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GENERALLY

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, and the standards of performance for a new emission facility set forth in the state air pollution control rules. However, if the administrator has determined a state standard of performance to be of equal or superior environmental protection compared to the New Source Performance Standards, then the owner or operator need only comply with the state standard of performance. "Administrator" has the meaning given in part 7007.0100, subpart 3.

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.

Statutory Authority: *MS s 116.07*

History: *8 SR 2275; 18 SR 614; 23 SR 145; 23 SR 2224*

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.

Statutory Authority: *MS s 116.07 subd 4*

History: *8 SR 2275; 18 SR 614*

CONTROL EQUIPMENT

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. **Capture efficiency.** "Capture efficiency" means the percentage of emissions produced by a process that are captured by an enclosure and/or ductwork and transported to air pollution control equipment.

Subp. 3. **Collection efficiency.** "Collection efficiency" means the percentage of emissions entering the air pollution control equipment that are collected by the air pollution control equipment and thus removed from the exhaust stream. "Collection" pertains to pollutants that are collected but molecular composition may or may not be changed.

Subp. 3a. **Control efficiency.** "Control efficiency" has the meaning given to control equipment efficiency in subpart 3b.

Subp. 3b. **Control equipment efficiency.** "Control equipment efficiency" means the percentage of emissions produced by a process that are not emitted to the atmosphere. Control equipment efficiency is equal to the product of the capture efficiency and collection efficiency or the product of capture efficiency and destruction efficiency.

Subp. 3c. **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. 3d. **Destruction efficiency.** "Destruction efficiency" means the percentage of emissions entering the air pollution control equipment that are destroyed by the air pollution control equipment and thus removed from the exhaust stream. "Destruction" pertains to pollutants that are destroyed whereby molecular composition is changed.

Subp. 3e. **Hood.** "Hood" means a shaped inlet to a pollution control system that does not totally surround emissions from an emissions unit, that is designed, used, and maintained 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." This document is subject to frequent change. A spray booth can be a hood if it meets the definition in this subpart.

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

Subp. 4a. **Testing company.** "Testing company" means a corporation, partnership, limited liability company, or sole proprietorship that conducts evaluations of hood design parameters as a normal part of its business activities and that is not the owner or operator of the emission facility or a subsidiary, division, or subdivision of the owner or operator of the emission facility.

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.

Statutory Authority: *MS s 116.07*

History: *19 SR 1345; 22 SR 1237; 23 SR 2224; 32 SR 904*

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 (1984), 1300 Kemper Meadow Drive, Cincinnati, Ohio 45240, 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.

Statutory Authority: *MS s 116.07*

History: *19 SR 1345; 32 SR 904*

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 elected to use 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;
- D. qualify for registration permit option D under part 7007.1130; or
- E. qualify for a capped permit under parts 7007.1140 to 7007.1148.

Subp. 2. [Repealed, 32 SR 904]

Statutory Authority: *MS s 116.07*

History: *19 SR 1345; 22 SR 1237; 23 SR 2224; 29 SR 626; 32 SR 904*

7011.0070 LISTED CONTROL EQUIPMENT AND CONTROL EQUIPMENT EFFICIENCIES.

Subpart 1. Listed control equipment efficiencies.

A. 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 that is certified as described in part 7011.0072, through a noncertified hood, or through a total enclosure. The control equipment efficiencies in Table A do not apply to any hazardous air pollutant.

B. The use of the control efficiencies listed in Table A under subpart 1a that are associated with a hood that is not certified is limited to the owner or operator of a stationary source that qualifies for a registration permit under parts 7007.1110 to 7007.1130.

Subp. 1a. **Exceptions where control efficiency disallowed.** The owner or operator may not use a control efficiency listed in Table A if:

A. the commissioner determines that the listed efficiency is inapplicable or is not representative of the source due to complexity of the process or source of emissions, lack of reliable data, presence of a pollutant or constituent such as condensable particulate matter or an organic compound significantly more difficult to control than the overall VOC gas stream that makes the categorical efficiency nonrepresentative, or other site-specific conditions; or

B. the commissioner determines that alternate site-specific requirements are necessary to ensure compliance with applicable requirements or to protect human health or the environment.

CONTROL EQUIPMENT EFFICIENCY - TABLE A

ID#	CONTROL EQUIPMENT DESCRIPTION	POLLUTANT	CONTROL EFFICIENCY		
			TOTAL ENCLOSURE	HOOD: CERTIFIED	HOOD: NOT CERTIFIED

Table A - Section 1 - Equipment Designed Primarily for Particulate Matter Control

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	90%	72%	54%
		PM-10	78%	62%	46%
008	Centrifugal Collector (cyclone)-medium efficiency means: a cyclonic device with parameters stated in drawing 1 and table 1	PM	80%	64%	48%
		PM-10	60%	48%	36%
009	Centrifugal Collector (cyclone)-low efficiency means: a cyclonic device with parameters stated in drawing 1 and table 1	PM	25%	20%	15%
		PM-10	25%	20%	15%
076	Multiple Cyclone without Fly Ash Reinjection means: a cyclonic device with more than one tube where fly ash is not reinjected	PM	90%	72%	54%
		PM-10	72%	58%	43%
057, 085	Wet Cyclone Separator or Cyclonic Scrubbers means: a cyclonic device that sprays water into a cyclone	PM, PM-10	84%	68%	51%

010,	PM CONTROL CATEGORY-				
011,	ELECTROSTATIC				
012,	PRECIPITATORS means:				
128,	a control device in which the				
146	incoming particulate matter				
	receives an electrical charge				
	and is then collected on a				
	surface with the opposite				
	electrical charge				
	-assumed efficiency for boiler	PM-10	40%	NA	NA
	fly ash control				
	-assumed efficiency for other	PM	98%	78%	59%
	applications	PM-10	94%	75%	56%
	PM CONTROL CATEGORY				
	- OTHER CONTROLS				
016,	Fabric Filter means: a control	PM	99%	79%	59%
017,	device in which the incoming	PM-10	93%	74%	56%
018	gas stream passes through a				
	porous fabric filter forming a				
	dust cake				
052	Spray Tower means: a control	PM	85%	68%	51%
	device in which the incoming	PM-10	84%	68%	51%
	gas stream passes through a				
	chamber in which it contacts				
	a liquid spray				
053	Venturi Scrubber means: a	PM	94%	76%	57%
	control device in which the	PM-10	84%	68%	51%
	incoming gas stream passes				
	through a venturi into which				
	a low pressure liquid is				
	introduced				
055	Impingement Plate Scrubber	PM	77%	62%	46%
	means: a control device in	PM-10	77%	62%	46%
	which the incoming gas stream				
	passes a liquid spray and is				
	then directed at high velocity				
	into a plate				
056,	Mechanically Aided Separator	PM	64%	52%	39%
113	means: a device that relies on	PM-10	5%	4%	3%
	inertia for separating particles				
	from a gas stream				

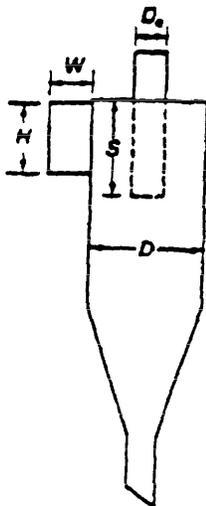
058	Wall or Panel Filter means: a control device in which the exiting gas stream passes through a panel of coarse fibers. Other Wall Filters means removable panels for cleaning and replacement, or liquid curtains for particulate removal that provide little resistance to air flow	PM	85%	68%	51%
		PM-10	85%	68%	51%
101	HEPA Filter or ULPA Filter means: a high efficiency wall or panel filter designed for collection of submicron particles	PM	99.98%	80%	60%
		PM-10	99.98%	80%	60%
503	Charged Scrubber means: a control device in which electric power is used to precharge particulate matter in the gas stream as a means of increasing the scrubber's collection efficiency for fine particles	PM	94%	76%	57%
		PM-10	84%	68%	51%
517	Condensation Scrubber means: a control device in which steam is injected into a wet scrubber to create supersaturated conditions and promote condensation of water on fine particulate matter in the gas stream	PM	94%	76%	57%
		PM-10	84%	68%	51%

Table A - Section 2 - Equipment Designed for VOC Control (includes efficiencies for pollutants where there is a co-benefit of control)

VOC CONTROL
CATEGORY

019,	Catalytic Afterburners	VOC	94%	76%	57%
020,	(catalytic oxidation) means: a	PM	62%	50%	37%
109,	device used to reduce VOC's	PM-10	62%	50%	38%
116,	to the products of combustion	CO	94%	76%	57%
509	through catalytic (use of a catalyst) oxidation in a combustion chamber				
021,	Thermal Afterburners (thermal	VOC	97%	78%	58%
022,	oxidation) means: a device	PM	62%	50%	37%
131,	used to reduce VOC's to the	PM-10	62%	50%	37%
133,	products of combustion	CO	97%	78%	58%
510	through thermal (high temperature) oxidation in a combustion chamber				
023	Flaring or Direct Combustor	VOC	98%	79%	59%
	means: a device in which air,	PM	61%	50%	37%
	combustible organic waste	PM-10	61%	50%	37%
	gases, and supplementary fuel	CO	98%	79%	59%
	(if needed) react in the flame zone (e.g., at the flare tip) to destroy the VOC's				

Drawing 1



SOURCE: Lapple, 1951.

