a tieback signal from the steam flow meter to the combustion control system cutting back fuel input at the derate load, a maximum limit stop on the fuel input control drive or valve, or such other equivalent physical means.

SA: MS s 116.07 subd 4

HIST: L 1987 c 186 s 15; 18 SR 614

Indirect Heating Equipment

7011.0545 TABLE I: EXISTING INDIRECT HEATING EQUIPMENT.

RATED HEAT INPUT OF THE INDIRECT HEATING EQUIPMENT Million BTU/Hr.	RATED HEAT INPUT OF ALL DIRECT AND INDIRECT HEATING EQUIPMENT AT THE PARTICULAR LOCATION Million BTU/Hr.	EMISSION LIMITATIONS LBS. PER MILLION BTU		
		Particulate Matter All Fuels	SO_2 Solid Fuels	SO_2 Liquid Fuels
A. Within Minneapolis-St. Paul Air Quality Control Region				
Greater than 250	Greater than 250	0.4	3.0	1.6
Less than or equal to 250	Greater than 250	0.4	3.0	1.6
Less than or equal to 250	Less than or equal to 250	0.4	4.0	2.0
B. Within the City of Duluth				
Greater than 250	Greater than 250	0.4	4.0	2.0
Less than or equal to 250	Greater than 250	0.4	4.0	2.0
Less than or equal to 250	Less than or equal to 250	0.4	N.A.*	N.A.
C. Outside Minneapolis-St. Paul Air Quality Control Region and Outside the City of Duluth				
Greater than 250	Greater than 250	0.6	4.0	2.0
Less than or equal to 250	Greater than 250	0.6	4.0	2.0
Less than or equal to 250	Less than or equal to 250	0.6	N.A.	N.A.

*N.A.–Not applicable

SA: MS s 116.07 subd 4
HIST: 18 SR 614

7011.0550 TABLE II: NEW INDIRECT HEATING EQUIPMENT.

RATED HEAT INPUT OF THE INDIRECT HEATING EQUIPMENT Million BTU/Hr	RATED HEAT INPUT OF ALL DIRECT AND INDIRECT HEATING EQUIPMENT AT THE PARTICULAR LOCATION Million BTU/Hr.	EMISSION LIMITATIONS LBS. PER MILLION BTU					
		Particulate Matter All Fuels	SO_2 Solid Fuels	SO_2 Liquid Fuels	SO_2 Solid Fuels	NO_x* Gaseous Fuels	NO_x* Liquid Fuels
A. Within Minneapolis-St. Paul Air Quality Control Region							
Greater than 250	Greater than 250	0.1	1.2	0.8	0.7	0.2	0.3
Greater than 100 but less than or equal to 250	Greater than 250	0.1	3.0	1.6	N.A.**	N.A.	N.A.
Less than or equal to 100	Greater than 250	0.4	3.0	1.6	N.A.	N.A.	N.A.
Less than or equal to 250	Less than or equal to 250	0.4	4.0	2.0	N.A.	N.A.	N.A.
B. Within the City of Duluth							
Greater than 250	Greater than 250	0.1	1.2	0.8	0.7	0.2	0.3
Greater than 100 but less than or equal to 250	Greater than 250	0.1	4.0	2.0	N.A.	N.A.	N.A.
Less than or equal to 100	Greater than 250	0.4	4.0	2.0	N.A.	N.A.	N.A.
Less than or equal to 250	Less than or equal to 250	0.4	N.A.	N.A.	N.A.	N.A.	N.A.
C. Outside Minneapolis-St. Paul Air Quality Control Region and Outside the City of Duluth							
Greater than 250	Greater than 250	0.1	1.2	0.8	0.7	0.2	0.3
Less than or equal to 250	Greater than 250	0.4	4.0	2.0	N.A.	N.A.	N.A.
Less than or equal to 250	Less than or equal to 250	0.4	N.A.	N.A.	N.A.	N.A.	N.A.

*NO_x expressed as NO_2
**N.A. - Not applicable

SA: MS s 116.07 subd 4
HIST: 18 SR 614

7011.0600 DEFINITIONS.

Subpart 1. **Scope.** As used in parts 7011.0600 to 7011.0620, the following words shall have the meanings defined herein.

Subp. 2. **Actual heat input.** "Actual heat input" means the number of Btu per hour (cal/hr) determined by multiplying the gross heating value of the fuel by the rate of fuel burned.

Subp. 3. **Direct heating equipment.** "Direct heating equipment" means a furnace, kiln, dryer, or other combustion equipment used in the burning of a fossil fuel for the purpose of processing a material where the products of combustion have direct contact with the heated material.

Subp. 4. **Fossil fuel.** "Fossil fuel" means natural gas, petroleum, coal, wood, peat, and any form of solid, liquid, or gaseous fuel derived from such materials for the purpose of creating useful heat.

Subp. 5. **Gross heating value.** "Gross heating value" means the gross calorific value (cal/g or Btu/lb) of the fuel combusted as determined by A.S.T.M. test methods D 2015-66(72) for solid fuels; D 1826-64(70) for gaseous fuels, and D 240-64(73) for liquid fuels.

Subp. 6. **Indirect heating equipment.** "Indirect heating equipment" means a furnace, a boiler or other unit of combustion equipment used in the process of burning fossil fuel for the purpose of producing steam, hot water, hot air, or other hot liquid, gas, or solid, where the products of combustion do not have direct contact with the heated medium.

Subp. 7. **Rated heat input.** "Rated heat input" means the number of Btu per hour (cal/hr) which the manufacturer has determined to be the continuous rated capability of the direct heating equipment.

SA: MS s 116.07 subd 4

HIST: 18 SR 614

7011.0605 DETERMINATION OF APPLICABLE STANDARDS OF PERFORMANCE.

Parts 7011.0600 to 7011.0620 shall apply to direct heating equipment for which a standard of performance has not been promulgated in a specific rule.

The applicable standard of performance for sulfur dioxide shall be determined by using the total rated heat input of all indirect heating equipment and all direct heating equipment of one owner or operator at that particular location.

When different fossil fuels are burned simultaneously in any combination, the applicable sulfur dioxide (SO_2) standard shall be determined by proration using the following formula:

$$w = \frac{y(a) + z(b)}{x + y + z}$$

where:

w is the maximum allowable emissions of sulfur dioxide

gases in lbs/per million Btu (g/million cal);
x is the percentage of total heat input derived from gaseous fossil fuel;
y is the percentage of total heat input derived from liquid fossil fuel;
z is the percentage of total heat input derived from solid fossil fuel;
a is the allowable SO_2 standard for liquid fossil fuels expressed in lbs per million Btu (g/million cal); and
b is the allowable SO_2 standard for solid fossil fuels expressed in lbs per million Btu (g/million cal).
SA: MS s 116.07 subd 4
HIST: 18 SR 614

7011.0610 STANDARDS OF PERFORMANCE FOR FOSSIL FUEL-BURNING DIRECT HEATING EQUIPMENT.
Subpart 1. **Particulate limitations.** Particulate limitations:
A. No owner or operator of any direct heating equipment shall cause to be discharged into the atmosphere from the direct heating equipment any gases which:
(1) contain particulate matter in excess of the limits allowed by parts 7011.0700 to 7011.0735; or

(2) exhibit greater than 20 percent opacity, except for one six-minute period per hour of not more than 60 percent opacity. An exceedance of this opacity standard occurs whenever any one-hour period contains two or more six-minute periods during which the average opacity exceeds 20 percent or whenever any one-hour period contains one or more six-minute periods during which the average opacity exceeds 60 percent.

B. No owner or operator of an existing gray iron cupola with a melting capacity of less than 1-1/2 per hour shall allow emissions which exceed 0.3 grain per standard cubic foot, dry basis, and the owner or operator shall incinerate all gases, vapors, and gas entrained effluents from such cupolas at a temperature of not less than 1,200 degrees Fahrenheit for a period of not less than 0.3 seconds. The owner or operator of any other gray iron cupola shall meet the requirements of item A.
Subp. 2. **Sulfur oxide limitations.** Sulfur oxide limitations:
A. Within Minneapolis-Saint Paul Air Quality Control Region. No owner or operator of direct heating equipment located within the Minneapolis-Saint Paul Air Quality Control Region shall cause to be discharged into the atmosphere from such equipment any gases which contain sulfur dioxide:
(1) in excess of three pounds per million Btu heat input if a solid fossil fuel is burned or 1.6 pounds per million Btu heat input if a liquid fossil fuel is burned, if the total rated heat input of all indirect and direct heating equipment of the owner or operator at that particular location exceeds 250 million Btu per hour;
(2) in excess of four pounds per million Btu heat

input if a solid fossil fuel is burned or two pounds per million Btu heat input if a liquid fossil fuel is burned, if the total rated heat input of all indirect and direct heating equipment of the owner or operator at that particular location is equal to or less than 2.50 million Btu per hour.

B. Outside Minneapolis-Saint Paul Air Quality Control Region. No owner or operator of direct heating equipment located outside the Minneapolis-Saint Paul Air Quality Control Region shall cause to be discharged into the atmosphere from such equipment any gases which contain sulfur dioxide in excess of four pounds per million Btu heat input if a solid fossil fuel is burned or two pounds per million Btu heat input if a liquid fossil fuel is burned, if the total rated heat input of all indirect and direct heating equipment of the owner or operator at that particular location is greater than 250 million Btu per hour.

SA: MS s 116.07 subd 4
HIST: 18 SR 614

7011.0615 PERFORMANCE TEST METHODS.

Unless another method is approved by the agency, any person required to submit performance tests for direct heating equipment shall utilize the following test methods:

A. Method 1 for selection of sampling site and sample traverses;

B. Method 3 for gas analysis;

C. Method 5 for concentration of particulate matter and the associated moisture content;

D. Method 6 for concentration of SO_2; and

E. Method 9 for visual determination of opacity.

SA: MS s 116.07 subd 4
HIST: 18 SR 614

7011.0620 PERFORMANCE TEST PROCEDURES.

Subpart 1. **Sampling site.** The sampling site, as selected by Method 1, shall be the same for each pollutant during a performance test.

Subp. 2. **Sampling time for Method 5.** For Method 5, the sampling time for each run shall be at least 60 minutes and the minimum sampling volume shall be 0.85 dscm (30 dscf) except that smaller sampling times or volumes, when necessitated by process variables or other factors may be approved by the agency. The probe and filter holder heating systems in the sampling train shall be set to provide a gas temperature between 120 degrees Celsius and 160 degrees Celsius (250 degrees Fahrenheit and 320 degrees Fahrenheit).

Subp. 3. **Sampling point for Method 6.** For Method 6, the sampling point in the duct shall be at the center of the cross section or at a point no closer to the walls than one meter (3.28 ft.). The sample shall be extracted at a rate

proportional to the gas velocity at the sampling point.

Subp. 4. **Sampling time for Method 6.** For Method 6, the minimum sampling time shall be 20 minutes and the minimum sampling volume 0.02 dscm (0.71 dscf) for each sample. The arithmetic mean of two samples shall constitute one run. Samples shall be taken at approximately 30-minute intervals.

Subp. 5. **Sulfur dioxide emissions.** For each performance test for sulfur dioxide emissions, the emissions expressed in g/million cal (lb/million Btu) shall be determined by the following procedure if the actual heat input is used:

$$E = CF \left(\frac{20.90}{20.9 - \%O_2}\right)$$

where:

A. E = pollutant emission, g/million cal (lb/million Btu);

B. C = pollutant concentration, g/dscm (lb/dscf);

C. $\%O_2$ = oxygen content by volume (expressed as percent), dry basis. Percent oxygen shall be determined by using the integrated sampling procedures of Method 3 or with the Orsat analyzer. The sample shall be obtained at approximately the same point in the duct as used to obtain the samples for Method 6;

D. F = factor representing a ratio of the volume of dry flue gases generated to the calorific value of the fuel combusted. Values of F are given as follows:

(1) For anthracitic coal according to A.S.T.M. D388-66, F = 0.01139 dscm/10^4 cal (101.4 dscf/10^4 Btu);

(2) For subbituminous and bituminous coal according to A.S.T.M. D388-66, F = 0.01103 dscm/10^4 cal (98.2 dscf/10^4 Btu);

(3) For liquid fossil fuels including crude, residual, and distillate oils, F = 0.01036 dscm/10^4 cal (92.2 dscf/10^4 Btu);

(4) For gaseous fossil fuels including natural gas, propane, and butane, F = 0.00982 dscm/10^4 cal (87.4 dscf/10^4 BTU).

E. An owner or operator may use the following equation to determine an F factor (dscf/10^4 Btu) in lieu of the F factors specified by item D or E:

$$F = \frac{10^6\ 3.64(\%H) + 1.53(\%C) + 0.57(\%S) + 0.14(\%N) - 0.46(\%)}{GVH}$$

where:

(1) H, C, S, N, and O are content by weight of hydrogen, carbon, sulfur, nitrogen, and oxygen (expressed as percent), respectively, as determined by ultimate analysis of the fuel fired, dry basis, using A.S.T.M. methods D3178-74 or D3176 (solid fuels) or D240-64(73) (liquid fuels) or computed from results using A.S.T.M. method D1137-53(70), D1945-64(73) or

D1946-67(72) (gaseous fuels) as applicable; and

(2) GHV is the gross heating value.

F. When combinations of fuels are fired, the F factors determined by item D or E shall be prorated in accordance with the following formula:

$$F = \frac{xF_1 + yF_2 + zF_3}{100}$$

where:

x = the percentage of total heat input derived from gaseous fossil fuel;

y = the percentage of total heat input derived from liquid fossil fuel;

z = the percentage of total heat input derived from solid fossil fuel;

F_1 = the value of F for gaseous fossil fuels according to item D or E;

F_2 = the value of F for liquid fossil fuels according to item D or E;

F_3 = the value of F for solid fossil fuels according to item D or E.