Table 1

Ratio Dimensions	Cyclone Type		
	High Efficiency	Medium Efficiency	Low Efficiency
Height of inlet, H/D	≤ 0.44	>0.44 and <0.8	≥ 0.8
Width of inlet, W/D	≤ 0.2	>0.2 and <0.375	≥ 0.375
Diameter of gas exit, D_g/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.

Subp. 1b. **Transition period.** Any owner or operator of a stationary source that used the control efficiencies in part 7011.0070 to qualify for its permit and is ineligible for its permit on or after January 1, 2007, shall apply for another type of permit on or before December 31, 2008.

Subp. 2. **Alternative control equipment and capture efficiencies; control efficiencies for hazardous air pollutants.** The owner or operator of a stationary source may use an alternative control equipment efficiency or capture efficiency or both for the control equipment listed in subpart 1, if the actual control efficiency or capture 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 or capture efficiency or both may be made through a permit application for a part 70, state, registration, capped, 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 or capture efficiency or both for a piece of listed control equipment at the stationary source established under this subpart.

Subp. 3. [Repealed, 32 SR 904]

Subp. 4. [Repealed, 32 SR 904]

Statutory Authority: *MS s 116.07*

History: *19 SR 1345; 20 SR 2316; 22 SR 1237; 23 SR 2224; 29 SR 626; 32 SR 904*

7011.0072 REQUIREMENTS FOR CERTIFIED HOODS.

Subpart 1. **Applicability.** This part applies only to certified hoods and hoods the owner or operator elects to be certified. Nothing in this part shall be construed to allow the owner or operator of an emission facility to violate an applicable requirement or compliance document.

Hoods evaluated before June 8, 1999, using a form, the contents of which differ from the content in subpart 3, are not required to be reevaluated, unless requested by the commissioner to demonstrate continued conformity with the design and operating practices described in the manual incorporated by reference under part 7011.0061.

Subp. 2. **Certification required.** In order to use a certified hood control efficiency value in part 7011.0070, subpart 1a, Table A, the owner or operator of a stationary source must:

A. arrange for a testing company to conduct a hood evaluation;

B. document, on a form provided by the commissioner, that the hood conforms to the design and operating practices recommended in the manual incorporated by reference under part 7011.0061 and must include with the permit application a certification statement as specified in item C, if the hood exists at the time of application. If the hood does not exist at the time of application, then the certification required in item C shall be sent to the commissioner within 30 days after start-up. The form used to demonstrate that the hood conforms to the required design and operating practices shall contain the elements listed in subpart 3; and

C. include on the form required under item B a certification statement signed by the responsible official, stating as follows: "I certify under penalty of law that the aforementioned hood(s) has (have) been evaluated under my direction or supervision by qualified personnel and that, to the best of my knowledge and belief, 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.""

Subp. 3. **Contents of hood evaluation form.** The hood evaluation form required in subpart 2 shall include:

A. hood dimensions recommended by the manual incorporated by reference under part 7011.0061;

B. design capture velocity and justification for use of this velocity and a list of the manual pages relied on;

C. minimum recommended air flow into the hood;

D. recommended hood face velocity or slot velocity, and, if applicable, plenum and duct velocity;

E. capture velocity test plan; and

F. actual values of design parameters listed in items A to D, as well as fan rotation speed or fan power draw, as determined through testing.

Subp. 4. **Monitoring and record keeping.** The owner or operator of a certified hood shall:

A. maintain at the stationary source the most current record of each hood evaluation required by part 7011.0070; and

B. measure the fan rotation speed, fan power draw, face velocity, or other comparable air flow indicator for each hood and maintain a yearly summary of these measurements. Each yearly summary shall be maintained at the stationary source for a minimum of five years.

Statutory Authority: *MS s 116.07*

History: *32 SR 904*

7011.0075 LISTED 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, with the exception of low-temperature fabric filters (ID #018) using visible emissions as the monitoring parameter under part 7011.0080, 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 conducted to determine control efficiency under parts 7017.2001 to 7017.2060 if those are more restrictive.

The owner or operator with fabric filters (ID #016, #017, #018) using pressure drop as the monitoring parameter under part 7011.0080 and applying for a registration permit or a capped permit, may request an alternative range to the control equipment manufacturer's specifications, if the proposed range is based on two years of compliant monitoring data supplied with the request. The proposed operating range shall be deemed acceptable unless the owner or operator is notified otherwise in writing within 30 days of receipt by the commissioner. The commissioner shall deny a request for an alternative monitoring parameter range if the commissioner finds that:

- A. an owner or operator has failed to disclose fully all facts relevant to the proposed monitoring parameter range of the control device or the owner or operator has knowingly submitted false or misleading information to the commissioner;
- B. operation of the control device in the monitoring parameter range proposed by the owner or operator would result in noncompliance with applicable requirements, endanger human health or the environment, or subject the stationary source to different applicable requirements or requirements under chapter 7007; or
- C. the proposed range is not supported by the data supplied with the request.

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 inventory of spare parts that are subject to frequent replacement, 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 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 monthly, or as required by the manufacturing specification, components that are subject to wear or plugging, for example: bearings, belts, hoses, fans, nozzles, orifices, and ducts;
- E. inspect quarterly, or as required by the manufacturing specification, components that are not subject to wear including structural components, housings, ducts, and hoods;

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

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

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; 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 parts 7011.0072 and 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 December 27, 1994, 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 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 in accordance with the deadlines in part 7007.0800, subpart 6, item A, subitem (2), any recorded reading outside the specification or range of specification allowed by subpart 1 of any monitored operating parameter required by part 7011.0080, except that owners or operators with a registration permit option D or a capped permit to which parts 7011.0060 to 7011.0080 apply shall make this report only if a deviation occurred in the reporting period. Owners or operators of low-temperature fabric control equipment (ID #018) using visible emissions as the monitoring parameter under part 7011.0080 shall report any visible emissions observed from the control equipment as a deviation.

Subp. 6. **Demonstration of capture and 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 capture efficiency of a hood or other capture device or 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 capture device or control equipment at a stationary source is attaining the efficiency assumed under 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.

Statutory Authority: *MS s 116.07*

History: *19 SR 1345; 22 SR 1237; 23 SR 2224; 29 SR 626; 32 SR 904*

7011.0080 MONITORING AND RECORD KEEPING FOR LISTED CONTROL EQUIPMENT.

The owner or 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. Unless a specific format is required, the records may be maintained in either electronic or paper format. For certified hoods, the owner or operator shall comply with part 7011.0072.

Identification Number(s)	Pollution Control Equipment Type	Monitoring Parameter(s)	Record-keeping Requirement
A. Equipment designed for particulate matter control			
007, 008, 009, 076,	Centrifugal collector (cyclone)	Pressure drop	Record pressure drop every 24 hours if in operation
010, 011, 012, 128, 146	Electrostatic precipitator	Voltage, secondary current, and, if used, conditioning agent flow rate	Continuous readout of voltage, and secondary current. If used, daily record of conditioning agent flow rate
016, 017	Fabric filter (bag house), high temperature (T>250°F), medium temperature (180°F> T<250°F)	Pressure drop	Record pressure drop every 24 hours if in operation

018	Fabric filter (bag house), low temperature (T<180°F)	Pressure drop or visible emissions observation from filter outlet during an entire cleaning cycle, unless the commissioner specifies pressure drop and/or visible emissions as the indicator(s) of fabric filter performance	Record pressure drop every 24 hours if in operation, or Record whether any visible emissions are observed and the time period of observation every 24 hours if in operation; or record both if the commissioner requires monitoring of both parameters
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
056, 113	Mechanically aided separator	Pressure drop	Record every 24 hours if in operation
058, 101	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
057, 085	Wet cyclone separator	Pressure drop; and water pressure	Record each parameter every 24 hours if in operation
503	Charged scrubber	Pressure drop and liquid flow rate	Record each parameter every 24 hours if in operation

517	Condensation scrubber	Pressure drop and either steam supply rate or blowdown rate	Record each parameter every 24 hours if in operation
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B. Equipment designed for volatile organic compound control

021, 022, 131, 133, 510	Thermal afterburner	Combustion temperature or inlet and outlet temperatures	Record temperatures at least once every 15 minutes
019, 020, 109, 116, 509	Catalytic afterburner	Inlet and outlet temperatures; and catalyst bed reactivity as per manufacturer's specifications	Record temperatures or manual readings at least once every 15 minutes; and record results of catalyst bed reactivity
023	Flaring	Temperature indicating presence of a flame	Record temperatures at least once every 15 minutes

Statutory Authority: *MS s 116.07*

History: *19 SR 1345; 20 SR 2316; 23 SR 2224; 32 SR 904*

EMISSION STANDARDS FOR VISIBLE AIR CONTAMINANTS

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.

Statutory Authority: *MS s 116.07 subd 4*

History: *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.

Statutory Authority: *MS s 116.07*

History: *18 SR 614; 22 SR 1237; 23 SR 145*

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. For the purposes of this part, "new emission facility" means an emission facility on which construction, modification, or reconstruction commenced after January 31, 1977.

Statutory Authority: *MS s 116.07*

History: *18 SR 614; 22 SR 1237*

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.

Performance tests shall be conducted according to the requirements of this part and parts 7017.2001 to 7017.2060.

Statutory Authority: *MS s 116.07*

History: *18 SR 614; 18 SR 1412*

7011.0120 OPACITY STANDARD ADJUSTMENT.

Subpart 1. **Application for permit modification.** An owner or operator of an emission facility may file an application for a permit modification under chapter 7007 for adjustment of the opacity standard applicable to an emissions unit. In addition to the items required under chapter 7007, the application must contain data that demonstrates that:

A. based on tests conducted under parts 7017.1002 to 7017.2060, the emissions unit is in compliance with the applicable standard of performance for particulate matter and all other standards of performance, except the opacity standard;

B. the stationary source is in compliance with all applicable standards of performance except the opacity standard at the emissions unit for which adjustments are being sought or have already been permitted by the agency; and

C. the stationary source was operated in a manner to minimize the opacity of emissions at the emissions unit during the performance tests conducted under item A.

Subp. 2. **Atmospheric dispersion modeling.** If the data submitted under subpart 1 indicates that an adjustment of the opacity standard may cause or contribute to a violation of an ambient air quality standard, the agency shall require the owner or operator to conduct atmospheric dispersion modeling and include the results of the modeling in the application for a permit modification. However, a stationary source that has potential emissions of particulate matter of less than 25 tons per year is not required to conduct modeling. Modeling must be performed according to "Guidelines on Air Quality Models," EPA-450/2-78-027R, as amended by supplemental updates, or methods that the commissioner finds to be comparably reliable.

The Guidelines are incorporated by reference. The Guidelines are written and published by the USEPA, Office of Air and Radiation, Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina 27711. The guidelines are subject to frequent change and are available from the Minnesota State Law Library, 25 Rev. Dr. Martin Luther King Jr. Blvd., Saint Paul, Minnesota 55155.

Subp. 3. **Opacity adjustment determination and permit modification.** The agency shall set an adjusted opacity standard at the most restrictive level which the performance tests conducted under subpart 1, items A and C demonstrate the emissions unit is capable of meeting and shall modify the permit to establish the adjusted opacity standard, if the requirements of subparts 1 and 2 are met and the stationary source, with the adjusted opacity standard, would meet any one of the following:

A. not cause or contribute to a violation of an ambient air quality standard;

B. have potential emissions of particulate matter of less than 25 tons per year and less than one ton per day; or

C. contribute less than one $\mu\text{g}/\text{m}^3$ to an annual ambient particulate matter standard violation and less than five $\mu\text{g}/\text{m}^3$ to a 24-hour ambient particulate matter standard violation.

Statutory Authority: *MS s 116.07*

History: *8 SR 2275; L 1987 c 186 s 15; 13 SR 2154; 18 SR 614; 18 SR 1412; 23 SR 1764; 23 SR 2224*

CONTROL OF FUGITIVE PARTICULATE MATTER

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. All persons shall take reasonable precautions to prevent the discharge of visible fugitive dust emissions beyond the lot line of the property on which the emissions originate. 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.

Statutory Authority: *MS s 116.07*

History: *L 1987 c 186 s 15; 18 SR 614; 20 SR 2316*

7011.0300 [Repealed, 21 SR 693]

7011.0305 [Repealed, 21 SR 693]

7011.0310 [Repealed, 21 SR 693]

7011.0315 [Repealed, 21 SR 693]

7011.0320 [Repealed, 21 SR 693]

7011.0325 [Repealed, 21 SR 693]

7011.0330 [Repealed, 21 SR 693]

7011.0400 [Repealed, 22 SR 1237]

7011.0405 [Repealed, 22 SR 1237]

7011.0410 [Repealed, 22 SR 1237]

INDIRECT HEATING FOSSIL-FUEL-BURNING EQUIPMENT

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.

Statutory Authority: *MS s 116.07 subd 4*

History: *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 SO₂ standard for liquid fossil fuels expressed in lbs per million Btu (nanograms/joule); and

b is the allowable SO₂ 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.

Statutory Authority: *MS s 116.07 subd 4*

History: *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 existing 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.

Subp. 3. **Definition.** For the purposes of this part and part 7011.0545, "existing indirect heating equipment" means indirect heating equipment on which construction, modification, or reconstruction did not commence after January 31, 1977.

Statutory Authority: *MS s 116.07*

History: 18 SR 614; 22 SR 1237; 23 SR 145

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.

Subp. 3. **Definition.** For the purposes of this part and part 7011.0550, "new indirect heating equipment" means indirect heating equipment on which construction, modification, or reconstruction commenced after January 31, 1977.

Statutory Authority: MS s 116.07

History: 18 SR 614; 22 SR 1237; 23 SR 145

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.

Statutory Authority: MS s 116.07 subd 4

History: 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.

Statutory Authority: MS s 116.07 subd 4

History: 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 SO₂;
- E. Method 7 for concentration of NO_x; and
- F. Method 9 for visual determination of opacity.

Statutory Authority: *MS s 116.07 subd 4*

History: *L 1987 c 186 s 15; 18 SR 614*

7011.0535 PERFORMANCE TEST PROCEDURES.

Subpart 1. **In general.** Performance tests shall be conducted according to the requirements of this part and parts 7017.2001 to 7017.2060.

Subp. 2. **Method 1.** The sampling site, as selected by Method 1, shall be the same for each pollutant during a performance test.

Subp. 3. **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. 4. **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. 5. **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. 6. **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. 7. **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. %O₂ = 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. The owner or operator may use either subitem (1) or (2) to determine the value of F. F = factor representing a ratio of the volume of dry flue gases generated to the calorific value of the fuel combusted.

(1) Values of F are given as follows:

(a) for anthracitic coal according to A.S.T.M. D388-66, $F = 2.723 \times 10^{-7}$ dscm/J (10140 dscf/10⁶ Btu);

(b) for subbituminous and bituminous coal according to A.S.T.M. D388-66, $F = 2.637 \times 10^{-7}$ dscm/J (9820 dscf/10⁶ Btu);

(c) for liquid fossil fuels including crude, residual, and distillate oils, $F = 2.476 \times 10^{-7}$ dscm/J (9220 dscf/10⁶ Btu); and

(d) for gaseous fossil fuels including natural gas, propane, and butane, $F = 2.347 \times 10^{-7}$ dscm/J (8740 dscf/10⁶ Btu).

(2) An owner or operator may use the following equation to determine an F factor (dscf/10⁶ Btu):

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

where:

(a) 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

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

E. 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;

F₁ = the value of F for gaseous fossil fuels according to item D or E;

F₂ = the value of F for liquid fossil fuels according to item D or E; and

F₃ = the value of F for solid fossil fuels according to item D or E;

F. 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. 8. **Alternate method.** When the emission factor cannot be calculated by means of the method outlined in subpart 7, 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. 9. **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.

Statutory Authority: *MS s 116.07*

History: *18 SR 614; 18 SR 1412; 22 SR 1237*

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.

Statutory Authority: *MS s 116.07 subd 4*

History: *L 1987 c 186 s 15; 18 SR 614*

7011.0545 TABLE I: EXISTING INDIRECT HEATING EQUIPMENT.

RATED HEAT INPUT OF THE INDIRECT HEATING EQUIPMENT	RATED HEAT INPUT OF ALL DIRECT AND INDIRECT HEATING EQUIPMENT AT THE PARTICULAR LOCATION	EMISSION LIMITATIONS LBS. PER MILLION BTU		
		Particulate Matter	Solid Fuels	Liquid Fuels
Million BTU/Hr.	Million BTU/Hr.			
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

Statutory Authority: *MS s 116.07 subd 4*

History: *18 SR 614*

7011.0550 TABLE II: NEW INDIRECT HEATING EQUIPMENT.

RATED HEAT INPUT OF THE INDIRECT HEATING EQUIPMENT	RATED HEAT INPUT OF ALL DIRECT AND INDIRECT HEATING EQUIPMENT AT THE PARTICULAR LOCATION	EMISSION LIMITATIONS							
		LBS. PER MILLION BTU SO ₂		LBS. PER MILLION BTU NO _x *		LBS. PER MILLION BTU PARTICULATE MATTER		LBS. PER MILLION BTU LIQUID FUELS	
Million BTU/Hr.	Million BTU/Hr.	Solid Fuels	Liquid Fuels	Solid Fuels	Gaseous Fuels	All Fuels	Solid Fuels	Liquid Fuels	Liquid Fuels
A. Within Minneapolis-St. Paul Air Quality Control Region									
Greater than 250	Greater than 250	1.2	0.8	0.7	0.2	0.1	1.2	0.8	0.3
Greater than 100 but less than or equal to 250	Greater than 250	3.0	1.6	N.A.**	N.A.	0.1	3.0	1.6	N.A.
Less than or equal to 100	Greater than 250	3.0	1.6	N.A.	N.A.	0.4	3.0	1.6	N.A.
Less than or equal to 250	Less than or equal to 250	4.0	2.0	N.A.	N.A.	0.4	4.0	2.0	N.A.
B. Within the City of Duluth									
Greater than 250	Greater than 250	1.2	0.8	0.7	0.2	0.1	1.2	0.8	0.3
Greater than 100 but less than or equal to 250	Greater than 250	4.0	2.0	N.A.	N.A.	0.1	4.0	2.0	N.A.
Less than or equal to 100	Greater than 250	4.0	2.0	N.A.	N.A.	0.4	4.0	2.0	N.A.
Less than or equal to 250	Less than or equal to 250	N.A.	N.A.	N.A.	N.A.	0.4	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	1.2	0.8	0.7	0.2	0.1	1.2	0.8	0.3
Less than or equal to 250	Greater than 250	4.0	2.0	N.A.	N.A.	0.4	4.0	2.0	N.A.
Less than or equal to 250	Less than or equal to 250	N.A.	N.A.	N.A.	N.A.	0.4	N.A.	N.A.	N.A.