G. When combinations of fossil fuels are fired, the actual heat input, expressed in cal/hr (Btu/hr), shall be determined during each testing period. The rate of fuels burned during each testing period shall be determined by suitable methods and shall be confirmed by a material balance over the direct heating system.

SA: MS s 116.07 subd 4

HIST: 18 SR 614

7011.0700 DEFINITIONS.

Subpart 1. **Scope.** As used in parts 7011.0700 to 7011.0735, the following words shall have the meanings defined herein.

Subp. 2. **Collection efficiency.** "Collection efficiency" means the percent of the total amount of particulate matter entering the control equipment which is removed from the exhaust stream by the control equipment and is calculated by the following equation:

$$\text{collection efficiency} = \frac{100(A - B)}{A}$$

where:

A = the amount (grams or pounds) or the concentration (gr/SCF) of particulate matter entering the collection equipment; and

B = the amount (grams or pounds) or the concentration (gr/SCF) of particulate matter leaving the control equipment.

Subp. 3. **Industrial process equipment.** "Industrial process equipment" means any equipment, apparatus, or device embracing chemical, industrial, or manufacturing facilities such as ovens, mixing kettles, heating and reheating furnaces, kilns, stills, dryers, roasters, and equipment used in connection therewith, and all other methods or forms of manufacturing or processing that may emit any air contaminant such as smoke, odor, particulate matter, or gaseous matter. Industrial process equipment is an affected facility. An emission facility may consist of more than one unit of industrial process equipment.

Subp. 4. **Process weight.** "Process weight" means the total weight in a given time period of all materials introduced into any industrial process equipment that may cause any emission of particulate matter. Solid fuels charged are considered as part of the process weight, but liquid and gaseous fuels and combustion air are not. For a cyclical or batch operation, the process weight per hour is derived by dividing the total process weight by the number of hours in one complete operation from the beginning of any given process to the completion thereof, excluding any time during which the equipment is idle. For a continuous operation, the process weight per hour is derived by dividing the process weight for a typical period of time.

SA: MS s 116.07 subd 4
HIST: 18 SR 614

7011.0705 SCOPE.

Parts 7011.0700 to 7011.0735 shall apply to industrial process equipment for which a standard of performance has not been promulgated in a specific rule.

SA: MS s 116.07 subd 4
HIST: 18 SR 614

7011.0710 STANDARDS OF PERFORMANCE FOR PRE-1969 INDUSTRIAL PROCESS EQUIPMENT.

Subpart 1. **Prohibited discharge of gases.** No owner or operator of any industrial process equipment which was in operation before July 9, 1969, shall cause to be discharged into the atmosphere from the industrial process equipment any gases which:

A. in any one hour contain particulate matter in excess of the amount permitted in part 7011.0730 for the allocated process weight; provided that the owner or operator shall not be required to reduce the particulate matter emission below the concentration permitted in part 7011.0735 for the appropriate source gas volume; provided further that regardless of the mass emission permitted by part 7011.0730, the owner or operator shall not be permitted to emit particulate matter in a concentration in excess of 0.30 grains per standard cubic foot of exhaust gas; or

B. exhibit greater than 20 percent opacity, except for one six-minute period per hour of not more than 60 percent opacity. An exceedance of this opacity standard occurs whenever any one-hour period contains two or more six-minute periods during which the average opacity exceeds 20 percent or whenever any one-hour period contains one or more six-minute periods during which the average opacity exceeds 60 percent.

Subp. 2. **Compliance.** The owner or operator of any industrial process equipment which was in operation before July 9, 1969, which has control equipment with a collection efficiency of not less than 99 percent by weight shall be considered in compliance with the requirements of subpart 1, item A.

Subp. 3. **Equipment located outside of Saint Paul, Minneapolis, and Duluth.** The owner or operator of any industrial process equipment which was in operation before July 9, 1969, which is located outside the Minneapolis-Saint Paul Air Quality Control Region and the city of Duluth, which is located not less than one-fourth mile from any residence or public roadway, and which has control equipment with a collection efficiency of not less than 85 percent by weight, and the operation of the entire emission facility does not cause a violation of the ambient air quality standards, shall be considered in compliance with the requirements of subpart 1, item A.

SA: MS s 116.07 subd 4
HIST: 18 SR 614

7011.0715 STANDARDS OF PERFORMANCE FOR POST-1969 INDUSTRIAL PROCESS EQUIPMENT.

Subpart 1. **Prohibited discharge of gases.** No owner or operator of any industrial process equipment which was not in operation before July 9, 1969, shall cause to be discharged into the atmosphere from the industrial process equipment any gases which:

A. in any one hour contain particulate matter in excess of the amount permitted in part 7011.0730 for the allocated process weight; provided that the owner or operator shall not be required to reduce the particulate matter emission below the concentration permitted in part 7011.0735 for the appropriate source gas volume; provided that regardless of the mass emission permitted by part 7011.0730, the owner or operator shall not be permitted to emit particulate matter in a concentration in excess of 0.30 grains per standard cubic foot of exhaust gas; or

B. exhibit greater than 20 percent opacity.

Subp. 2. **Compliance.** The owner or operator of any industrial process equipment which was not in operation before July 9, 1969, which has control equipment with a collection efficiency of not less than 99.7 percent by weight shall be considered in compliance with the requirements of subpart 1, item A.

Subp. 3. **Equipment located outside of Saint Paul, Minneapolis, and Duluth.** The owner or operator of any industrial equipment which was in operation after July 9, 1969, which is located outside the Minneapolis-Saint Paul Air Quality Control Region and the city of Duluth, which is located not less than one-fourth mile from any residence or public roadway, and which has control equipment with a collection efficiency of not less than 85 percent by weight, and the operation of the entire emission facility does not cause a violation of the ambient air quality standards, shall be considered in compliance with the requirements of subpart 1, item A.

SA: MS s 116.07 subd 4
HIST: 18 SR 614

7011.0720 PERFORMANCE TEST METHODS.

Unless another method is approved by the agency, any owner or operator required to submit performance tests for any industrial process equipment shall utilize the following test methods:

A. Method 1 for sample and velocity traverses;

B. Method 2 for velocity and volumetric flow rate;

C. Method 3 for gas analysis;

D. Method 5 for the concentration of particulate matter and associated moisture content; and

E. Method 9 for visual determination of the opacity of emissions from stationary sources.

SA: MS s 116.07 subd 4
HIST: 18 SR 614

7011.0725 PERFORMANCE TEST PROCEDURES.

In the event that emissions from any industrial process equipment contain organic vapors which condense at standard conditions of temperature and pressure, the following changes in

method 5 for determining particulate emissions shall be made:

A. Paragraph 4.2, Sample Recovery in method 5 is amended to read as follows:

4.2 Sample Recovery. Exercise care in moving the collection train from the test site to the sample recovery area so as to minimize the loss of collected sample or the gain of extraneous particulate matter. Set aside a portion of the acetone and water used in the sample recovery as a blank for analysis. Place the samples in containers as follows:

Container #1. Remove the filter from its holder, place in this container, and seal.

Container #2. Place loose particulate matter and water and acetone washings from all sample-exposed surfaces preceding the filter paper in this container and seal. The probe and nozzle should be scrubbed with a stiff brush and distilled water, followed by an acetone rinse. If these solvents do not do a good cleaning job, an adequate solvent must be found and used. Use a razor blade or rubber policeman to loosen adhering particles if necessary.

Container #3. Measure the volume of water from the first three impingers and place the water in this container. Place water rinsings of all sample-exposed surfaces between the filter and fourth impinger in this container prior to sealing.

Container #4. Transfer the silica gel from the fourth impinger to the original container and seal. Use a rubber policeman as an aid in removing silica gel from the impinger.

Container #5. Thoroughly rinse all sample-exposed surfaces between the filter paper and fourth impinger with acetone, place the washings in this container, and seal.

B. Paragraph 4.3, Analysis in Method 5 is amended to read as follows:

4.3 Analysis. Record the data required on the example sheet shown in figure 5-3. Handle each sample container as follows:

Container #1. Transfer the filter and any loose particulate matter from the sample container to a tared glass weighing dish, desiccate, and dry to a constant weight. Report results to the nearest 0.5 milligram.

Container #2. Transfer the washings to a tared beaker and evaporate to dryness at ambient temperature and pressure. Desiccate and dry to a constant weight. Weigh to the nearest 0.5 milligram.

Container #3. Extract organic particulate matter from the impinger solution with three 25 ml portions of chloroform. Complete the extraction with three 25 ml portions of ethyl ether. Combine the ether and chloroform extracts, transfer to a tared beaker and evaporate at 70 degrees Fahrenheit until no solvent remains. Desiccate, dry to a constant weight, and report the results to the nearest 0.5 milligram.

Container #4. Weigh the spent silica gel and report to the

nearest gram.

Container #5. Transfer the acetone washings to a tared beaker and evaporate to dryness at ambient temperature and pressure. Desiccate, dry to a constant weight, and report the results to the nearest 0.5 milligram.

SA: MS s 116.07 subd 4

HIST: 18 SR 614

7011.0730 TABLE 1.

Process Weight Rate (pounds/hour)	Emission Rate (pounds/hour)
50	0.08
100	0.55
500	1.53
1,000	2.25
5,000	6.34
10,000	9.73
20,000	14.99
60,000	29.60
80,000	31.19
120,000	33.28
160,000	34.85
200,000	36.11
400,000	40.35
1,000,000	46.72

Interpolation of the data in this part for the process weight rates up to 60,000 pounds/hour shall be accomplished by the use of the equation:

$$E = 3.59P^{0.62}$$
$$P < 30 \text{ tons/hour}$$

and interpolation and extrapolation of the data for process weight rates in excess of 60,000 pounds/hour shall be accomplished by use of the equation:

$$E = 17.31P^{0.16}$$
$$P > 30 \text{ tons/hour}$$

where:

E = emissions in pounds per hour;

P = process weight rate in tons per hour.

SA: MS s 116.07 subd 4

HIST: 18 SR 614

7011.0735 TABLE 2.

Source Gas Volume, DSCFM[a]	Concentration GR/DSCF[b]
7,000 or less	0.100
8,000	0.096

9,000	0.092
10,000	0.089
20,000	0.071
30,000	0.062
40,000	0.057
50,000	0.053
60,000	0.050
80,000	0.045
100,000	0.042
120,000	0.040
140,000	0.038
160,000	0.036
180,000	0.035
200,000	0.034
300,000	0.030
400,000	0.027
500,000	0.025
600,000	0.024
800,000	0.021
1,000,000 or more	0.020

[a]Dry standard cubic feet per minute
[b]Grains per dry standard cubic foot.

SA: MS s 116.07 subd 4
HIST: 13 SR 2154; 18 SR 614

7011.0800 DEFINITION.
As used in parts 7011.0800 to 7011.0825, "portland cement plant" means any facility manufacturing portland cement by either the wet or dry process.
SA: MS s 116.07 subd 4
HIST: 18 SR 614

7011.0805 STANDARDS OF PERFORMANCE FOR EXISTING PORTLAND CEMENT PLANTS.

No owner or operator of an existing portland cement plant shall cause or allow the discharge into the atmosphere of any gases which:

A. contain particulate matter in excess of the limits established by parts 7011.0700 to 7011.0735; or

B. exhibit greater than 20 percent opacity, except for one six-minute period per hour of not more than 47 percent opacity. An exceedance of this opacity standard occurs whenever any one-hour period contains two or more six-minute periods during which the average opacity exceeds 20 percent or whenever any one-hour period contains one or more six-minute periods during which the average opacity exceeds 47 percent.

The requirements of this part are applicable to the kiln, the clinker cooler, the raw mill system, the raw mill dryer, raw material storage, the finish mill system, clinker storage, finished product storage, conveyor transfer points, and bagging and bulk loading and unloading systems.

For the purposes of this part, "existing portland cement plant" means a portland cement plant on which construction, modification, or reconstruction did not commence after August 17, 1971.

7011.0810 [Repealed, 18 SR 580]

7011.0815 MONITORING OF OPERATIONS.
The owner or operator of any portland cement plant shall record the daily production rates and kiln feed rates.
SA: MS s 116.07 subd 4
HIST: 18 SR 614

7011.0820 PERFORMANCE TEST METHODS.
Unless another method is approved by the agency, any owner or operator required to submit performance tests for a portland cement plant shall utilize the following test methods:
A. Method 1 for sample and velocity traverses;
B. Method 2 for velocity and volumetric flow rate;
C. Method 3 for gas analysis;
D. Method 5 for the concentration of particulate matter and the associated moisture content; and
E. Method 9 for visual determination of opacity.
SA: MS s 116.07 subd 4
HIST: 18 SR 614

7011.0825 PERFORMANCE TEST PROCEDURES.

In testing for the concentration of particulate matter and the associated moisture content, the minimum sampling time and minimum sample volume for each run, except when other times and volumes are approved by the agency, shall be as follows: 60 minutes and 30 dscf (0.85 dscm) for the kiln, and 60 minutes and 40.6 dscf (1.15 dscm) for the clinker cooler.

Total kiln feed rate (except fuels) expressed in tons per hour on a dry basis, shall be determined during each testing period by a method approved by the agency, and shall be confirmed by a material balance over the production system.

For each run, particulate matter emissions, expressed in pounds per ton of kiln feed, shall be determined by dividing the emission rate in pounds per hour by the kiln feed rate. The emission rate shall be determined by the equation, lb/hr = Q_S x c, where Q_S = volumetric flow rate of the total effluent in dscf/hr as determined in accordance with part 7011.0820, item B, and c = particulate concentration in lb/dscf as determined in accordance with part 7011.0820, item D.

SA: MS s 116.07 subd 4

HIST: 18 SR 614

7011.0900 DEFINITION.

"Asphalt concrete plant" means any facility used to manufacture asphalt concrete by heating and drying aggregate and mixing with asphalt cements. "Asphalt concrete plant" includes dryers; systems for screening, handling, storing, and weighing hot aggregate; systems for loading, transferring, and storing mineral filler; systems for mixing asphalt concrete; and the loading, transfer, and storage systems associated with emission control systems.

SA: MS s 116.07 subd 4
HIST: 18 SR 614

7011.0905 STANDARDS OF PERFORMANCE FOR EXISTING ASPHALT CONCRETE PLANTS.

No owner or operator of an existing asphalt concrete plant shall cause to be discharged into the atmosphere from the asphalt concrete plant any gases which:

A. contain particulate matter in excess of the limits allowed by parts 7011.0700 to 7011.0735; or

B. exhibit greater than 20 percent opacity, except that a maximum of 40 percent opacity shall be permissible for not more than four minutes in any 30-minute period and a maximum of 60 percent opacity shall be permissible for not more than four minutes in any 60-minute period.

SA: MS s 116.07 subd 4
HIST: 18 SR 614

7011.0910 [Repealed, 18 SR 580]

7011.0915 TEST METHODS.

Unless another method is approved by the agency, any owner or operator required to submit performance tests for an asphalt concrete plant shall utilize the following test methods:

A. Method 1 for sample and velocity traverses;

B. Method 2 for velocity and volumetric flow rate;

C. Method 3 for gas analysis; and

D. Method 5 for the concentration of particulate matter and the associated moisture content.

SA: MS s 116.07 subd 4
HIST: 18 SR 614

7011.0920 PERFORMANCE TEST PROCEDURES.

For Method 5, the sampling time for each run shall be at least 60 minutes and the sampling rate shall be at least 0.9 dscm/hr (0.53 dscf/min) except that shorter sampling times, when necessitated by process variables or other factors, may be approved by the agency.

SA: MS s 116.07 subd 4
HIST: 18 SR 614

7011.1000 DEFINITIONS.

Subpart 1. **Scope.** For the purposes of parts 7011.1000 to 7011.1015 the following terms have the meanings given them.

Subp. 2. **Capture system.** "Capture system" means equipment such as hoods, ducts, fans, and dampers used to capture particulate matter.

Subp. 3. **Column dryer.** "Column dryer" means equipment used to reduce the moisture content of grain in which the grain flows from the top to the bottom in one or more continuous packed columns between two perforated metal sheets.

Subp. 4. **Dry bulk agricultural commodity, commodity.** "Dry bulk agricultural commodity" or "commodity" includes grain, grain by-products, seed, beet pulp or pellets, and alfalfa meal or pellets.

Subp. 5. **Dry bulk agricultural commodity facility.** "Dry bulk agricultural commodity facility" means a facility where bulk commodities are unloaded, handled, cleaned, dried, stored, ground, or loaded. "Dry bulk agricultural commodity facility" does not include a facility located on a family farm or family farm corporation, as defined in Minnesota Statutes, section 116B.02, which handles commodities from the farm or used on the farm.

Subp. 6. **Grain.** "Grain" means corn, wheat, sorghum, rice, rye, oats, barley, flax, soybeans, and sunflower seeds.

Subp. 7. **Grain storage elevator.** "Grain storage elevator" means a grain elevator located at a wheat flour mill, wet corn mill, dry corn mill (human consumption), rice mill, or soybean oil extraction plant that has a permanent grain storage capacity of more than 35,200 cubic meters, which is approximately 1,000,000 bushels.

Subp. 8. **Grain terminal elevator.** "Grain terminal elevator" means a grain elevator that has a permanent storage capacity of more than 88,100 cubic meters, which is approximately 2,500,000 bushels, except a grain elevator located at animal food manufacturers, pet food manufacturers, cereal manufacturers, breweries, and livestock feedlots.

Subp. 9. **Handling operation.** "Handling operation" includes the use of bucket elevators, scale hoppers, conveyors, trippers, and spouts for the distribution and weighing of commodities within a commodity facility.

Subp. 10. **Loading station.** "Loading station" means the part of a commodity facility where the commodities are transferred from the facility to a truck, railcar, barge, or ship.

Subp. 11. **Normal loading procedure.** "Normal loading procedure" means that part of a barge or ship loading operation where the spout and associated dust suppression systems are capable of distributing the commodity in the hold as needed without making modifications to the loading procedure, such as removing the dust suppressor, raising the spout, slowing the

loading rate below the design capability of the spout, or attaching equipment at the end of the spout.

Subp. 12. **Rack dryer.** "Rack dryer" means equipment used to reduce the moisture content of grain in which the grain flows from the top to the bottom in a cascading flow around rows of baffles (racks).

Subp. 13. **Reasonably available control technology (RACT).** "Reasonably available control technology (RACT)" means the lowest emission limit that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility.

Subp. 14. **Throughput.** "Throughput" means the number of tons of commodities received, plus the number of tons of commodities shipped, divided by two, determined on the basis of an average year. An average year is determined by averaging the actual receipts and shipments for the last three consecutive fiscal years. For facilities less than three years old, actual and anticipated receipts and shipments must be used.

Subp. 15. **Topping-off.** "Topping-off" means the placing of grain in the final three feet of void in a barge, nine feet in a ship, between the fore and aft center line of the hatch and the outboard side of the vessel. The depth is determined by vertical measurement along the outboard side of the vessel from the top of the hatch opening.

Subp. 16. **Trimming.** "Trimming" means the part of ship loading that requires the use of spoons, slingers, and other equipment attached to the loading spout to ensure that a ship is loaded to capacity.

Subp. 17. **Unloading station.** "Unloading station" means the part of a commodity facility where the commodities are transferred from a truck, railcar, barge, or ship to a receiving hopper.

SA: MS s 116.07 subd 1
HIST: 8 SR 1675; 18 SR 614

BULK AGRICULTURAL COMMODITY FACILITIES

7011.1005 STANDARDS OF PERFORMANCE FOR DRY BULK AGRICULTURAL COMMODITY FACILITIES.

Subpart 1. **Owner or operator duties.** The owner or operator of a commodity facility shall:

A. clean up commodities spilled on the driveway and other facility property as required to minimize fugitive emissions to a level consistent with RACT; and

B. maintain air pollution control equipment in proper operating condition and utilize the air pollution control systems as designed.

Subp. 3. **Prohibited discharges.** A commodity facility that is not required to be controlled under subpart 2 must be controlled if the facility meets one of the descriptions listed in part 7011.1015 where the table indicates "control required." For a facility where control is required under this section, no owner, operator, or other person who conducts activities at the facility may allow:

A. a discharge of fugitive emissions that exhibit greater than five percent opacity from a truck unloading station, railcar unloading station, railcar loading station, or handling operation;

B. a discharge of fugitive emissions that exhibit greater than ten percent opacity from a truck loading station;

C. a discharge of fugitive emissions that exhibit greater than 20 percent opacity from a ship or barge loading or unloading station, except that during trimming or topping-off, when normal loading procedures cannot be used, no opacity standard applies; and

D. a discharge of particulate matter from control equipment that exceeds the limits set forth in part 7011.0735 or that exhibits greater than ten percent opacity, except that facilities constructed prior to January 1, 1984, with an annual commodity throughput of more than 180,000 tons and located in an unincorporated area or in a city with a population of less than 7,500, outside the Minneapolis-Saint Paul Air Quality Control Region, is in compliance if the control equipment has a collection efficiency of not less than 85 percent by weight.

Subp. 4. **Capture systems and control equipment.** The owner or operator of a commodity facility not required to control emissions under subpart 2 or 3 is not required to install capture systems and control equipment but shall unload, handle, clean, dry, and load commodities to minimize fugitive emissions to a level consistent with RACT. If a capture system is used, the particulate matter must be conveyed through control equipment that has a collection efficiency of not less than 85 percent by weight.

Subp. 5. **Grain dryer specifications.** A grain dryer must meet the following design specifications:

A. the perforations of a column dryer screen must not exceed 3/32 inches in diameter; and

B. the emissions from a rack dryer must pass through

a 50-mesh screen enclosure before discharge to the atmosphere.
SA: MS s 116.07
HIST: 8 SR 1675; 18 SR 580; 18 SR 614

7011.1010 NUISANCE.

Notwithstanding any provisions in parts 7011.1000 to 7011.1015, no owner or operator of a dry bulk agricultural commodity facility may operate or maintain a facility that creates a public nuisance. If the commissioner determines that operation or maintenance of a commodity facility creates a public nuisance, the commissioner may require the owner or operator to take measures necessary to eliminate the nuisance.
SA: MS s 116.07 subd 1
HIST: 8 SR 1675; L 1987 c 186 s 15; 18 SR 614

7011.1015 CONTROL REQUIREMENTS SCHEDULE.

Facility Description	Date Construction, Modification or Reconstruction Commenced	
	Prior to 1/1/84	After 1/1/84
Facility located in Minneapolis-Saint Paul Air Quality Control Region or located in a city with a population of 7,500 or more or with annual commodity throughput of more than 180,000 tons	Control required	Control required
Facility with annual commodity throughput of 120,000 to 180,000 tons and located in a city with a population of less than 7,500	No control required	Control required
Facility with annual commodity throughput and location other than those described above	No control required	No control required

SA: MS s 116.07 subd 1
HIST: 8 SR 1675; 18 SR 614

Coal Handling Facilities

7011.1100 DEFINITIONS.

Subpart 1. **Scope.** As used in parts 7011.1100 to 7011.1140, the following words shall have the meanings defined herein.

Subp. 2. **Coal.** "Coal" means any solid fossil fuel described as anthracite, bituminous, subbituminous, lignite, or coke (as derived from coal).

Subp. 3. **Coal handling.** "Coal handling" means operations including, but not limited to, operations such as dumping, loading, unloading, storing, reclaiming, transferring, and conveying.

Subp. 4. **Coal handling facility.** "Coal handling facility" means a facility where coal is handled such as coal transshipment terminals, electric generating plants, boiler plants, or steam plants.

Subp. 5. **Coal throughput.** "Coal throughput" means the number of tons of coal received plus the number of tons of coal shipped by an owner or operator of a coal transshipment facility in any one calendar year. In the case of facilities where coal is consumed at the same facility where received, such as electric generating plants, boiler plants, or steam plants, coal throughput means the number of tons of coal received at the facility.

Subp. 6. **Dust suppression methods.** "Dust suppression methods" mean dust control equipment or measures including, but not limited to, hoppers, hoods, screens, enclosures, wetting or chemical agents, foam agents, surfactants, precleaning treatment, utilizing induced draft and air pollution control equipment, watering, and other equivalent methods approved by the commissioner.

Subp. 7. **Hauler.** "Hauler" means any vehicle engaged in reclaiming, moving, or dumping coal within a coal handling facility.

Subp. 8. **Minimize.** "Minimize" means, with respect to the control of fugitive emissions, to reduce such emissions to a level consistent with RACT.

Subp. 9. **Pneumatic coal-cleaning equipment.** "Pneumatic coal-cleaning equipment" means any equipment which classifies coal by size or separates coal from refuse by application of air stream(s).

Subp. 10. **Reasonably available control technology (RACT).** "Reasonably available control technology (RACT)" is the lowest emission limit that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility.

Subp. 11. **Thermal dryer.** "Thermal dryer" means any device in which the moisture content of coal is reduced by contact with a heated gas stream which is exhausted to the atmosphere.

SA: MS s 116.07 subd 4

HIST: L 1987 c 186 s 15; 18 SR 614

7011.1105 STANDARDS OF PERFORMANCE FOR CERTAIN COAL HANDLING FACILITIES.

The owner or operator of a new or existing coal handling facility which is located within the Minneapolis-Saint Paul Air Quality Control Region or within the boundaries of the city of Duluth shall perform the following abatement measures unless otherwise exempt by portions of these parts:

A. Access areas, roads, parking facilities.

(1) Install asphalt or concrete surfaces or chemical agents on all active truck haul roads of the coal handling facility when the coal throughput by truck is 200,000 tons or greater. All paved roads and areas shall be cleaned to minimize the discharge to the atmosphere of fugitive particulate emissions. Such cleaning shall be accomplished in a manner which minimizes resuspension of particulate matter. Access areas surrounding coal stockpiles and parking facilities which are located within a coal handling facility shall be treated with water, oils, or chemical agents.

(2) No person shall cause or permit the use of access areas surrounding coal stockpiles and use of all active truck haul roads and parking facilities which are located within a coal handling facility whose coal throughput by truck is less than 200,000 tons unless such areas and roads are treated with water, oils, or chemical agents.

B. Coal loading stations. Control fugitive particulate emissions from the loading of trucks, haulers, and railcars by dust suppression methods so that emissions from such sources are minimized.

C. Truck and hauler unloading stations. Control fugitive particulate emissions from the unloading of trucks or haulers by dust suppression methods so that emissions from such sources are minimized.

D. Barge or vessel loading stations.

When the amount of coal loaded into barges or vessels at a given facility is 200,000 tons per year or greater, conveyor systems shall utilize loadout spouts with remote control capability for movement sideways, up and down, and telescoping so as to decrease as much as practical the vertical free fall of coal at all times during the loadout operation. Choke feeding devices, flood loading, or other equivalent equipment or methods may be installed as alternates on conveyor systems to control fugitive emissions. Crane and shovels shall be operated so as to minimize the vertical free fall of coal.

When the amount of coal loaded into barges or vessels at a given facility is less than 200,000 tons per year, control fugitive particulate emissions by dust suppression methods so that emissions from such sources are minimized.

E. Barge or vessel unloading station. Cranes, shovels, and conveyors shall be operated in a manner which decreases as much as practical the vertical free fall of coal.

Control fugitive particulate emissions during unloading so that fugitive particulate emissions are minimized.

F. Stockpiles, stockpile construction, and reclaiming.

(1) Control fugitive particulate emissions by dust suppression methods on such operations so that fugitive particulate emissions are minimized.

(2) In the alternative, use an underground bottom feed (plow) of coal to an underground conveyor system provided the exhaust gases from the enclosed spaces do not contain particulate matter in excess of 0.020 grains per dry standard cubic foot (gr/dscf).