*NO_x expressed as NO₂
 **N.A.--Not applicable

Statutory Authority: MS s 116.07 subd 4

History: 18 SR 614

7011.0551 RECORD KEEPING AND REPORTING FOR INDIRECT HEATING UNITS COMBUSTING SOLID WASTE.

Subpart 1. **Application.** The owner or operator of indirect heating equipment combusting mixed municipal solid waste or refuse-derived fuel which makes up 30 percent or less by weight of total fuel input, as determined by subpart 2, shall comply with the conditions of Minnesota Statutes, section 116.90, and the conditions of this part. If the unit combusts more than 30 percent of mixed municipal solid waste or refuse-derived fuel, parts 7011.1201 to 7011.1290 apply.

Subp. 2. **Calculation.** The fuel feed stream composition calculation shall be the ratio of the weights of mixed municipal solid waste and refuse-derived fuel to mixed municipal solid waste, refuse-derived fuel, and all other fuels delivered to the combustion chamber. The calculation shall be made for each 24-hour period that the equipment is operated.

Subp. 3. **Log.** The owner or operator shall maintain an operating log where the date, weights of mixed municipal solid waste and refuse-derived fuel combusted, weight of each other fuel combusted, and the result of the calculation made in subpart 2 is recorded daily.

Subp. 4. **Report.** The owner or operator shall submit to the commissioner a quarterly report containing the date, weights of mixed municipal solid waste and refuse-derived fuel, and the weight of each other fuel combusted during the quarter. The reports shall be submitted within 30 days following December 30, March 30, June 30, and September 30 of each year.

Statutory Authority: *MS s 116.07*

History: *18 SR 2584; 22 SR 1975*

7011.0553 NITROGEN OXIDES EMISSION REDUCTION REQUIREMENTS FOR AFFECTED SOURCES.

Affected sources, as defined in part 7007.0100, subpart 4, shall comply with Code of Federal Regulations, title 40, part 76, as amended, entitled "Acid Rain Nitrogen Oxides Emission Reduction Program," which is adopted and incorporated by reference.

Statutory Authority: *MS s 116.07*

History: *19 SR 1666*

DIRECT HEATING FOSSIL-FUEL-BURNING EQUIPMENT

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.

Statutory Authority: *MS s 116.07 subd 4*

History: *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 (SO₂) 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 SO₂ standard for liquid fossil fuels expressed in lbs per million Btu (g/million cal); and

b is the allowable SO₂ standard for solid fossil fuels expressed in lbs per million Btu (g/million cal).

Statutory Authority: *MS s 116.07 subd 4*

History: *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 tons 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 250 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.

Statutory Authority: *MS s 116.07*

History: *18 SR 614; 23 SR 145*

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 SO₂; and
- E. Method 9 for visual determination of opacity.

Statutory Authority: *MS s 116.07 subd 4*

History: *18 SR 614*

7011.0620 PERFORMANCE TEST PROCEDURES.

Subpart 1. **In general.** Performance tests shall be conducted according to the requirements of this part and parts 7017.2001 to 7017.2060.

Subp. 2. **Sampling site.** The sampling site, as selected by Method 1, shall be the same for each pollutant during a performance test.

Subp. 3. **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. 4. **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. 5. **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. 6. **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. %O₂ = 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. The owner or operator may use either subitem (1) or (2) to determine the value of F. F = factor representing a ratio of the volume of dry flue gases generated to the calorific value of the fuel combusted.

(1) Values of F are given as follows:

(a) for anthracitic coal according to A.S.T.M. D388-66, F = 0.01139 dscm/10⁴ cal (101.4 dscf/10⁴ Btu);

(b) for subbituminous and bituminous coal according to A.S.T.M. D388-66, F = 0.01103 dscm/10⁴ cal (98.2 dscf/10⁴ Btu);

(c) for liquid fossil fuels including crude, residual, and distillate oils, F = 0.01036 dscm/10⁴ cal (92.2 dscf/10⁴ Btu); and

(d) for gaseous fossil fuels including natural gas, propane, and butane, F = 0.00982 dscm/10⁴ cal (87.4 dscf/10⁴ BTU).

(2) An owner or operator may use the following equation to determine an F factor (dscf/10⁴ Btu):

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

where:

(a) 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

(b) GHV is the gross heating value.

E. 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;

F₁ = the value of F for gaseous fossil fuels according to item D or E;

F₂ = the value of F for liquid fossil fuels according to item D or E;

F₃ = the value of F for solid fossil fuels according to item D or E.

F. 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.

Statutory Authority: *MS s 116.07*

History: *18 SR 614; 18 SR 1412; 22 SR 1237*

7011.0625 RECORD KEEPING AND REPORTING FOR DIRECT HEATING UNITS COMBUSTING SOLID WASTE.

Subpart 1. **Application.** The owner or operator of direct heating equipment combusting mixed municipal solid waste or refuse-derived fuel which makes up 30 percent or less by weight of total fuel weight input, as determined by subpart 2, shall comply with the conditions of Minnesota Statutes, section 116.90, and subparts 3 and 4. If the unit combusts more than 30 percent of mixed municipal solid waste or refuse-derived fuel, parts 7011.1201 to 7011.1290 apply.

Subp. 2. **Calculation.** The fuel feed stream composition calculation shall be the ratio of the weights of mixed municipal solid waste and refuse-derived fuel to mixed municipal solid waste, refuse-derived fuel, and all other fuels delivered to the combustion chamber. The calculation shall be made for each 24-hour period that the equipment is operated.

Subp. 3. **Log.** The owner or operator shall maintain an operating log where the date, weight of mixed municipal solid waste and refuse-derived fuel, weight of each other fuel combusted, and the result of the calculation made in subpart 2 is recorded daily.

Subp. 4. **Reports.** The owner or operator shall submit to the commissioner a quarterly report containing the date, weight of mixed municipal solid waste and refuse-derived fuel, and

weight of each other fuel combusted during the quarter. The reports shall be submitted within 30 days following December 30, March 30, June 30, and September 30 of each year.

Statutory Authority: *MS s 116.07*

History: *18 SR 2584; 22 SR 1975*

INDUSTRIAL PROCESS EQUIPMENT

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.

Statutory Authority: *MS s 116.07 subd 4*

History: *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.

Statutory Authority: *MS s 116.07 subd 4*

History: *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.

Statutory Authority: *MS s 116.07*

History: *18 SR 614; 23 SR 145*

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.

Statutory Authority: *MS s 116.07 subd 4*

History: *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.

Statutory Authority: *MS s 116.07 subd 4*

History: *18 SR 614*

7011.0725 PERFORMANCE TEST PROCEDURES.

Subpart 1. **In general.** Performance tests shall be conducted according to the requirements of this part and parts 7017.2001 to 7017.2060.

Subp. 2. **Special 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.

Statutory Authority: *MS s 116.07*

History: *18 SR 614; 18 SR 1412*

7011.0730 TABLE 1.

Process Weight Rate (pounds/hour)	Emission Rate (pounds/hour)
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.

Statutory Authority: *MS s 116.07*

History: *18 SR 614; 32 SR 904*

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

^aDry standard cubic feet per minute

^bGrains per dry standard cubic foot.

Statutory Authority: *MS s 116.07 subd 4*

History: *13 SR 2154; 18 SR 614*

7011.0800 [Repealed, 23 SR 2224]

7011.0805 [Repealed, 23 SR 2224]

7011.0810 [Repealed, 18 SR 580]

7011.0815 [Repealed, 23 SR 2224]

7011.0820 [Repealed, 23 SR 2224]

7011.0825 [Repealed, 23 SR 2224]

CONCRETE MANUFACTURING PLANT STANDARDS OF PERFORMANCE

7011.0850 DEFINITIONS.

Subpart 1. **Scope.** The definition in this part applies to the terms used in parts 7011.0850 to 7011.0859. The definitions in parts 7005.0100, 7007.0100, and 7011.0060 apply to the terms used in parts 7011.0850 to 7011.0859, unless the terms are otherwise defined in this part.

Subp. 2. [Repealed, 27 SR 1579]

Subp. 3. [Repealed, 27 SR 1579]

Subp. 4. [Repealed, 27 SR 1579]

Subp. 5. [Repealed, 27 SR 1579]

Subp. 6. **Fabric filter.** "Fabric filter" means a control device in which the incoming gas stream passes through a porous filter forming a dust cake.