G. Enclosed coal handling facilities or emissions units not specifically covered by any other provision in these parts. If exhaust gases from any enclosed coal handling facility exceed 20 percent opacity, then the owner or operator of such facility shall select and implement one of the following further controls:

(1) install exhaust air system and control exhaust gases so that particulate emissions in such gases do not exceed 0.020 gr/dscf;

(2) control exhaust gases using dust suppression methods so that particulate emissions do not exhibit greater than 20 percent opacity.

H. Railcar unloading. When the amount of coal unloaded by rail is 200,000 tons per year or greater, unload railcars only within a permanent building or structure. If exhaust gases from such building or structure exceed 20 percent opacity, then the owner or operator of such facility shall select and implement one of the following further controls: install an exhaust air system and control exhaust gases so that particulate emissions in such gases do not exceed 0.020 gr/dscf; or control exhaust gases using dust suppression methods so that particulate emissions do not exhibit greater than 20 percent opacity.

When the amount of coal unloaded by rail is less than 200,000 tons per year control fugitive particulate emissions during unloading so that fugitive particulate emissions are minimized.

I. Operating practices. Clean up all coal spilled on roads or access areas as soon as practicable using methods that minimize the amount of dust suspended.

Maintain air pollution control equipment in proper operating condition and utilize air pollution control systems as designed.

SA: MS s 116.07 subd 4
HIST: 13 SR 2154; 18 SR 614

7011.1110 STANDARDS OF PERFORMANCE FOR EXISTING OUTSTATE COAL HANDLING FACILITIES.

The owner or operator of an existing coal handling facility

which is located outside the Minneapolis-Saint Paul Air Quality Control Region and outside the boundaries of the city of Duluth shall comply with the requirements of existing rules (part 7011.0150) for the control of fugitive particulate emissions.
SA: MS s 116.07
HIST: 18 SR 614

7011.1115 STANDARDS OF PERFORMANCE FOR PNEUMATIC COAL-CLEANING EQUIPMENT AND THERMAL DRYERS AT ANY COAL HANDLING FACILITY.

Subpart 1. **Pneumatic coal-cleaning equipment.** The owner or operator of a coal handling facility shall not cause to be discharged into the atmosphere from any pneumatic coal-cleaning equipment any gases which:

A. contain particulate matter in excess of 0.040 g/dscm (0.018 gr/dscf); or

B. exhibit ten percent opacity or greater.

Subp. 2. **Thermal dryers.** The owner or operator of a coal handling facility shall not cause to be discharged into the atmosphere from any thermal dryer any gases which:

A. contain particulate matter in excess of 0.070 g/dscm (0.031 gr/dscf); or

B. exhibit 20 percent opacity or greater.

Subp. 3. **Installation.** The owner or operator shall install pneumatic coal-cleaning equipment and thermal dryers in a manner that performance tests for particulate matter can be run in accordance with applicable procedures and methods set forth in parts 7011.1130 to 7011.1135.

Subp. 4. **Monitoring.** The owner or operator of any coal handling facility that contains a thermal dryer shall install, calibrate, maintain, and continuously operate monitoring devices as follows:

A. A monitoring device for the measurement of the temperature of the gas stream at the exit of the thermal dryer on a continuous basis. The monitoring device shall be certified by the manufacturer to be accurate within three degrees Fahrenheit.

B. In the event venturi scrubber emission control equipment is utilized:

(1) A monitoring device for the continuous measurement of the pressure loss through the venturi constriction of the control equipment. The monitoring device shall be certified by the manufacturer to be accurate within one inch water gauge.

(2) A monitoring device for the continuous measurement of the water supply pressure to the control equipment. The monitoring device shall be certified by the manufacturer to be accurate within five percent of design water supply pressure. The pressure sensor or tap shall be located close to the water discharge point.

C. The owner or operator of a coal handling facility

who is required to maintain monitoring devices shall recalibrate each device annually in accordance with the manufacturer's written requirements for checking the operation and calibration of the device.
SA: MS s 116.07 subd 4
HIST: 18 SR 614

7011.1120 EXEMPTION.
During freezing temperatures, owners or operators shall not be required to apply water or dust suppressants.
SA: MS s 116.07 subd 4
HIST: 18 SR 614

7011.1125 CESSATION OF OPERATIONS.
The owner or operator of a coal handling facility shall not conduct any nonessential coal handling operations that are not shielded from the wind or enclosed in a building when steady wind speeds exceed 30 miles per hour as determined at the nearest official station of the United States Weather Bureau or by wind speed instruments on or adjacent to the site.
SA: MS s 116.07 subd 4
HIST: 18 SR 614

7011.1130 PERFORMANCE TEST METHOD.
Unless another equivalent method is approved by the commissioner, any person required to conduct performance tests for coal handling facilities shall utilize the following test methods, as referenced in Code of Federal Regulations, title 40, part 60, appendix A as in force on November 17, 1980:

A. Method 1 for sample and velocity traverses;

B. Method 5 for the concentration of particulate material and moisture content;

C. Method 9 for the visual determination of the opacity of emission from stationary sources.

SA: MS s 116.07 subd 4
HIST: L 1987 c 186 s 15; 18 SR 614

7011.1135 PERFORMANCE TEST PROCEDURES.
For Method 5, the sampling time for each run shall be at least 60 minutes and the minimum sampling volume shall be 0.85 dscm (30 dscf) except that smaller sampling times or volumes, when necessitated by process variables or other factors, shall be approved by the commissioner. The probe and filter holder heating systems in the sampling train shall be set to provide a gas temperature between 100 degrees Celsius and 120 degrees Celsius (212 degrees Fahrenheit and 250 degrees Fahrenheit). Sampling shall not be started until at least 30 minutes after start up and shall be terminated before shutdown procedures commence. The owner or operator shall eliminate cyclonic flow during performance tests.

SA: MS s 116.07 subd 4
HIST: L 1987 c 186 s 15; 18 SR 614

7011.1140 DUST SUPPRESSANT AGENTS.

Nothing in these parts shall authorize the use of surface hardening agents, wetting or chemical agents, foam agents, and oils that may cause ground water or surface water contamination in violation of any applicable water pollution law.

SA: MS s 116.07 subd 4
HIST: 18 SR 614

7011.1201 DEFINITIONS.

Subpart 1. **Scope.** As used in parts 7011.1201 to 7011.1207 the following words shall have the meanings defined herein.

Subp. 2. **Incinerator.** "Incinerator" means any furnace or other device used in the process of burning solid waste for the purpose of reducing the volume of the waste by removing combustible matter.

Subp. 3. **Solid waste.** "Solid waste" means garbage, refuse, and other discarded solid materials, except animal waste used as fertilizer, including solid waste materials resulting from industrial, commercial, and agricultural operations, and from community activities. Solid waste does not include earthen fill, boulders, rock, and other materials normally handled in construction operations, solids or dissolved material in domestic sewage, or other significant pollutants in water resources, such as silt, dissolved or suspended solids in industrial waste water effluents, dissolved materials in irrigation return flows, or other common water pollutants.

Subp. 4. **Burning capacity.** "Burning capacity" means the manufacturer's or designer's maximum rate or such other rate that is considered good engineering practice and accepted by the commissioner.

SA: MS s 116.07 subd 4

HIST: L 1987 c 186 s 15; 18 SR 614

7011.1202 STANDARDS OF PERFORMANCE FOR EXISTING INCINERATORS.

Subpart 1. **Maximum particulate matter; capacity less than 200 pounds per hour.** No owner or operator of an existing incinerator with a maximum refuse burning capacity of less than 200 pounds per hour shall cause to be discharged into the atmosphere from the incinerator any gases which contain particulate matter in excess of 0.3 gr/dscf corrected to 12 percent CO_2.

Subp. 2. **Capacity of 200 to 2,000 pounds per hour.** No owner or operator of an existing incinerator with a maximum refuse burning capacity of 200 to 2,000 pounds per hour shall cause to be discharged into the atmosphere from the incinerator any gases which contain particulate matter in excess of 0.2 gr/dscf corrected to 12 percent CO_2.

Subp. 3. **Capacity of more than 2,000 pounds per hour.** No owner or operator of an existing incinerator with a maximum refuse burning capacity of more than 2,000 pounds per hour shall cause to be discharged into the atmosphere from the incinerator any gases which contain particulate matter in excess of 0.1 gr/dscf corrected to 12 percent CO_2.

Subp. 4. **Opacity.** No owner or operator of an existing incinerator of any burning capacity shall cause or permit the emission of smoke or any other air contaminant which is greater than 20 percent opacity, except that a maximum of 40 percent opacity shall be permissible for four minutes in any 60-minute

period.

Subp. 5. **Requirements for afterburner.** No owner or operator of an existing incinerator of any burning capacity shall burn type 2, 3, 4, 5, or 6 waste as classified by the Incinerator Institute of America unless said incinerator utilizes auxiliary fuel burners that maintain a minimum temperature of 1,200 degrees Fahrenheit for a minimum retention time of 0.3 second.

SA: MS s 116.07 subd 4

HIST: 18 SR 614

7011.1203 STANDARDS OF PERFORMANCE FOR NEW INCINERATORS.

Subpart 1. **Capacity less than 200 pounds per hour.** No owner or operator of a new incinerator with a maximum refuse burning capacity of less than 200 pounds per hour shall cause to be discharged into the atmosphere from the incinerator any gases which contain particulate matter in excess of 0.2 gr/dscf corrected to 12 percent CO_2.

Subp. 2. **Capacity of 200 to 2,000 pounds per hour.** No owner or operator of a new incinerator with a maximum refuse burning capacity of 200 to 2,000 pounds per hour shall cause to be discharged into the atmosphere from the incinerator any gases which contain particulate matter in excess of 0.15 gr/dscf corrected to 12 percent CO_2.

Subp. 3. **Capacity of 2,001 to 3,999 pounds per hour.** No owner or operator of a new incinerator with a maximum refuse burning capacity of more than 2,000 but less than 4,000 pounds per hour shall cause to be discharged into the atmosphere from the incinerator any gases which contain particulate matter in excess of 0.1 gr/dscf corrected to 12 percent CO_2.

Subp. 4. **Capacity greater than 4,000 pounds per hour.** No owner or operator of a new incinerator with a maximum refuse burning capacity of 4,000 pounds per hour or more shall cause to be discharged into the atmosphere from the incinerator any gases which contain particulate matter in excess of 0.08 gr/dscf corrected to 12 percent CO_2.

Subp. 5. **Opacity.** No owner or operator of a new incinerator of any burning capacity shall cause or permit the emission of smoke or any other contaminant which is greater than 20 percent opacity.

Subp. 6. **Requirements for afterburner.** No owner or operator of a new incinerator of any burning capacity shall burn type 2, 3, 4, 5, or 6 waste as classified by the Incinerator Institute of America unless said incinerator utilizes auxiliary fuel burners that maintain a minimum temperature of 1,200 degrees Fahrenheit for a minimum retention time of 0.3 second.

SA: MS s 116.07 subd 4

HIST: 18 SR 614

7011.1204 MONITORING OF OPERATIONS.

The owner or operator of any incinerator shall record the daily charging rate and hours of operation.

SA: MS s 116.07 subd 4

HIST: 18 SR 614

7011.1206 PERFORMANCE TEST METHODS.

Unless another method is approved by the agency, any owner or operator required to submit performance tests for an incinerator shall utilize the following methods (defined in part 7005.0100):

A. Method 5 for the concentration of particulate matter and the associated moisture content;

B. Method 1 for sample and velocity traverses;

C. Method 2 for velocity and volumetric flow rate;

D. Method 3 for gas analysis and calculation of excess air, using the integrated sample technique; and

E. Method 9 for visual determination of opacity.

SA: MS s 116.07 subd 4

HIST: 18 SR 614

7011.1207 PERFORMANCE TEST PROCEDURES.

Subpart 1. **Method 5.** For Method 5, the sampling time for each run shall be at least 60 minutes and the minimum sample volume shall be 0.85 dscm (30.0 dscf) except that smaller sampling times or sample volumes, when necessitated by process variables or other factors, may be approved by the agency.

Subp. 2. **Wet scrubber.** If a wet scrubber is used, the gas analysis sample shall reflect flue gas conditions after the scrubber, allowing for carbon dioxide absorption by sampling the gas on the scrubber inlet and outlet sides according to the following procedure:

A. The outlet sampling site shall be the same as for the particulate matter measurement. The inlet site shall be selected according to Method 1, or as specified by the agency.

B. Randomly select nine sampling points within the cross section at both the inlet and outlet sampling sites. Use the first set of three for the first run, the second set for the second run, and the third set for the third run.

C. Simultaneously with each particulate matter run, extract and analyze for CO_2 an integrated gas sample according to Method 3, traversing the three sample points and sampling at each point for equal increments of time. Conduct the runs at both inlet and outlet sampling sites.

D. Measure the volumetric flow rate at the inlet during each particulate matter run according to Method 2, using the full number of traverse points. For the inlet make two full velocity traverses approximately one hour apart during each run and average the results. The outlet volumetric flow rate may be determined from the particulate matter run (Method 5).

E. Calculate the adjusted CO_2 percentage using the following equation:

($\%CO_2$) adj = ($\%CO_2$) di (Qdi/Qdo)

where:

($\%CO_2$) adj is the adjusted CO_2 percentage which removes the effect of CO_2 absorption and dilution air;

($\%CO_2$) di is the percentage of CO_2 measured before the scrubber, dry basis;

Qdi is the volumetric flow rate before the scrubber, average of two runs, dscf/min using Method 2; and

Qdo is the volumetric flow rate after the scrubber, dscf/min using Methods 2 and 5.

Subp. 3. **Alternate procedures.** The following procedures may be substituted for the procedures under items C to E:

A. Simultaneously with each particulate matter run, extract and analyze for CO_2, O_2, and N_2 an integrated gas sample according to Method 3, traversing the three sample points and sampling for equal increments of time at each point. Conduct the runs at both the inlet and outlet sampling sites.

B. After completing the analysis of the gas sample, calculate the percentage of excess air (EA) for both the inlet and outlet sampling sites using the following equation:

$$\%EA = \frac{(\%O_2) - 0.5(\%CO)}{0.264(\%N_2) - (\%O_2) + 0.5(\%CO)} \times 100$$

where:

$\%EA$ = percent excess air

$\%O_2$ = percent oxygen by volume, dry basis

$\%N_2$ = percent nitrogen by volume, dry basis

$\%CO$ = percent carbon monoxide volume, dry basis

0.264 = ratio of oxygen to nitrogen in air by volume

C. Calculate the adjusted CO_2 percentage using the following equation:

$$(\%CO_2) \text{ adj} = (\%CO_2) \text{ di} \frac{100 + (\%EA)_I}{100 + (\%EA)_O}$$

where:

($\%CO_2$) adj is the adjusted outlet CO_2 percentage;

($\%CO_2$) di is the percentage of CO_2 measured before the scrubber, dry basis;

$(\%EA)_I$ is the percentage of excess air at the inlet; and

$(\%EA)_O$ is the percentage of excess air at the outlet.

Subp. 4. **Particulate matter.** Particulate matter emissions, expressed in g/dscm, shall be corrected to 12 percent CO_2 by using the following formula:

$$c_{12} = \frac{12c}{\%CO_2}$$

where:

c_{12} is the concentration of particulate matter corrected to

12 percent CO_2;

c is the concentration of particulate matter as measured by Method 5; and

$\%CO_2$ is the percentage of CO_2 as measured by Method 3, or when applicable, the adjusted outlet CO_2 percentage as determined by subpart 2 or 3.

SA: MS s 116.07 subd 4

HIST: 18 SR 614

Sewage Sludge Incinerators

7011.1300 DEFINITIONS.

Subpart 1. Scope. As used in parts 7011.1300 to 7011.1325, the following words shall have the meanings defined herein.

Subp. 2. **Burning capacity.** "Burning capacity" means the manufacturer's or designer's maximum rate or such other rate that is considered good engineering practice and accepted by the commissioner.

Subp. 3. **Sewage sludge incinerator.** "Sewage sludge incinerator" means any furnace or other device used in the process of burning sludge produced by a sewage treatment facility.

SA: MS s 116.07 subd 4

HIST: L 1987 c 186 s 15; 18 SR 614

7011.1305 STANDARDS OF PERFORMANCE FOR EXISTING SEWAGE SLUDGE INCINERATORS.

No owner or operator of an existing sewage sludge incinerator shall cause to be discharged into the atmosphere from the sewage sludge incinerator any gases which:

A. contain particulate matter in excess of 0.3 gr/dscf corrected to 12 percent CO_2 if the incinerator has a burning capacity of less than 200 pounds per hour;

B. contain particulate matter in excess of 0.2 gr/dscf corrected to 12 percent CO_2 if the incinerator has a burning capacity of 200 to 2,000 pounds per hour;

C. contain particulate matter in excess of 0.1 gr/dscf corrected to 12 percent CO2 if the incinerator has a burning capacity of greater than 2,000 pounds per hour.

No owner or operator of an existing sewage sludge incinerator shall cause to be discharged into the atmosphere from the incinerator any gases which exhibit greater than 20 percent opacity, except for one six-minute period per hour of not more than 33 percent opacity. An exceedance of this opacity standard occurs whenever any one-hour period contains two or more six-minute periods during which the average opacity exceeds 20 percent or whenever any one-hour period contains one or more six-minute periods during which the average opacity exceeds 33 percent.

No owner or operator of an existing sewage sludge incinerator shall operate such incinerator unless such incinerator utilizes auxiliary fuel burners that maintain a minimum temperature of 1,200 degrees Fahrenheit for a minimum retention time of 0.3 second or other method of odor control as approved by the commissioner.

For the purposes of this part, "existing sewage sludge incinerator" means a sewage sludge incinerator on which construction, modification, or reconstruction did not commence after June 11, 1973.

7011.1310 STANDARDS OF PERFORMANCE FOR NEW SEWAGE SLUDGE INCINERATORS.

No owner or operator of a new sewage sludge incinerator shall cause to be discharged into the atmosphere from the incinerator any gases which:

A. contain particulate matter in excess of 0.65 g/kg dry sludge input (1.30 lb/ton dry sludge input); or

B. exhibit 20 percent opacity or greater.

No owner or operator of a new sewage sludge incinerator shall operate such incinerator unless such incinerator utilizes auxiliary fuel burners that maintain a minimum temperature of 1200 degrees Fahrenheit for a minimum retention time of 0.3 second or other method of odor control as approved by the commissioner.

SA: MS s 116.07 subd 4
HIST: L 1987 c 186 s 15; 18 SR 614

7011.1315 MONITORING OF OPERATIONS.

The owner or operator of any sewage sludge incinerator shall:

A. Install, calibrate, maintain, and operate a flow measuring device which can be used to determine either the mass or volume of sludge charged to the incinerator. The flow measuring device shall have an accuracy of plus or minus five percent over its operating range.

B. Provide access to the sludge charged so that a well-mixed representative grab sample of the sludge can be obtained.

SA: MS s 116.07 subd 4
HIST: 18 SR 614

7011.1320 PERFORMANCE TEST METHODS.

Unless another method is approved by the agency, any owner or operator required to submit performance tests for a sewage sludge incinerator shall utilize the following methods:

A. Method 1 for sample and velocity traverses;

B. Method 2 for volumetric flow rate;

C. Method 3 for gas analysis; and

D. Method 5 for concentration of particulate matter and associated moisture content.

SA: MS s 116.07 subd 4
HIST: 18 SR 614

7011.1325 PERFORMANCE TEST PROCEDURES.

Subpart 1. **Sampling time for Method 5.** For Method 5, the sampling time for each run shall be at least 60 minutes and the sampling rate shall be at least 0.015 dscm/min (0.53 dscf/min), except that shorter sampling times, when necessitated by process variables or other factors, may be approved by the agency.

Subp. 2. **Dry sludge charging rate.** Dry sludge charging rate shall be determined as follows:

A. Determine the mass (S_m) or volume (S_v) of sludge charged to the incinerator during each run using a flow measuring device meeting the requirements of part 7011.1315, item A. If total input during a run is measured by a flow measuring device, such readings shall be used. Otherwise, record the flow measuring device readings at five-minute

intervals during a run. Determine the quantity charged during each interval by averaging the flow rates at the beginning and end of the interval and then multiplying the average for each interval by the time for each interval. Then add the quantity for each interval to determine the total quantity charged during the entire run, (S_m) or (S_v).

B. Collect samples of the sludge charged to the incinerator in nonporous collecting jars at the beginning of each run and at approximately one-hour intervals thereafter until the test ends, and determine for each sample the dry sludge content (total solids residue) in accordance with "224 G. Method for Solid and Semisolid Samples," Standard Methods for the Examination of Water and Wastewater, Thirteenth Edition, American Public Health Association, Inc., New York, N.Y., 1971, pp. 539-41, except that:

(1) evaporating dishes shall be ignited to at least 103 degrees Celsius rather than the 550 degrees Celsius specified in step 3(a)(1);

(2) determination of volatile residue, step 3(b) may be deleted;

(3) the quantity of dry sludge per unit sludge charged shall be determined in terms of either R_{dv} (metric units: mg dry sludge/liter sludge charged or English units: lb/ft^3) or R_{dm} (metric units: mg dry sludge/mg sludge charged or English units: lb/lb).

C. Determine the quantity of dry sludge per unit sludge charged in terms of either R_{dv} or R_{dm}:

(1) If the volume of sludge charged is used:

$$S_d = (60 \times 10^{-3}) \frac{R_{dv} S_v}{T} \text{(Metric Units}$$

or

$$S_d = (8.021) \frac{R_{dv} S_v}{T} \text{(English Units)}$$

where:

S_d = average dry sludge charging rate during the run, kg/hr (English units: lb/hr);

R_{dv} = average quantity of dry sludge per unit volume of sludge charged to the incinerator, mg/l (English units: lb/ft^3);

S_v = sludge charged to the incinerator during the run, m^3 (English units: gal);

T = duration of run, min (English units: min);

60×10^{-3} = metric units conversion factor, 1-kg-min/m_3-mg-hr;

8.021 = English units conversion factor, ft^3-min/gal-hr.

(2) If the mass of sludge charged is used:

$$S_d = (60) \frac{R_{dm} S_m}{\quad} \text{ (Metric or English Units)}$$

T

where:

S_d = average dry sludge charging rate during the run, kg/hr (English units: lb/hr);

R_{dm} = average ratio of quantity of dry sludge to quantity of sludge charged to the incinerator, mg/mg (English units: lb/lb);

S_m = sludge charged during the run, kg (English units: lb);

T = duration of run, min (metric or English units);

60 = conversion factor, min/hr (metric or English units).

Subp. 3. **Particulate emission rate.** Particulate emission rate shall be determined by:

$C_{aw} = C_S Q_3$ (metric or English units)

where:

C_{aw} = Particulate matter mass emissions, mg/hr (English units: lb/hr).

C_S = Particulate matter concentration, mg/m^3 (English units: lb/dscf).

Q_S = Volumetric stack gas flow rate, dscm/hr (English units: dscf/hr). Q_S and c_S shall be determined using methods 2 and 5, respectively.

Subp. 4. **Compliance with standards.** Compliance with part 7011.1310 shall be determined as follows:

$$C_{ds} = (10^{-3}) \frac{C_{aw}}{S_d} \text{ (Metric Units)}$$

or

$$C_{ds} = (2000) \frac{C_{aw}}{S_d} \text{ (English Units)}$$

where:

C_{ds} = particulate emission discharge, g/kg dry sludge (English units: lb/ton dry sludge).

10^{-3} = Metric conversion factor, g/mg.

2,000 = English conversion factor, lb/ton.

SA: MS s 116.07

HIST: 18 SR 614

7011.1400 DEFINITIONS.

Subpart 1. **Scope.** As used in parts 7011.1400 to 7011.1430 the following words shall have the meanings defined herein.

Subp. 2. **Coke burn-off.** "Coke burn-off" means the coke removed from the surface of the fluid catalytic cracking unit catalyst by combustion in the catalyst regenerator. The rate of coke burn-off is calculated by the formula specified in part 7011.1430, subpart 5.

Subp. 3. **Fossil fuel.** "Fossil fuel" means natural gas, petroleum, coal, wood, and any form of solid, liquid, or gaseous fuel derived from such materials.

Subp. 4. **Fuel gas.** "Fuel gas" means any gas which is generated by a petroleum refinery process unit and which is combusted, including any gaseous mixture of a natural gas and fuel gas which is combusted.

Subp. 5. **Fuel gas combustion device.** "Fuel gas combustion device" means any equipment, such as process heaters, boilers, and flares used to combust fuel gas, but does not include fluid coking units and fluid catalytic cracking unit incinerator-waste heat boilers and facilities in which gases are combusted to produce sulfur or sulfuric acid.

Subp. 6. **Heat input.** "Heat input" means the number of Btu per hour (cal/hr) determined by multiplying the high heating value (Btu/lb) (cal/gm) of each fossil fuel or fuel gas that is fired in the indirect heating equipment or fuel gas combustion device (at the time of determining the heat input) times the rate of each fuel burned (lb/hr) (gm/hr).

Subp. 7. **High heating value.** "High heating value" means the number of (Btu/lb) (cal/gm) of a fossil fuel as determined by the A.S.T.M. test methods described in part 7011.0525.

Subp. 8. **Indirect heating equipment.** "Indirect heating equipment" means a furnace, boiler, or other unit of combustion equipment used in the process of burning fossil fuel for the purpose of producing steam, hot water, hot air, or other hot liquid, gas, or solid, where the products of combustion do not have direct contact with the heated medium. "Indirect heating equipment" includes all fuel gas combustion devices which burn a liquid or solid fossil fuel but does not include fluid catalytic cracking unit incinerator-waste heat boilers, fluid coking units, and facilities in which gases are combusted to produce sulfur or sulfuric acid.

Subp. 9. **Petroleum.** "Petroleum" means the crude oil removed from the earth and the oils derived from tar sands, shale, and coal.

Subp. 10. **Petroleum refinery.** "Petroleum refinery" means any facility engaged in producing gasoline, kerosene, distillate fuel oils, residual fuel oil, lubricants, or other products through distillation of petroleum or through redistillation, cracking, or reforming of unfinished petroleum derivatives. "Petroleum refinery" includes fluid catalytic cracking unit

catalyst regenerators, fluid catalytic cracking unit incinerator-waste heat boilers, fuel gas combustion devices, and all indirect heating equipment associated with the refinery.

Subp. 11. **Process gas.** "Process gas" means any gas generated by a petroleum refinery process unit, except fuel gas and process upset gas as defined in this part.

Subp. 12. **Process upset gas.** "Process upset gas" means any gas generated by a petroleum refinery process unit as a result of start-up, shutdown, upset, or malfunction.

Subp. 13. **Refinery process unit.** "Refinery process unit" means any segment of the petroleum refinery in which a specific processing operation is conducted.

Subp. 14. **Steam generating unit.** "Steam generating unit" means indirect heating equipment used to produce steam.

SA: MS s 116.07

HIST: 18 SR 614

7011.1405 STANDARDS OF PERFORMANCE FOR EXISTING AFFECTED FACILITIES AT PETROLEUM REFINERIES.

Subpart 1. **Fluid catalytic cracking unit catalyst regenerator and incinerator-waste heat boiler.** No owner or operator of an existing fluid catalytic cracking unit catalyst regenerator or its incinerator-waste heat boiler at a petroleum refinery shall cause to be discharged into the atmosphere from such regenerator or its incinerator-waste heat boiler any gases which:

A. contain particulate matter in excess of 10.0 lb/1000 lb (10.0 kg/1000 kg) of coke burn-off in the catalyst regenerator; or

B. exhibit greater than 30 percent opacity, except that 30 percent opacity may be exceeded for one six-minute period in any one-hour period. An exceedance of this opacity standard occurs whenever any one-hour period contains two or more six-minute periods during which the average opacity exceeds 30 percent.