Statutory Authority: *MS s 116.07*

History: *23 SR 1241; 27 SR 1579*

7011.0852 STANDARDS OF PERFORMANCE FOR CONCRETE MANUFACTURING PLANTS.

No owner or operator of a concrete manufacturing plant shall cause to be discharged into the atmosphere from the concrete manufacturing plant any emissions 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.

Statutory Authority: *MS s 116.07*

History: *23 SR 1241*

7011.0854 CONCRETE MANUFACTURING PLANT CONTROL EQUIPMENT REQUIREMENTS.

Subpart 1. **Operation of concrete manufacturing plant control equipment.** Unless otherwise allowed in a state or part 70 permit, emissions during cementitious material receiving from cement silos and other cementitious material storage devices shall pass through a fabric filter. For concrete manufacturing plants in operation on December 2, 1998, the owner or operator must install control equipment no later than December 2, 1999. For concrete manufacturing plants not in operation on December 2, 1998, the control equipment must be installed prior to operation of any concrete manufacturing plant.

Subp. 2. **Operation and maintenance of fabric filter control equipment.** The owner or operator of a concrete manufacturing plant shall perform the following on each piece of control equipment required in subpart 1:

A. properly operate and maintain the control equipment to function as it was designed. Proper operation and maintenance includes effective performance, adequate funding, and adequate operator staffing and training;

B. thoroughly conduct an internal and external inspection of control equipment at least annually, which often requires shutting down temporarily, and maintain a record of the activities conducted in the inspection including the activities completed, the date the activity was completed, and any corrective action taken; and

C. maintain a record of parts replaced, repaired, or modified.

Subp. 3. **Monitoring of fabric filter control equipment.** During cementitious material receiving, the owner or operator of a concrete manufacturing plant, or a designee, shall observe the outlet of each piece of control equipment required in subpart 1 for any visible emissions once each day cementitious material is received, and record the date and time period during which the observation was made and whether or not any visible emissions were observed. If visible emissions are observed, the owner or operator, or a designee, shall take all practical steps to modify operations to reduce the emissions and shall take corrective action to eliminate visible emissions prior to the following business day. The commissioner may require feasible and practical modifications in the operation to reduce emissions of air pollutants.

Subp. 4. **Record retention.** 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. The owner or operator shall maintain records for the current calendar year of operation at the concrete manufacturing plant. For all years prior to the current calendar year, the owner or operator shall maintain records at either the concrete manufacturing plant or at an office of the owner or operator of the concrete manufacturing plant.

Statutory Authority: *MS s 116.07*

History: *23 SR 1241*

7011.0857 PREVENTING PARTICULATE MATTER FROM BECOMING AIRBORNE.

No owner or operator of a concrete manufacturing plant 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 from a concrete manufacturing plant.

No owner or operator of a concrete manufacturing plant shall cause or permit a building or its appurtenances, a road, 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 owner or operator of a concrete manufacturing plant shall take reasonable precautions to prevent the discharge of visible fugitive dust emissions beyond the lot line of the property on which the emissions originate. The commissioner may require such reasonable measures as may be necessary to prevent particulate matter from becoming airborne including, but not limited to, application of water; application of commercially available dust suppressants; paving; frequent cleaning and sweeping of roads, driveways, and parking lots; use of curtains or socks for truck loading operations; use of water sprays during truck loading operations; use of water or commercially available dust suppressants on stockpiles or aggregate transfer points; and the planting and maintenance of vegetative ground cover.

Statutory Authority: *MS s 116.07*

History: *23 SR 1241*

7011.0859 SHUTDOWN AND BREAKDOWN PROCEDURES.

In the event of a shutdown or breakdown of process or control equipment that causes any increase in emissions of any regulated air pollutant, the owner or operator of a stationary source shall comply with the notification, operation changes, and all other requirements in part 7019.1000.

Statutory Authority: *MS s 116.07*

History: *23 SR 1241*

7011.0860 [Repealed, 27 SR 1579]

7011.0865 INCORPORATIONS BY REFERENCE.

A. For the purpose of part 7011.0870, the documents in items B and C are incorporated by reference. These documents are not subject to frequent change.

B. California Environmental Protection Agency, Air Resources Board, Vapor Recovery Certification Procedure CP-201, Certification Procedure for Vapor Recovery Systems of Dispensing Facilities, February 1, 2001. This publication is available through the Minitex interlibrary loan system.

C. United States Environmental Protection Agency, Office of Air Quality Planning and Standards, Design Criteria for Stage I Vapor Control Systems - Gasoline Service Stations, November 1975. This publication is available through the Minitex interlibrary loan system.

Statutory Authority: *MS s 116.07*

History: *27 SR 1579*

7011.0870 STAGE-ONE VAPOR RECOVERY.

Subpart 1. **Applicability.** The owner or operator of a gasoline service station required to install and operate a stage-one vapor recovery system shall comply with this part.

Subp. 2. **System design.** Stage-one vapor recovery systems must:

A. conform with the requirements of Design Criteria for Stage I Vapor Control Systems - Gasoline Service Stations as incorporated by reference in part 7011.0865;

B. incorporate a submerged fill pipe in each storage tank; and

C. have a vent system that is equipped with a pressure vacuum valve that complies with Vapor Recovery Certification Procedure CP-201, as incorporated by reference in part 7011.0865.

Subp. 3. **System operation and maintenance.**

A. The owner or operator of a gasoline service station with a vapor recovery system shall not accept gasoline without the vapor recovery system properly connected.

B. The owner or operator of a gasoline service station with stage-one vapor recovery shall:

(1) maintain and operate the vapor recovery system in accordance with manufacturer's specifications;

(2) promptly repair any malfunction of the system;

(3) keep on the premises a copy of the manufacturer's operation and maintenance instructions and make these instructions available to the commissioner or an authorized representative of the commissioner on request; and

(4) maintain system monitoring or testing devices in proper working order.

Statutory Authority: *MS s 116.07*

History: *27 SR 1579*

HOT MIX ASPHALT PLANTS

7011.0900 DEFINITIONS.

Subpart 1. **Scope.** The definitions in this part apply to the terms used in parts 7011.0900 to 7011.0920. The definitions in parts 7005.0100, 7007.0100, and 7011.0060 apply to the terms used in parts 7011.0900 to 7011.0920, unless the terms are defined in this part.

Subp. 2. **Asphalt plant control equipment.** "Asphalt plant control equipment" means the control equipment at a hot mix asphalt plant listed in part 7011.0917, subpart 7.

Subp. 3. **Existing hot mix asphalt plant.** "Existing hot mix asphalt plant" means a hot mix asphalt plant that is not a new hot mix asphalt plant.

Subp. 4. **Hot mix asphalt plant.** "Hot mix asphalt plant" means a facility used to manufacture hot mix asphalt paving materials by heating and drying aggregate and mixing with asphalt cements. "Hot mix asphalt plant" includes dryers; systems for screening, handling, storing, and weighing hot aggregate; systems for loading, transferring, and storing mineral filler; systems for mixing hot mix asphalt; and the loading, transfer, and storage systems associated with emission control systems.

Subp. 5. **New hot mix asphalt plant.** "New hot mix asphalt plant" means a hot mix asphalt plant that commences construction, modification, or reconstruction, as defined in Code of Federal Regulations, title 40, section 60.2, after June 11, 1973, and includes all hot mix asphalt plants subject to the new source performance standards incorporated by reference in part 7011.0909.

Statutory Authority: *MS s 116.07*

History: *18 SR 614; 20 SR 2253(NO. 42); 23 SR 2224*

7011.0903 COMPLIANCE WITH AMBIENT AIR QUALITY STANDARDS.

Subpart 1. **Fuel sulfur content limitation.** Notwithstanding part 7011.0913, no owner or operator of a hot mix asphalt plant shall use in the dryer burner any fuel with a sulfur content greater than 0.70 percent, unless:

- A. authorized by a part 70, state, or general permit; or
- B. compliance with part 7009.0080 has been demonstrated under subpart 2 for each dryer fuel with a sulfur content greater than 0.70 percent.

Subp. 2. **Modeling of emissions from high sulfur content fuels.** Prior to the use of each dryer fuel with a sulfur content greater than 0.70 percent, the owner or operator of a hot mix asphalt plant shall perform air dispersion modeling to determine whether burning that fuel would comply with the ambient air quality standard for sulfur dioxides (maximum one hour concentration not to be exceeded more than once per year) in part 7009.0080. The owner or operator shall model sulfur dioxide emissions using the most recent version of EPA's screen model described in SCREEN3 Model User's Guide, EPA-454/B-95-004, United States Environmental Protection Agency, Office of Air Quality Planning and Standards, September 1995, which is incorporated by reference and is subject to frequent change. This publication and copies of the SCREEN3 model are available from the Pollution Control Agency library through the Minitex interlibrary loan system, through the National Technical Information Service (NTIS), Springfield, VA, (703) 487-4650, or may be downloaded from the Support

Center for Regulatory Air Models (SCRAM) Bulletin Board System (BBS). The SCRAM BBS may be accessed at (919) 541-5742.

Subp. 3. Records required.

A. For any fuel used in the dryer burner, except natural gas, methane, butane, propane, gasoline, kerosene, diesel fuel, and No. 1 and No. 2 fuel oil, the owner or operator of a hot mix asphalt plant shall keep for each fuel delivery a record of a vendor certification or fuel analysis which shows the sulfur content of the fuel.

B. The owner or operator of a hot mix asphalt plant that has done modeling under subpart 2 shall keep a record of the modeling results. The record shall include:

- (1) the sulfur content of the fuel modeled;
- (2) the site modeled;
- (3) model output files; and
- (4) supporting calculations.

The owner or operator shall maintain the records required by this subpart for a minimum of five years from the date the record was made.

Subp. 4. Hot mix asphalt plants with registration permits. If the commissioner finds that a hot mix asphalt plant that has applied for or been issued a registration permit needs source-specific permit conditions to prevent violation of any ambient air quality standard, the commissioner shall require the owner or operator of the hot mix asphalt plant to apply for and obtain a part 70, state, or general permit. The owner or operator of a hot mix asphalt plant shall submit the required permit application within 120 days of the commissioner's written request under this subpart.

Subp. 5. Compliance with ambient air quality standards. Nothing in this part shall be construed to allow violation of any national or state ambient air quality standards. If the commissioner requests it, the owner or operator of a hot mix asphalt plant must demonstrate compliance with the national or state ambient air quality standards.

Statutory Authority: *MS s 116.07*

History: *20 SR 2253(NO. 42)*

7011.0905 STANDARDS OF PERFORMANCE FOR EXISTING HOT MIX ASPHALT PLANTS.

No owner or operator of an existing hot mix asphalt plant shall cause to be discharged into the atmosphere from the hot mix asphalt 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.

Statutory Authority: *MS s 116.07*

History: *18 SR 614; 20 SR 2253(NO. 42)*

7011.0910 [Repealed, 18 SR 580]

7011.0911 MAINTENANCE OF DRYER BURNER.

Subpart 1. **Annual tuning of dryer burner.** The owner or operator of a hot mix asphalt plant must tune the dryer burner for maximum combustion efficiency once each calendar year.

Subp. 2. **Daily check of dryer burner.** The owner or operator of a hot mix asphalt plant must do the following while producing hot mix asphalt each day except when burning natural gas or propane:

- A. read the fuel pressure gauge on the dryer burner; and
- B. check for a negative draft at the dryer burner inlet.

Subp. 3. **Records kept on dryer burner.** The owner or operator of a hot mix asphalt plant must maintain a record of:

- A. the dates of the annual tuning of the dryer burner;
- B. the daily reading from the fuel pressure gauge on the dryer burner except when burning natural gas or propane;
- C. whether there was a negative draft at the dryer burner inlet each day except when burning natural gas or propane; and
- D. any corrective actions taken as a result of the daily checks required by subpart 2.

Statutory Authority: *MS s 116.07*

History: *20 SR 2253(NO. 42)*

7011.0913 HOT MIX ASPHALT PLANT MATERIALS, FUELS, AND ADDITIVES OPERATING REQUIREMENTS.

Subpart 1. **Materials, fuels, and additives allowed.** Except as provided in subpart 3, the owner or operator of a hot mix asphalt plant is allowed to use only the materials, fuels, and additives designated in subpart 2 unless specifically disallowed in a part 70, state, or general permit.

Subp. 2. **List of authorized materials, fuels, and additives.**

A. The designated materials are clay, silt, sand, gravel, and crushed stone produced from naturally occurring geologic formations, without additives; recycled asphalt pavement; portland cement concrete; recycled sediments from asphalt plant scrubber operations; fines from asphalt plant fabric filter operations; asphalt cement; and hydrated lime.

B. The designated fuels for combustion are natural gas, methane, butane, and propane; gasoline, kerosene, diesel fuel, jet fuel, and fuel oils (No. 1, No. 2, No. 3, No. 4, No. 5, No. 6); on-specification used oil as defined in part 7045.0020, subpart 60a, provided that

total halogens shall not exceed 1,000 parts per million; and virgin oil that is discarded before use and that otherwise meets the requirements of this item for on-specification used oil.

C. The designated additives are silicone, organic soaps, and other substances of a similar nature added to the asphalt cement.

Subp. 3. **Procedure for approval of additional materials, fuels, and additives.** The owner or operator may use materials, fuels, or additives not listed in subpart 2, if:

A. the use is specifically allowed by a part 70, state, or general permit; or

B. for hot mix asphalt plants with a registration permit, the commissioner has provided written approval of the use prior to its incorporation into asphalt or use as a fuel.

Requests under item B must be received by the commissioner at least 60 days before the materials, fuels, or additives are used. The requests must be on a form provided by the commissioner. The owner or operator shall conduct performance testing under parts 7017.2001 to 7017.2060 to determine actual emission rates from the use of the material, fuel, or additive. The actual emission rates shall be used to determine actual emissions under part 7007.1130, subpart 3, for hot mix asphalt plants that hold option D registration permits. The commissioner shall deny these requests if the commissioner determines that use of the material would endanger human health or the environment or would subject the hot mix asphalt plant to different applicable requirements or different requirements under chapter 7007. The performance testing required by this subpart may be waived by the commissioner when the nonlisted material is substantially similar in composition to a listed material, or when the material has already been the subject of performance tests at a similar hot mix asphalt plant.

Subp. 4. **Compliance.** The owner or operator must comply with the conditions on the use of the materials, fuels, and additives established in the part 70, state, or general permit if the use is authorized under subpart 3, item A. The owner or operator must comply with the conditions on the use of the materials, fuels, and additives set forth in the commissioner's written approval if the use is authorized under subpart 3, item B.

Subp. 5. **Records required.** The owner or operator shall keep records of the materials, fuels, and additives used and the amount used on a calendar year basis. The owner or operator shall maintain the records required under this subpart for a minimum of five years from the date the record was made.

Statutory Authority: *MS s 116.07*

History: *20 SR 2253(NO. 42); 28 SR 1482*

7011.0915 [Repealed, 20 SR 2253(NO. 42)]

7011.0917 ASPHALT PLANT CONTROL EQUIPMENT REQUIREMENTS.

Subpart 1. **Operation of asphalt plant control equipment.** The owner or operator of a hot mix asphalt plant shall operate in compliance with this part all asphalt plant control equipment located at the stationary source whenever operating the emission units controlled by the asphalt plant control equipment. Unless specifically allowed by a part 70, state, or general permit, each piece of asphalt plant control equipment shall at all times be operated such that the monitoring parameters listed in subpart 7 are in the range established by the control

equipment manufacturer's specifications, or within the operating parameters established by the commissioner as the result of the most recent performance test conducted under parts 7017.2001 to 7017.2060, if those are more restrictive.

The owner or operator applying for a registration permit or capped permit may request an alternative range to the control equipment manufacturer's specifications, if the proposed range is based on two previous years of compliant monitoring data supplied with the request. For hot mix asphalt plants applying for a registration permit in operation on April 22, 1996, this request shall be made by the application deadline listed in part 7007.0350, subpart 1, item A. The proposed operating range shall be deemed acceptable unless notified otherwise in writing within 30 days of receipt by the commissioner. The commissioner shall deny a request for an alternative monitoring parameter range if the commissioner finds that:

- A. an owner or operator has failed to disclose fully all facts relevant to the proposed monitoring parameter range of the asphalt plant control device or the owner or operator has knowingly submitted false or misleading information to the agency;
- B. operation of the control device in the monitoring parameter range proposed by the owner or operator would endanger human health or the environment, or subject the hot mix asphalt plant to different applicable requirements or requirements under chapter 7007; or
- C. the proposed range is not supported by the data supplied with the request.

Subp. 2. **Maintenance of asphalt plant control equipment.** The owner or operator of a hot mix asphalt plant shall maintain each piece of asphalt plant control equipment as designed to ensure compliance with applicable requirements, comply with source-specific maintenance requirements specified in a part 70, state, or general permit, and shall perform the following on each piece of asphalt plant control equipment unless otherwise specified in a part 70, state, or general permit:

- A. thoroughly inspect all asphalt plant control equipment, including structural components, annually;
- B. inspect ducts, connections, and housings for leaks monthly;
- C. check monitoring equipment daily to ensure it is operating in the range required by subpart 1, for example: pressure gauges, temperature indicators, flow gauges, and recorders;
- D. calibrate all monitoring equipment annually;
- E. for fabric filter control devices: check exterior cleaning system equipment and its operation daily; and check interior cleaning equipment and its operation, and the clean air side of bags for evidence of leaks at least monthly; and
- F. for control devices using water such as spray towers, scrubbers, and wet cyclone separators: check sediment level in non-self-cleaning ponds daily so as not to exceed one-half the pond depth, and check to ensure the pH of the water leaving the control device is between five and ten weekly; and check accessible dampers, spray bars, nozzles, and demister monthly for wear.

The owner or operator shall maintain a record of activities conducted in items A to F, consisting of the activity completed, the date the activity was completed, and any corrective action taken; and the owner or operator shall maintain the records required by this subpart for a minimum of five years from the date the record was made.

Subp. 3. **Installation of monitoring equipment.** The owner or operator of a hot mix asphalt plant shall install monitoring equipment to measure operating hours as specified in part

7011.0922, subpart 3, and the monitoring parameters for all asphalt plant control equipment as specified by subpart 7. For hot mix asphalt plants not in operation on April 22, 1996, the monitoring equipment must be installed prior to operation of any hot mix asphalt plant equipment controlled by the control equipment. For hot mix asphalt plants in operation on April 22, 1996, the owner or operator must install monitoring equipment no later than 30 days after April 22, 1996.