If auxiliary liquid or solid fossil fuels are burned in the fluid catalytic cracking unit incinerator-waste heat boiler, particulate matter in excess of that permitted by item A may be emitted provided that the incremental rate of particulate emissions shall not exceed 0.4 pounds per million Btu (0.72 grams per million cal) of heat input attributable to such liquid or solid fossil fuel.

Subp. 2. **Fuel gas combustion device and indirect heating equipment.** No owner or operator of existing fuel gas combustion devices and indirect heating equipment at a petroleum refinery shall cause to be discharged into the atmosphere from such devices and equipment any gases which contain sulfur dioxide in excess of 1.75 pounds per million Btu (3.15 grams per million cal) heat input. The total emissions of sulfur dioxide from all existing fuel gas combustion devices and all indirect heating equipment shall be divided by the total heat input of all such devices and equipment to determine compliance with this section;

provided that no owner or operator shall cause to be discharged from any one fuel gas combustion device or any one unit of indirect heating equipment any gases which contain sulfur dioxide in excess of 3.0 pounds per million Btu (5.4 grams per million cal) heat input.

Subp. 3. **Indirect heating equipment.** No owner or operator of existing indirect heating equipment at a petroleum refinery shall cause to be discharged into the atmosphere from such equipment any gases which:

A. contain particulate matter in excess of 0.4 pounds per million Btu (0.72 grams per million cal) heat input; or

B. exhibit greater than 20 percent opacity, except for one six-minute period per hour of not more than 60 percent opacity. An exceedance of this opacity standard occurs whenever any one-hour period contains two or more six-minute periods during which the average opacity exceeds 20 percent or whenever any one-hour period contains one or more six-minute periods during which the average opacity exceeds 60 percent.

7011.1410 STANDARDS OF PERFORMANCE FOR NEW AFFECTED FACILITIES AT PETROLEUM REFINERIES.

Subpart 1. **Fluid catalytic cracking unit catalyst regenerator and incinerator-waste heat boiler.** No owner or operator of a new fluid catalytic cracking unit catalyst regenerator or its incinerator-waste heat boiler at a petroleum refinery shall cause to be discharged into the atmosphere from such regenerator or incinerator-waste heat boiler any gases which:

A. contain particulate matter in excess of 1.0 lb/1000 lb (1.0 kg/1000 kg) of coke burn-off in the catalyst regenerator; or

B. exhibit greater than 30 percent opacity, except that 30 percent opacity may be exceeded for one six-minute period in any one-hour period. An exceedance of this opacity standard occurs whenever any one-hour period contains two or more six-minute periods during which the average opacity exceeds 30 percent.

If auxiliary liquid or solid fossil fuels are burned in the fluid catalytic cracking unit incinerator-waste heat boiler, particulate matter in excess of that permitted by item A may be emitted provided that the incremental rate of particulate emissions shall not exceed 0.1 pound per million Btu of heat input attributable to such liquid or solid fossil fuel.

No owner or operator of a new fluid catalytic cracking unit catalyst regenerator at a petroleum refinery shall cause to be discharged into the atmosphere from such regenerator any gases which contain carbon monoxide in excess of 0.050 percent by volume.

Subp. 2. **Fuel gas combustion device.** No owner or operator of a new fuel gas combustion device at a petroleum refinery shall burn in any such device any fuel gas which contains H_2S in excess of 0.10 gr/dscf, (230 mg/dscm) except as provided herein. The owner or operator may elect to treat the gases

resulting from the combustion of fuel gas in a manner which limits the release of SO_2 to the atmosphere if it is shown to the satisfaction of the commissioner that this prevents SO_2 emissions as effectively as compliance with the H_2S restriction set forth above.

Subp. 3. **Indirect heating equipment.** Indirect heating equipment:

A. No owner or operator of new indirect heating equipment at a petroleum refinery shall cause to be discharged into the atmosphere from such equipment any gases which contain sulfur dioxide in excess of 1.75 pounds per million Btu (3.15 grams per million cal) heat input. The total emissions of sulfur dioxide from all existing and new fuel gas combustion devices and indirect heating equipment shall be divided by the total heat input of all such devices and equipment to determine compliance with this part; provided that no owner or operator shall cause to be discharged from any one unit of new indirect heating equipment any gases which contain sulfur dioxide in excess of 3.0 pounds per million Btu (5.4 grams per million cal) heat input.

B. No owner or operator of new indirect heating equipment at a petroleum refinery shall cause to be discharged into the atmosphere from such equipment any gases which:

(1) contain particulate matter in excess of 0.4 pounds per million Btu (0.72 grams per million cal) heat input; or

(2) exhibit greater than 20 percent opacity, except for one six-minute period per hour of not more than 60 percent opacity. An exceedance of this opacity standard occurs whenever any one-hour period contains two or more six-minute periods during which the average opacity exceeds 20 percent or whenever any one-hour period contains one or more six-minute periods during which the average opacity exceeds 60 percent.

C. The owner or operator of a new steam generating unit of more than 250 million Btu per hour (63 million cal per hour) heat input at a petroleum refinery shall comply with the following requirements:

(1) No gases shall be discharged from the steam generating unit which contain particulate matter in excess of 0.1 pounds per million Btu (0.18 grams per million cal) heat input.

(2) No gases shall be discharged which exhibit greater than 20 percent opacity, except for one six-minute period per hour of not more than 27 percent opacity. An exceedance of this opacity standard occurs whenever any one-hour period contains two or more six-minute periods during which the average opacity exceeds 20 percent or whenever any one-hour period contains one or more six-minute periods during which the average opacity exceeds 27 percent.

(3) No gases shall be discharged which contain sulfur dioxide in excess of 0.80 pounds per million Btu (1.4 grams per million cal) heat input if a liquid fossil fuel is burned and 1.2 pounds per million Btu (2.2 grams per million cal) heat input if a solid fossil fuel is burned. When different fossil fuels are burned simultaneously in any combination, the applicable standard shall be determined by proration using the following formula:

$$x = \frac{y(0.8) + z(1.2)}{y + z}$$

where:

x is the maximum allowable emissions of sulfur dioxide gases in lbs/per million Btu;

y is the percentage of total heat input derived from liquid fossil fuel;

z is the percentage of total heat input derived from solid fossil fuel; and

Compliance shall be based on the total heat input from all fossil fuel burned including gaseous fuels.

SA: MS s 116.07 subd 4

HIST: L 1987 c 186 s 15; 18 SR 614

7011.1415 EXEMPTIONS.

The combustion of process upset gas in a flare, or the combustion in a flare of process gas or fuel gas which is released to the flare as a result of relief valve leakage, is exempt from the standards of performance set forth in these parts.

The standards of performance promulgated in parts 7011.1400 to 7011.1430 for indirect heating equipment shall not apply to indirect heating equipment at a petroleum refinery. Only those standards of performance for indirect heating equipment set forth in these parts shall apply to such equipment.

SA: MS s 116.07 subd 4

HIST: 18 SR 614

7011.1420 EMISSION MONITORING.

Subpart 1. **Fluid catalytic cracking unit catalyst regenerators.** Fluid catalytic cracking unit catalyst regenerators:

A. Opacity.

(1) The owner or operator of any new fluid catalytic unit catalyst regenerator and the owner or operator of an existing fluid catalytic cracking unit catalyst regenerator for fluid bed catalyst cracking units of greater than 20,000 barrels per day fresh feed capacity shall install, calibrate, maintain, and operate a continuous monitoring system for the measurement of opacity of emissions discharged into the atmosphere from the regenerator.

(2) The continuous monitoring system shall be spanned at 60, 70, or 80 percent opacity.

B. Coke burn-off. The average coke burn-off rate (thousands of pounds per hour or thousands of kilograms per hour) and hours of operation of any fluid catalytic cracking unit catalyst regenerator shall be recorded daily.

Subp. 2. **Fuel gas combustion devices.** Fuel gas combustion devices:

A. Sulfur dioxide.

(1) The owner or operator of a new fuel gas combustion device at a petroleum refinery shall install, calibrate, maintain, and operate a continuous monitoring system for the measurement of sulfur dioxide in the gases discharged into the atmosphere.

(2) The pollutant gas used to prepare calibration gas mixtures and for calibration checks shall be sulfur dioxide (SO_2).

(3) The span shall be set at 100 ppm.

(4) Reference Method 6 shall be used for conducting monitoring system performance specifications.

(5) For the purpose of reports under part 7019.2000, subpart 1, item B, periods of excess emissions that shall be reported are defined as any six-hour period during which the average emissions (arithmetic average of six continuous one-hour periods) of sulfur dioxide as measured by a continuous monitoring system exceed the applicable standards of performance in part 7011.1410.

B. Hydrogen sulfide. The owner or operator of a new fuel gas combustion device at a petroleum refinery may elect to install a continuous monitoring system for the measurement of hydrogen sulfide in the fuel gas instead of the sulfur dioxide monitor described in item A. The owner or operator shall notify the commissioner in writing of such election. The owner or operator who elects to install the hydrogen sulfide monitor shall not be required to do so until monitoring requirements for such a system are promulgated; provided, however, the commissioner may require the installation of a sulfur dioxide monitor under the provisions of part 7017.1000, subpart 1.

Subp. 3. **Incinerator waste heat boilers.** The owner or operator of any fluid catalytic cracking unit catalyst regenerator at a petroleum refinery which utilizes an incinerator-waste heat boiler to combust the exhaust gases from the catalyst regenerator shall record daily the rate of combustion of liquid or solid fossil fuels (gallons per hour or liters per hour, pounds per hour or kilograms per hour) and the hours of operation during which liquid or solid fossil fuels are combusted in the incinerator-waste heat boiler.

SA: MS s 116.07 subd 4

HIST: L 1987 c 186 s 15; 18 SR 614

7011.1425 PERFORMANCE TEST METHODS.

Subpart 1. **In general.** Unless another method is approved by the commissioner, any person required to submit performance tests for a petroleum refinery shall utilize the following test methods.

Subp. 2. **Gases released to atmosphere from fluid catalytic cracking unit catalyst regenerator.** For gases released to the atmosphere from the fluid catalytic cracking unit catalyst

regenerator:

A. Method 1 for sample and velocity traverses;

B. Method 2 for velocity and volumetric flow rate;

C. Method 5 for the concentration of particulate matter and moisture content;

D. Method 9 for visual determination of the opacity of emissions from stationary sources;

E. Method 10 for carbon monoxide.

Subp. 3. **Exhaust gases.** For exhaust gases from the fluid catalytic cracking unit catalyst regenerator prior to the emission control system:

A. Method 1 for sample and velocity traverses;

B. Method 2 for velocity and volumetric flow rate.

C. Method 3 for gas analysis;

D. Method 4 for moisture content.

Subp. 4. **Determination of concentration.** For determining the concentration of H_2S in any fuel gas, Method 11 shall be used.

Subp. 5. **Gases to atmosphere from combustion.** For gases released to the atmosphere from the combustion of fuel gas, fossil fuel, and the combination of fuel gas and fossil fuel:

A. Method 1 for sample and velocity traverses;

B. Method 2 for velocity and volumetric flow rate;

C. Method 5 for the concentration of particulate matter and moisture content;

D. Method 6 for concentration of SO_{O2};

E. Method 9 for visual determination of the opacity of emissions from stationary sources.

SA: MS s 116.07 subd 4

HIST: L 1987 c 186 s 15; 18 SR 614

7011.1430 PERFORMANCE TEST PROCEDURES.

Subpart 1. **Sampling time.** For Method 5, the sampling time for each run shall be at least 60 minutes and the sampling rate shall be at least 0.015 dscm (0.53 dscf/min), except that shorter sampling times may be approved by the agency when process variable or other factors preclude sampling for at least 60 minutes.

Subp. 2. **Extraction rate.** For Method 10, the sample shall be extracted at a rate proportional to the gas velocity at a sampling point near the centroid of the duct. The sampling time shall not be less than 60 minutes.

Subp. 3. **Introduction of gases into sampling train.** For Method 11, when refinery fuel gas lines are operating at pressures substantially above atmospheric, the gases sampled must be introduced into the sampling train at approximately atmospheric pressure. This may be accomplished with a flow control valve. If the line pressure is high enough to operate the sampling train without a vacuum pump, the pump may be eliminated from the sampling train. The sample shall be drawn

from a point near the centroid of the fuel gas line. The minimum sampling time shall be ten minutes and the minimum sampling volume 0.01 dscm (0.35 dscf) for each sample. The arithmetic average of two samples shall constitute one run. Samples shall be taken at approximately one-hour intervals. For most fuel gases, sample times exceeding 20 minutes may result in depletion of the collecting solution, although fuel gases containing low concentrations of hydrogen sulfide may necessitate sampling for longer periods of time.

Subp. 4. **Sampling to determine SO_2 concentration.** The sampling site for determining SO_2 concentration by Method 6 shall be the same as for determining volumetric flow rate by Method 2. The sampling point in the duct for determining SO_2 concentration by Method 6 shall be at the centroid of the cross section if the cross sectional area is less than 5 m^2 (54 ft^2) or at a point no closer to the walls than 1 meter (39 inches) if the cross sectional area is 5 m^2 or more and the centroid is more than one meter from the wall. The sample shall be extracted at a rate proportional to the gas velocity at the sampling point. The minimum sampling time shall be ten minutes and the minimum sampling volume 0.01 dscm (0.35 dscf) for each sample. The arithmetic average of two samples shall constitute one run. Samples shall be taken at approximately one-hour intervals.

Subp. 5. **Coke burn-off rate.** Coke burn-off rate shall be determined by the following formula:

$$R_c = 0.2982\, Q_{re}\,(\%CO_2 + \%CO) + 2.088\, Q_{re} - 0.0994\, Q_{re}\left(\frac{\%CO}{2} + \%CO_2 + \%O_2\right) \text{(Metric Units)}$$

$$R_c = 0.0186\, Q_{re}\,(\%CO_2 + \%CO) + 0.1303\, Q_{re} - 0.0062\, Q_{re}\left(\frac{\%CO}{2} + CO_2 + O_2\right) \text{(English Units)}$$

R_c = coke burn-off rate, kg/hr (English units lb/hr).

0.2982 = metric units material balance factor divided by 100, kg-min/hr-m^3;

0.0186 = English units material balance factor divided by 100, lb-min/hr-ft^3;

Q_{re} = fluid catalytic cracking unit catalyst regenerator exhaust gas flow rate before entering the emission control system, as determined by Method 2, dscm/min (English units: dscf/min);

$\%CO_2$ = percent carbon dioxide by volume, dry basis, as determined by Method 3;

%CO = percent carbon monoxide by volume, dry basis, as determined by Method 3;

$\%O_2$ = percent oxygen by volume, dry basis, as determined by

Method 3;

2.088 = metric units material balance factor divided by 100, kg-min/hr-m^3;

0.1303 = English units material balance factor divided by 100, lb-min/hr-ft^3;

Q_{ra} = air rate to fluid catalytic cracking unit catalyst regenerator, as determined from fluid catalytic cracking unit control room instrumentation, dscm/min (English units: dscf/min);

0.0994 = metric units material balance factor divided by 100, kg-min/hr-m^3;

0.0062 = English units material balance factor divided by 100, lb-min/hr-ft^3.

Subp. 6. **Particulate emissions.** Particulate emissions shall be determined by the following equation:

$R_e = (60 \times 10^{-6}) Q_{rv} C_x$ (metric units); or

$R_e = (8.57 \times 10^{-3}) Q_{rv} C_s$ (English units)

where:

R_e = particulate emission rate, kg/hr (English units: lb-hr);

60×10^{-6} = metric units conversion factor, min-kg/hr-gr;

8.57×10^{-3} = English units conversion factor, min-lb/hr.gr;

Q_{rv} = volumetric flow rate of gases discharged into the atmosphere from the fluid catalytic cracking unit catalyst regenerator following the emission control system, as determined by Method 2, dscm/min (English units: dscf/min);

C_s = particulate emission concentration discharged in the atmosphere, as determined by Method 5, mg/dscm (English units: gr/dscf).

Subp. 7. **Coke burn-off.** For each run, emissions expressed in kg/1000 kg (lb/1000 lb) of coke burn-off in the catalyst regenerator shall be determined by the following equation:

$$R_s = 1000 \frac{R_e}{R_c} \text{ (Metric or English Units)}$$

where:

R_s = particulate emission rate, kg/1000 kg (lb/1000 lb) of coke burn-off in the fluid catalytic cracking unit catalyst regenerator;

1000 = conversion factor, kg to 1000 kg (lb to 1000 lb);

R_e = particulate emission rate, kg/hr (lb/hr);

R_c = coke burn-off rate, kg/hr (lb/hr).

Subp. 8. **Rate of particulate matter emissions permitted.** In those instances in which auxiliary liquid or solid fossil fuels are burned in an incinerator-waste heat boiler, the rate of particulate matter emissions permitted must be determined. Auxiliary fuel heat input, expressed in millions of cal/hr (English units: millions of Btu/hr) shall be calculated for each run by fuel flow rate measurement and analysis of the liquid or solid auxiliary fossil fuels. For each run, the rate

of particulate emissions permitted shall be calculated from the following equation:

New Affected Facilities	Existing Affected Facilities	
$R_a = 1.0 + \frac{0.18\ H}{R_c}$	$R_a = 10.0 + \frac{0.72\ H}{R_c}$	(Metric Units)
or		
$R_a = 1.0 + \frac{0.10\ H}{R_c}$	$R_a = 10.0 + \frac{0.4\ H}{R_c}$	(English Units)

where:

R_a = allowable particulate emission rate, kg/1000 kg (English units: lb/1000 lb) of coke burn-off in the fluid catalytic cracking unit catalyst regenerator;

1.0 = emission standard for new affected facilities, 1.0 kg/1000 kg (English units: 1.0 lb/1000 lb) of coke burn-off in the fluid catalytic cracking unit catalyst regenerator;

10.0 = emission standard for existing affected facilities;

0.18 = metric units maximum allowable incremental rate of particulate emissions for new affected facilities gm/million cal;

0.10 = English units maximum allowable incremental rate of particulate emissions for new affected facilities, lb/million Btu;

0.72 = metric units maximum allowable incremental rate of particulate emissions for existing affected facilities gm/million cal;

0.4 = English units maximum allowable incremental rate of particulate emissions for existing affected facilities, lb/million Btu;

H = heat input from solid or liquid fossil fuel, million cal/hr (English units: million Btu/hr);

R_c = coke burn-off rate, kg/hr (English units: lb/hr).

SA: MS s 116.07

HIST: 18 SR 614

7011.1500 DEFINITIONS.

Subpart 1. **Scope.** As used in parts 7011.1500 to 7011.1515 the following words shall have the meanings defined herein.

Subp. 2. **Condensate.** "Condensate" means hydrocarbon liquid separated from natural gas which condenses due to changes in the temperature and/or pressure and remains liquid at standard conditions.

Subp. 3. **Custody transfer.** "Custody transfer" means 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.

Subp. 4. **Drilling and production facility.** "Drilling and production facility" means all drilling and servicing equipment, wells, flow lines, separators, equipment, gathering lines, and auxiliary nontransportation related equipment used in the production of petroleum but does not include natural gasoline plants.

Subp. 5. **Floating roof.** "Floating roof" means a storage vessel cover consisting of a double deck, pontoon single deck, internal floating cover, or covered floating roof, which rests upon and is supported by the petroleum liquid being contained, and is equipped with a closure seal or seals to close the space between the roof edge and tank wall.

Subp. 6. **Hydrocarbon.** "Hydrocarbon" means any organic compound consisting predominantly of carbon and hydrogen.

Subp. 7. **Petroleum.** "Petroleum" means the crude oil removed from the earth and the oils derived from tar sands, shale, and coal.

Subp. 8. **Petroleum liquids.** "Petroleum liquids" means petroleum, condensate, and any finished or intermediate products manufactured in a petroleum refinery but does not mean number 2 through number 6 fuel oils as specified in A.S.T.M. D396-69, gas turbine fuel oils Numbers 2-GT through 4-GT as specified in A.S.T.M. D2880-71, or diesel fuel oils Numbers 2-D and 4-D as specified in A.S.T.M. D975-68.

Subp. 9. **Petroleum refinery.** "Petroleum refinery" means 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.

Subp. 10. **Reid vapor pressure.** "Reid vapor pressure" is the absolute vapor pressure of volatile crude oil and volatile nonviscous petroleum liquids, except liquefied petroleum gases, as determined by A.S.T.M.-D-323-58 (reapproved 1968).

Subp. 11. **Storage vessel.** "Storage vessel" means any tank, reservoir, or container used for the storage of petroleum liquids, but does not include:

A. pressure vessels which are designed to operate in excess of 15 pounds per square inch gauge without emissions to

the atmosphere except under emergency conditions;

B. subsurface caverns or porous rock reservoirs; or

C. underground tanks if the total volume of petroleum liquids added to and taken from a tank annually does not exceed twice the volume of the tank.

Subp. 12. **Submerged fill pipe.** "Submerged fill pipe" means any fill pipe the discharge opening of which is entirely submerged when the liquid level is six inches above the bottom of the storage vessel. When applied to a storage vessel which is loaded from the side, "submerged fill pipe" means any fill pipe the discharge opening of which is entirely submerged when filling except for filling after the vessel has been emptied for cleaning and repairs.

Subp. 13. **True vapor pressure.** "True vapor pressure" means the equilibrium partial pressure exerted by a petroleum liquid as determined in accordance with methods described in American Petroleum Institute Bulletin 2517, Evaporation Loss from Floating Roof Tanks, 1962.

Subp. 14. **Vapor recovery system.** "Vapor recovery system" means a vapor gathering system capable of collecting all hydrocarbon vapors and gases discharged from the storage vessel and a vapor disposal system capable of processing such hydrocarbon vapors and gases so as to prevent their emission to the atmosphere.

SA: MS s 116.07 subd 4

HIST: 18 SR 614

7011.1505 STANDARDS OF PERFORMANCE FOR STORAGE VESSELS.

Subpart 1. **Pre-1969 storage vessels.** There are no standards of performance promulgated in this rule for storage vessels for which construction was commenced prior to July 7, 1969.

Subp. 2. **July 7, 1969 to June 11, 1973 storage vessels.** July 7, 1969 to June 11, 1973:

A. There are no standards of performance promulgated in this rule for storage vessels with a storage capacity of 2,000 gallons (7,571 liters) or less for which construction was commenced after July 7, 1969, but prior to June 11, 1973.

B. The owner or operator of any storage vessel with a storage capacity of greater than 2,000 gallons (7,571 liters) but less than or equal to 65,000 gallons (246,405 liters) for which construction was commenced after July 7, 1969, but prior to June 11, 1973, shall equip the storage vessel with a permanent submerged fill pipe or comply with the requirements of subpart 3, item C.

C. The owner or operator of any storage vessel with a storage capacity of greater than 65,000 gallons (246,405 liters) for which construction was commenced after July 7, 1969, but prior to June 11, 1973, shall comply with the following requirements:

(1) If the true vapor pressure of the petroleum liquid, as stored, is equal to or greater than 128 mm Hg (2.5 psia) but not greater than 642 mm Hg (12.5 psia) the storage vessel shall be equipped with a floating roof, a vapor recovery system or their equivalents.

(2) If the true vapor pressure of the petroleum liquid, as stored, is greater than 642 mm Hg (12.5 psia), the storage vessel shall be equipped with a vapor recovery system or its equivalent.

Subp. 3. **Post-June 11, 1973 storage vessels.** Post-June 11, 1973:

A. There are no standards of performance promulgated in this part for storage vessels with a storage capacity of 2,000 gallons (7,571 liters) or less for which construction was commenced on or after June 11, 1973.

B. The owner or operator of any storage vessel with a storage capacity of greater than 2,000 gallons (7,571 liters) but less than or equal to 40,000 gallons (151,412 liters) for which construction was commenced on or after June 11, 1973, shall equip the storage vessel with a permanent submerged fill pipe or comply with the requirements of item C.

C. The owner or operator of any storage vessel with a storage capacity of greater than 40,000 gallons (151,412 liters) for which construction was commenced on or after June 11, 1973, shall comply with the following requirements:

(1) If the true vapor pressure of the petroleum liquid, as stored, is equal to or greater than 78 mm Hg (1.5 psia) but not greater than 570 mm Hg (11.1 psia), the storage vessel shall be equipped with a floating roof, a vapor recovery system, or their equivalents.

(2) If the true vapor pressure of the petroleum liquid as stored is greater than 570 mm Hg (11.1 psia), the storage vessel shall be equipped with a vapor recovery system or its equivalent.

SA: MS s 116.07 subd 4
HIST: 18 SR 614

7011.1510 MONITORING OF OPERATIONS.

Subpart 1. **Records.** The owner or operator of any storage vessel, the construction or modification of which commenced on or after June 11, 1973, which has a storage capacity of greater than 40,000 gallons (151,412 liters) shall for each storage vessel:

A. maintain a file of each type of petroleum liquid stored, of the typical Reid vapor pressure of each type of petroleum liquid stored, of the dates of storage and withdrawals, and of the date on which the storage vessel is empty;

B. determine and record the average monthly storage temperature and true vapor pressure of the petroleum liquid

stored at such temperature if:

(1) the petroleum liquid has a true vapor pressure, as stored, greater than 26 mm Hg (0.5 psia) but less than 78 mm Hg (1.5 psia) and is stored in a storage vessel other than one equipped with a floating roof, a vapor recovery system or their equivalents; or

(2) the petroleum liquid has a true vapor pressure, as stored, greater than 470 mm Hg (9.1 psia) and is stored in a storage vessel other than one equipped with a vapor recovery system or its equivalent.

Subp. 2. **Calculation.** The average monthly storage temperature is an arithmetic average calculated for each calendar month, or portion thereof if storage is for less than a month, from bulk liquid storage temperatures determined at least once every seven days.

Subp. 3. **Vapor pressure determination.** The true vapor pressure shall be determined by the procedure in American Petroleum Institute Bulletin 2517. This procedure is dependent upon determination of the storage temperature and the Reid vapor pressure, which requires sampling of the petroleum liquids in the storage vessels. Unless the agency or the commissioner requires in specific cases that the stored petroleum liquid be sampled, the true vapor pressure may be determined by using the average monthly storage temperature and the typical Reid vapor pressure. For those liquids for which certified specifications limiting the Reid vapor pressure exist, that Reid vapor pressure may be used. For other liquids, supporting analytical data must be made available on request of the agency or the commissioner when typical Reid vapor pressure is used.

SA: MS s 116.07 subd 4
HIST: L 1987 c 186 s 15; 18 SR 614

7011.1515 EXCEPTION.

The provisions of parts 7011.1500 to 7011.1515 do not apply to storage vessels for petroleum or condensate stored, processed, or treated at a drilling and production facility prior to custody transfer.

SA: MS s 116.07 subd 4
HIST: 18 SR 614

Sulfuric Acid Plants

7011.1600 DEFINITIONS.

As used in parts 7011.1600 to 7011.1700 the following words shall have the meanings defined herein:

A. Acid mist. "Acid mist" means sulfuric acid mist as measured by Method 8.

B. Sulfuric acid production unit. "Sulfuric acid production unit" means any emission facility producing sulfuric acid by the contact process by burning elemental sulfur, alkylation acid, hydrogen sulfide, organic sulfides and mercaptans, or acid sludge, but does not include facilities where conversion to sulfuric acid is utilized primarily as a means of preventing emissions to the atmosphere of sulfur dioxide or other sulfur compounds.