Subp. 4. **Operation of monitoring equipment.** The owner or operator of a hot mix asphalt plant shall operate in compliance with this part the monitoring equipment for each piece of asphalt plant control equipment at all times the asphalt plant control equipment is required to operate.

Subp. 5. **Shutdown and breakdown procedures.** In the event of a shutdown or breakdown of asphalt plant control equipment, the owner or operator of a hot mix asphalt plant shall comply with part 7019.1000.

Subp. 6. **Deviation of asphalt plant control equipment from operating specifications.** Unless otherwise specified in a part 70, state, or general permit, the owner or operator of a stationary source shall report to the commissioner any recorded reading outside of the specification or range of specifications allowed by subpart 1 from any monitored operating parameter required by subpart 7, in accordance with the deadlines in part 7007.0800, subpart 6, item A, subitem (2), except that owners and operators with a registration permit option D or capped permit shall make this report only if a deviation occurred in the reporting period.

Subp. 7. **Monitoring and record keeping for asphalt plant control equipment.** Unless otherwise specified in a part 70, state, or general permit, the owner or operator of a hot mix asphalt plant shall comply with the monitoring and record keeping required by the table in this subpart for asphalt plant control equipment. The owner or operator shall maintain the records required by this subpart for a minimum of five years from the date the record was made.

EPA ID NO.	POLLUTION CONTROL EQUIPMENT TYPE	MONITORING PARAMETERS	RECORD KEEPING REQUIREMENT
001, 002, 003	"Miscellaneous Wet Scrubber" means a control device in which the particulates in the incoming gas stream are entrained by a liquid and the control device is not a spray tower, venturi scrubber, impingement plate scrubber, or a wet cyclone separator.	Pressure drop, liquid flow rate, and water pressure	Record each parameter every calendar day of operation

016	"Fabric Filter" (Bag House) means a control device in which the incoming gas stream passes through a porous fabric filter forming a dust cake.	Pressure drop	Record every calendar day of operation
052	"Spray Tower" means a control device in which the incoming gas stream passes through a chamber in which it contacts a liquid spray.	Liquid flow rate, pressure drop, and water pressure	Record each parameter every calendar day of operation
053	"Venturi Scrubber" means a control device in which the incoming gas stream passes through a venturi into which low pressure liquid is introduced.	Pressure drop, liquid flow rate, and water pressure	Record each parameter every calendar day of operation
055	"Impingement Plate Scrubber" means a control device in which the incoming gas stream passes a liquid spray and is then directed at high velocity into a plate.	Pressure drop, liquid flow rate, and water pressure	Record each parameter every calendar day of operation
085	"Wet Cyclone Separator" or "Cyclonic Scrubbers" means a cyclonic device that sprays water into a cyclone.	Pressure drop, water pressure, and water flow rate	Record each parameter every calendar day of operation
019	"Afterburners" (thermal or catalytic oxidation) means a device used to reduce VOC's to the products of combustion through thermal (high temperature) oxidation or catalytic (use of a catalyst) oxidation in a combustion chamber.	Combustion temperature or inlet and outlet temperatures	Continuous hard copy readout of temperatures or manual readings every 15 minutes of operation

Statutory Authority: *MS s 116.07*

History: *20 SR 2253(NO. 42); 22 SR 1237; 29 SR 626*

7011.0920 PERFORMANCE TESTS.

Subpart 1. **Methods and procedures.** Performance tests shall be conducted according to the requirements of this part and parts 7017.2001 to 7017.2060.

Subp. 2. **Performance test frequency for hot mix asphalt plants using fabric filters.** If an owner or operator of a hot mix asphalt plant uses a fabric filter, including, but not limited to, EPA ID No. 016 listed in part 7011.0917, subpart 7, as the primary or secondary control

equipment to remove particulate matter, then the owner or operator shall conduct performance testing for particulate matter and opacity as required by part 7017.2020, subpart 1.

Subp. 3. **Performance test frequency for hot mix asphalt plants with control equipment that uses liquid to remove pollutants.** If an owner or operator operates a hot mix asphalt plant that has only control equipment that uses liquid to remove pollutants or has a secondary control device that uses liquid to remove pollutants, including, but not limited to, EPA ID Nos. 052, 053, 055, and 085 listed in part 7011.0917, subpart 7, then the owner or operator shall conduct performance testing for particulate matter and opacity as described in items A to E.

A. If the hot mix asphalt plant produced no more than 35,000 tons in each of the three previous calendar years and has a manufacturer's rated capacity of 100 tons per hour or less at five percent moisture, then the owner or operator shall conduct performance testing as required by part 7017.2020, subpart 1.

B. Except as provided in item A, if the hot mix asphalt plant produced no more than 100,000 tons in any of the three previous calendar years, then the owner or operator shall conduct performance testing every three calendar years.

C. If the hot mix asphalt plant produced greater than 100,000 tons, but no more than 200,000 tons in any of the three previous calendar years, then the owner or operator shall conduct performance testing every two calendar years.

D. If the hot mix asphalt plant produced more than 200,000 tons in the previous calendar year, then the owner or operator shall conduct performance testing within 60 days of start-up in the following calendar year.

E. The owner or operator of a hot mix asphalt plant shall conduct additional performance testing as required by part 7017.2020, subpart 1.

Subp. 4. **Performance test required for all hot mix asphalt plants.** If the owner or operator of a hot mix asphalt plant has not conducted a performance test for particulate matter and opacity approved by the commissioner under parts 7017.2001 to 7017.2060 since January 1, 1991, the owner or operator must conduct such a performance test:

A. in 1996, for hot mix asphalt plants that are operated in the state in 1996; or

B. within 60 days after the hot mix asphalt plant begins operation in the state.

Statutory Authority: *MS s 116.07*

History: *18 SR 614; 18 SR 1412; 20 SR 2253(NO. 42)*

7011.0922 OPERATIONAL REQUIREMENTS AND LIMITATIONS FROM PERFORMANCE TESTS.

Subpart 1. **Throughput limit.** The owner or operator of a hot mix asphalt plant shall not exceed the production throughput at which compliance with part 7011.0905 or 7011.0909 was demonstrated during the plant's most recent performance test, unless authorized by subpart 2.

Subp. 2. **Certain exceptions to throughput limit.** Except as provided in items A and B, if a hot mix asphalt plant demonstrated compliance for particulate matter and opacity during its most recent performance test and its tested emission rate (gr/dscf or lb/hr) was less than 80

percent of the applicable rule or permit emission limit, then the owner or operator may increase production throughput ten percent over that allowed under subpart 1.

A. If a hot mix asphalt plant with a fabric filter control device has conducted a performance test since January 1, 1991, has demonstrated compliance for particulate matter and opacity, and its tested emission rate (gr/dscf or lb/hr) was less than 50 percent but greater than or equal to 25 percent of the applicable rule or permit emission limit, then the owner or operator may increase production throughput 15 percent over that allowed under subpart 1.

B. If a hot mix asphalt plant with a fabric filter control device has conducted a performance test since January 1, 1991, has demonstrated compliance for particulate matter and opacity, and its tested emission rate (gr/dscf or lb/hr) was less than 25 percent of the applicable rule or permit emission limit, then the owner or operator may increase production throughput 20 percent over that allowed by subpart 1.

Subp. 3. **Monitoring and record keeping required.** To determine compliance with subpart 1, the owner or operator of a hot mix asphalt plant must:

A. operate an accumulating hour meter on the dryer burner at all times the dryer burner is in operation;

B. record each day the plant's hours of operation as determined by the hour meter and total tons of hot mix asphalt produced; and

C. determine the production throughput by dividing the total tons of hot mix asphalt produced by the hours of operation for each calendar day of operation.

Statutory Authority: *MS s 116.07*

History: *20 SR 2253(NO. 42)*

7011.0925 [Renumbered 7011.0909]

BULK AGRICULTURAL COMMODITY FACILITIES

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.

Statutory Authority: *MS s 116.07 subd 1*

History: *8 SR 1675; 18 SR 614*

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. 2. **Federal requirements.** The owner, operator, or other person who conducts activities at a grain terminal elevator or grain storage elevator, of which construction, modification, or reconstruction commenced, as defined in Code of Federal Regulations, title 40, section 60.2, after August 3, 1978, shall meet the requirements of Code of Federal Regulations, title 40, part 60, subpart DD, as amended, entitled "Standards of Performance for Grain Elevators," which is adopted and incorporated by reference, except that decisions made by the administrator under Code of Federal Regulations, title 40, section 60.302(d)(3), are not delegated to the commissioner and must be made by the administrator.

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 part 7011.1015, 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;

D. a discharge of particulate matter from control equipment that exhibits greater than ten percent opacity; and

E. a discharge of particulate matter from control equipment that has a collection efficiency of less than 80 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 80 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.

Statutory Authority: *MS s 116.07*

History: *8 SR 1675; 18 SR 580; 18 SR 614; 23 SR 2224; 32 SR 904*

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.