SA: MS s 116.07 subd 4
HIST: 18 SR 614

7011.1605 STANDARDS OF PERFORMANCE OF EXISTING SULFURIC ACID PRODUCTION UNITS.

Subpart 1. **Pre-July 1, 1977 limit.** Prior to July 1, 1977, no owner or operator of an existing sulfuric acid production unit shall cause to be discharged into the atmosphere from any sulfuric acid production unit any gases which contain sulfur dioxide in excess of 42 pounds per ton of acid produced (21 kg per metric ton), production being expressed as 100 percent H_2SO_4.

Subp. 2. **Post-July 1, 1977 limit.** After July 1, 1977, no owner or operator of an existing sulfuric acid production unit shall cause to be discharged into the atmosphere from any sulfuric acid production unit any gases which contain sulfur dioxide in excess of 30 pounds per ton of acid produced (15 kg per metric ton), production being expressed as 100 percent H_2SO_4.

Subp. 3. **Acid mist.** No owner or operator of an existing sulfuric acid production unit shall cause to be discharged into the atmosphere from any sulfuric acid production unit any gases which contain acid mist, expressed as H_2SO_4, in excess of 1.70 pounds per ton of acid produced (0.85 kg per metric ton), the production being expressed as 100 percent H_2SO_4.

SA: MS s 116.07 subd 4
HIST: 18 SR 614

7011.1610 [Repealed, 18 SR 580]

7011.1615 CONTINUOUS EMISSION MONITORING.

Subpart 1. **Instrumentalities.** The owner or operator of a sulfuric acid production unit shall install, calibrate, maintain, and operate an instrument for continuously monitoring and recording emissions of sulfur dioxide.

Subp. 2. **Calibration.** The pollutant gas used to prepare calibration gas mixtures and for calibration check shall be sulfur dioxide.

Subp. 3. **Method 8.** When conducting monitoring system

performance evaluations only the sulfur dioxide portion of the Method 8 results shall be used.

Subp. 4. **Span set.** The span shall be set at 1,000 ppm of sulfur dioxide.

Subp. 5. **Conversion factor.** The owner or operator of a sulfuric acid production unit shall establish a conversion factor for the purpose of converting monitoring data into units of the applicable standard (kg/metric ton, lb/short ton). The conversion factor shall be determined, as a minimum, three times daily by measuring the concentration of sulfur dioxide entering the converter using suitable methods (e.g., the Reich test, National Air Pollution Control Administration Publication No. 999-AP-13) and calculating the appropriate conversion factor for each eight-hour period as follows:

$$CF = k\left[\frac{1{,}000 - 0.015r}{r - s}\right]$$

where:

CF = conversion factor (kg/metric ton per ppm, lb/short ton per ppm).

k = constant derived from material balance. For determining CF in metric units, k = 0.0653. For determining CF in English units, k = 0.1306.

r = percentage of sulfur dioxide by volume entering the gas converter. Appropriate corrections must be made for air injection.

s = percentage of sulfur dioxide by volume in the emissions to the atmosphere determined by the continuous monitoring system required under subpart 1.

Subp. 6. **Record of conversion factors.** The owner or operator of a sulfuric acid production unit shall record all conversion factors and values under subpart 5, i.e., CF, r, and s.

Subp. 7. **Record of production data.** The owner or operator of a sulfuric acid production unit shall record daily the production rate and hours of operation.

Subp. 8. **Periods of excess emissions.** For the purpose of reports under part 7019.2000, subpart 1, item B, periods of excess emissions shall be all three-hour periods (or the arithmetic average of three consecutive one-hour periods) during which the integrated average sulfur dioxide emissions exceed the applicable standards under these parts.

SA: MS s 116.07 subd 4

HIST: 18 SR 614

7011.1620 PERFORMANCE TEST METHODS.

Unless another method is approved by the commissioner, any person required to submit performance tests for a sulfuric acid production unit shall utilize the following test methods:

A. Method 1 for sample and velocity traverses;

B. Method 2 for velocity and volumetric flow rate;

C. Method 3 for gas analysis; and

D. Method 8 for the concentrations of SO_2 and acid mist.

SA: MS s 116.07 subd 4

HIST: L 1987 c 186 s 15; 18 SR 614

7011.1625 PERFORMANCE TEST PROCEDURES.

Subpart 1. **Sampling time and volume.** In testing for sulfur dioxide and acid mist, the sampling time for each run shall be at least 60 minutes and the minimum sample volume shall be 40.6 dscf (1.15 dscm) except that smaller sampling times or sample volumes, when necessitated by process variables or other factors, may be approved by the agency.

Subp. 2. **Acid production rate.** Acid production rate, expressed in tons per hour of 100 percent H_2SO_4, shall be determined during each testing period by a suitable method approved by the agency. The agency may require the production rate to be confirmed by a material balance over the production system.

Subp. 3. **Acid mist and sulfur dioxide emissions.** Unless the commissioner approves another method, acid mist and sulfur dioxide emissions, expressed in pounds per ton (kg/metric ton) of 100 percent H_2 SO_4, shall be determined by dividing the emission rate in lb/hr (kg/hr) by the acid production rate. The emission rate shall be determined by the equation, Q_s x c = lb/hr (kg/hr), where Q_s = volumetric flow rate of the effluent in dscf/hr (dscm/hr) as determined in accordance with part 7011.1620, item B, and c = acid mist and sulfur dioxide concentrations in lb/dscf (kg/dscm) as determined in accordance with part 7011.1620, item D.

SA: MS s 116.07

HIST: L 1987 c 186 s 15; 18 SR 614

7011.1630 EXCEPTIONS.

Shutdowns and breakdowns of control equipment at any sulfuric acid production unit shall be governed by the provisions of parts 7017.1000, 7017.2000, 7019.1000, 7019.2000, 7019.3000, and 7019.3010.

SA: MS s 116.07

HIST: 18 SR 614

Nitric Acid Plants

7011.1700 DEFINITIONS.

As used in parts 7011.1700 to 7011.1725 the following words shall have the meanings defined herein:

A. "Nitric acid production unit" means any facility producing weak nitric acid by either the pressure or atmospheric pressure process.

B. "Weak nitric acid" means acid which is 30 to 70 percent in strength.

SA: MS s 116.07 subd 4
HIST: 18 SR 614

7011.1705 STANDARDS OF PERFORMANCE FOR EXISTING NITRIC ACID PRODUCTION UNITS.

Prior to July 1, 1977, no owner or operator of an existing nitric acid production unit shall cause to be discharged into the atmosphere from any nitric acid production unit any gases which contain nitrogen oxides, expressed as NO_2, in excess of 50 pounds per ton of acid produced (25 kg per metric ton), the production being expressed as 100 percent nitric acid.

After July 1, 1977, no owner or operator of an existing nitric acid production unit shall cause to be discharged into the atmosphere from any nitric acid production unit any gases which contain nitrogen oxides, expressed as NO_2, in excess of 40 pounds per ton of acid produced (20 kg per metric ton), the production being expressed as 100 percent nitric acid.

No owner or operator of an existing nitric acid production unit shall cause to be discharged into the atmosphere from any nitric acid production unit any gases which exhibit greater than ten percent opacity.

SA: MS s 116.07 subd 4
HIST: 18 SR 614

7011.1710 [Repealed, 18 SR 580]

7011.1715 EMISSION MONITORING.

The owner or operator of a nitric acid production unit shall install, calibrate, maintain, and operate a continuous monitoring system for the measurement and recording of nitrogen oxides emissions.

The pollutant gas used to prepare calibration gas mixtures and for calibration checks shall be nitrogen dioxide (NO_2).

Reference Method 7 shall be used for conducting monitoring system performance evaluations.

The span shall be set at 500 ppm of nitrogen dioxide.

The owner or operator of a nitric acid plant shall establish a conversion factor for the purpose of converting monitoring data into units of the applicable standard (kg/metric ton, lb/ton). The conversion factor shall be established by measuring emissions with the continuous monitoring system concurrent with measuring emissions with the applicable

Reference Method tests. Using only that portion of the continuous monitoring emission data that represents emission measurements concurrent with the reference method test periods, the conversion factor shall be determined by dividing the reference method test data averages by the monitoring data averages to obtain a ratio expressed in units of the applicable standards to units of the monitoring data, i.e., (kg/metric ton per ppm, lb/ton per ppm). The conversion factor shall be reestablished during any performance test or any continuous monitoring system performance evaluation.

The owner or operator of a nitric acid production unit shall record the daily production rate and hours of operation.

For the purpose of reports under part 7019.2000, subpart 1, item B, periods of excess emissions that shall be reported are defined as any three-hour period during which the average nitrogen oxides emissions (arithmetic average of three contiguous one-hour periods) are measured by a continuous monitoring system exceed the applicable standards under part 7011.1705.

SA: MS s 116.07
HIST: 18 SR 580; 18 SR 614

7011.1720 PERFORMANCE TEST METHODS.

Unless another method is approved by the commissioner, any person required to submit performance tests for a nitric acid production unit shall utilize the following test methods:

A. Method 1 for sample and velocity traverses;
B. Method 2 for velocity and volumetric flow rate;
C. Method 3 for gas analysis; and
D. Method 7 for the concentration of NO_2.

SA: MS s 116.07 subd 4
HIST: L 1987 c 186 s 15; 18 SR 614

7011.1725 PERFORMANCE TEST PROCEDURES.

For Method 7, the same site shall be selected according to Method 1 and the sampling point shall be the centroid of the stack or duct or at a point no closer to the walls than 1 meter (3.28 feet). Each run shall consist of at least four grab samples taken at approximately 15-minute intervals. The arithmetic mean of the samples shall constitute the run value. A velocity traverse shall be performed once per run.

Acid production rate, expressed in metric tons per hour of 100 percent nitric acid, shall be determined during each testing period by suitable methods and shall be confirmed by a material balance over the production system.

For each run, nitrogen oxides, expressed in lb/ton of 100 percent nitric acid (kg/metric ton), shall be determined by dividing the emission rate in lb/hr (kg/hr) by the acid production rate. The emission rate shall be determined by the equation:

Q_s x c = lb/hr (kg/hr)
where Q_s = volumetric flow rate of the effluent in dscf/hr (dscm/hr), as determined in accordance with part 7011.1720, item B, and c = NO_2 concentration in lb/dscf (kg/dscm), as determined in accordance with part 7011.1720, item D.
SA: MS s 116.07
HIST: 18 SR 614

Lead Smelters

7011.1800 [Repealed, 18 SR 580]

7011.1805 [Repealed, 18 SR 580]

7011.1810 [Repealed, 18 SR 580]

7011.1815 [Repealed, 18 SR 580]

7011.2100 DEFINITIONS.

Subpart 1. **Scope.** The following definitions of words and phrases are controlling for purposes of parts 7011.2100 and 7011.2105.

Subp. 2. **Inorganic fibrous material.** "Inorganic fibrous material" means glass fibers, glass wool, rock wool, and aluminum oxide fibers having a length-to-diameter ratio of equal to or greater than three to one.

Subp. 3. **Spraying.** "Spraying" means an operation in which material is conveyed in the form of, or by the means of, a fluid stream from an application device to a receiving surface.

SA: MS s 116.07 subd 4

HIST: 18 SR 614

7011.2105 SPRAYING OF INORGANIC FIBROUS MATERIALS.

The spraying on any portion of a building or structure open to the outdoor atmosphere of any acoustical insulating, thermal insulating, or fireproofing product which does not contain asbestos but which contains inorganic fibrous material shall occur only under the following procedures:

A. The entire floor area where the spraying is to occur shall be enclosed with plastic-coated tarpaulins or by other means in a manner which shall prevent the escape of sprayed material from the enclosure. All interior areas, such as elevator shafts and stairwells, shall be enclosed in a manner which shall prevent the escape of sprayed material from the working area.

B. The entire area in which spraying has occurred, including all ledges, surfaces, equipment, and protective tarpaulins within the enclosure, shall be thoroughly cleaned by means of scraping, sweeping, vacuuming, or other acceptable methods upon completion of the spraying operation and before the enclosure is dismantled; provided, however, that all such cleaning procedures shall be followed by thorough vacuuming. The collected material shall be placed in a sealed container or bag strong enough to resist breaking and tearing under normal handling conditions and shall be transported directly to a disposal site approved by the commissioner.

C. All areas for opening containers of the material to be sprayed and for loading the material to be sprayed into hoppers, or other containers shall be enclosed in a manner which shall prevent the escape of the material to be sprayed to the outdoor atmosphere.

SA: MS s 116.07 subd 4

HIST: L 1987 c 186 s 15; 18 SR 614

7011.2300 STANDARDS OF PERFORMANCE FOR STATIONARY INTERNAL COMBUSTION ENGINES.

Subpart 1. **Visible air contaminants.** No owner or operator of any stationary internal combustion engine shall cause or permit the emission of visible air contaminants from the engine in excess of 20 percent opacity for more than ten consecutive seconds once operating temperatures have been obtained.

Subp. 2. **Sulfur dioxide.** No owner or operator of any stationary internal combustion engine shall cause to be discharged into the atmosphere from the engine any gases which contain sulfur dioxide in excess of 1.75 pounds per million Btu actual heat input if the engine is located in the Minneapolis-Saint Paul air quality control region or if the engine is located outside the Minneapolis-Saint Paul air quality control region but has a total rated heat input greater than 250 million Btu per hour.

Subp. 3. **Heat input.** The actual heat input and rated heat input of an internal combustion engine shall be determined in accordance with the provisions set forth in parts 7011.0500 to 7011.0550.

SA: MS s 116.07 subd 4

HIST: 18 SR 614