Statutory Authority: *MS s 116.07 subd 1*

History: *8 SR 1675; L 1987 c 186 s 15; 18 SR 614*

7011.1015 CONTROL REQUIREMENTS SCHEDULE.

Date Construction, Modification or
Reconstruction Commenced

Facility Description

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

Statutory Authority: *MS s 116.07 subd 1*

History: *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.

Statutory Authority: *MS s 116.07 subd 4*

History: *L 1987 c 186 s 15; 18 SR 614*

7011.1105 STANDARDS OF PERFORMANCE FOR CERTAIN COAL HANDLING FACILITIES.

The owner or operator of any new coal handling facility, or an existing coal handling facility 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.

Statutory Authority: *MS s 116.07*

History: *13 SR 2154; 18 SR 614; 22 SR 1237*

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 part 7011.0150 for the control of fugitive particulate emissions. For the purposes of this part, "existing coal handling facility" means a coal handling facility on which construction, modification, or reconstruction did not commence after November 17, 1980.

Statutory Authority: *MS s 116.07*

History: *18 SR 614; 22 SR 1237*

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.

Statutory Authority: *MS s 116.07 subd 4*

History: *18 SR 614*

7011.1120 EXEMPTION.

During freezing temperatures, owners or operators shall not be required to apply water or dust suppressants.

Statutory Authority: *MS s 116.07 subd 4*

History: *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.

Statutory Authority: *MS s 116.07 subd 4*

History: *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.

Statutory Authority: *MS s 116.07 subd 4*

History: *L 1987 c 186 s 15; 18 SR 614*

7011.1135 PERFORMANCE TEST PROCEDURES.

Subpart 1. **In general.** Performance tests shall be conducted according to the requirements of this part and parts 7017.2001 to 7017.2060.

Subp. 2. **Special 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.

Statutory Authority: *MS s 116.07*

History: *L 1987 c 186 s 15; 18 SR 614; 18 SR 1412*

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.

Statutory Authority: *MS s 116.07 subd 4*

History: *18 SR 614*

WASTE COMBUSTORS

7011.1201 DEFINITIONS.

Subpart 1. **Scope.** As used in parts 7007.0200, 7007.0250, 7007.0501, 7007.0801, and 7011.1201 to 7011.1290, the following words have the meanings defined in this part.

Subp. 1a. **Statutes and other rules.** The definitions in Minnesota Statutes, section 116.06, and in part 7001.0010 and chapters 7005, 7007, 7009, 7011, 7017, and 7019 apply to terms in parts 7011.1201 to 7011.1290, unless the terms are specifically otherwise defined in this part.

Subp. 2. [Repealed, 18 SR 2584]

Subp. 3. [Repealed, 18 SR 2584]

Subp. 4. [Repealed, 18 SR 2584]

Subp. 5. **Accurate and valid data.** "Accurate and valid data" means data which provides the measurement of emissions of an air contaminant from the waste combustor or operating parameters of a component of the waste combustor. For continuously monitored emissions, data shall be considered accurate and valid immediately upon recording. For emissions for which a performance test is conducted, data shall be considered accurate and valid 14 days after the waste combustor owner or operator receives the performance test report, unless the

waste combustor owner or operator notifies the commissioner within the same 14 days that the owner or operator can show reason for rejecting the data.

Subp. 6. **Air contaminant.** "Air contaminant" has the meaning given in Minnesota Statutes, section 116.06, subdivision 2.

Subp. 7. [Repealed, 22 SR 1975]

Subp. 8. **Chief facility operator.** "Chief facility operator" means the person in direct charge and control of the operation of a waste combustor who is responsible for daily on-site supervision, technical direction, management, and overall performance of the facility.

Subp. 9. **Class A waste combustor.** "Class A waste combustor" means that the design capacity for a waste combustor unit is 93.75×10^6 Btu/hr or more, the waste combustor units combust primarily mixed municipal solid waste or RDF, and construction of the waste combustor was commenced on or before September 20, 1994.

Subp. 10. [Repealed, 22 SR 1975]

Subp. 11. **Class C waste combustor.** "Class C waste combustor" means that the total of the design capacities for all waste combustor units at a stationary source is 15×10^6 Btu/hr or more and less than 93.75×10^6 Btu/hr, the waste combustor units combust primarily mixed municipal solid waste or RDF, and construction of the waste combustor was commenced on or before September 20, 1994.

Subp. 12. **Class D waste combustor.** "Class D waste combustor" means that the design capacity of a waste combustor unit is 3.0×10^6 Btu/hr or more, combusts waste other than mixed municipal solid waste or RDF, and was operating on or before December 20, 1989.

Subp. 13. **Class I waste combustor.** "Class I waste combustor" means that the design capacity for a waste combustor unit is 93.75×10^6 Btu/hr or more, and that construction of the unit is commenced after September 20, 1994, or modification or reconstruction is commenced after June 19, 1996.

Subp. 14. **Class II waste combustor.** "Class II waste combustor" means that the design capacity for a waste combustor unit is 15×10^6 Btu/hr or more and less than 93.75×10^6 Btu/hr, and that construction of the unit is commenced after September 20, 1994, or modification or reconstruction is commenced after June 19, 1996.

Subp. 15. **Class III waste combustor.** "Class III waste combustor" means that the design capacity for a waste combustor unit is 3.0×10^6 Btu/hr or more and less than 15×10^6 Btu/hr, and the waste combustor is issued a permit for construction after December 20, 1989.

Subp. 16. **Class IV waste combustor.** "Class IV waste combustor" means that the design capacity for a waste combustor unit is less than 3.0×10^6 Btu/hr.

Subp. 17. **Cofired unit.** "Cofired unit" means an emissions unit which combusts mixed municipal solid waste or RDF with a fuel that is not mixed municipal solid waste or RDF and 30 percent or less by weight of the total fuel input is comprised in aggregate of mixed municipal solid waste or RDF as measured on a 24-hour basis. The fuel feed stream composition calculation shall be the ratio of the weights of mixed municipal solid waste and RDF to mixed municipal solid waste, RDF, and all other fuels delivered to the combustion chamber.

Subp. 18. **Crematorium.** "Crematorium" means a furnace used to reduce the dead human body to ashes and inorganic bone fragments.

Subp. 19. **Design capacity.** "Design capacity" means the hourly throughput of the waste combustor unit based on heat input from solid waste of the combustion system stated by the manufacturer or designer, based on accepted design and engineering practices. For a noncontinuous feed system, design capacity means the total heat input from solid waste per cycle.

Subp. 20. **Dumpstack.** "Dumpstack" means a stack, chimney, vent, or other functionally equivalent opening by which uncontrolled emissions are vented into the ambient air.

Subp. 21. **Energy recovery facility.** "Energy recovery facility" means an emissions unit or emission facility used to capture the heat value of solid waste for conversion to steam, electricity, or immediate heat value by direct combustion or by burning an intermediate fuel product derived from solid waste. For the purposes of parts 7011.1201 to 7011.1290, this definition does not include landfill facilities that recover methane gases, or facilities processing solid waste to convert the solid waste to an intermediate fuel product.

Subp. 22. **Fluidized bed combustor.** "Fluidized bed combustor" means a classification of combustion systems in which the bed material is maintained in a fluidized state in the primary zone of combustion. Combustion systems included in this classification include bubbling fluidized bed and circulating fluidized bed combustors.

Subp. 23. **Four-hour block average.** "Four-hour block average" means the average of all hourly emission rates when the emissions unit is operating and combusting solid waste measured over six discrete four-hour periods beginning at midnight.

Subp. 24. **Hazardous waste.** "Hazardous waste" has the meaning given in Minnesota Statutes, section 115B.02, subdivision 9.

Subp. 25. **Household batteries.** "Household batteries" has the meaning given in Minnesota Statutes, section 115A.961.

Subp. 26. **Household hazardous waste.** "Household hazardous waste" has the meaning given in Minnesota Statutes, section 115A.96, subdivision 1, paragraph (b).

Subp. 27. **Incinerator.** "Incinerator" means any emissions unit, emission facility, furnace, or other device used for the primary purpose of reducing the volume of solid waste by removing combustible matter.

Subp. 28. **Industrial solid waste.** "Industrial solid waste" has the meaning given in part 7035.0300, subpart 45.

Subp. 29. **Infectious waste.** "Infectious waste" has the meaning given in Minnesota Statutes, section 116.76, subdivision 12.

Subp. 30. **Initial start-up.** "Initial start-up" means the date on which solid waste is first fired in a new, modified, retrofitted, or reconstructed emissions unit.

Subp. 31. **Mass burn.** "Mass burn" means a classification of field-erected combustion systems in which solid waste is combusted that has not been subjected to shredding or size

classification. Combustion systems included in this classification are mass burn waterwall, mass burn refractory, and mass burn rotary waterwall combustors.

Subp. 32. **Maximum demonstrated capacity.** For waste combustors with heat recovery, "maximum demonstrated capacity" means the maximum four-hour integrated average load for each waste combustor unit achieved during four consecutive hours during the most recent test during which compliance with the PCDD/PCDF limit in part 7011.1225 is achieved, as measured by steam flow or alternative method as approved by the commissioner. For waste combustors without heat recovery, "maximum demonstrated capacity" means the maximum four-hour arithmetic average input rate for each waste combustor unit achieved during the most recent test during which compliance with the PCDD/PCDF limit was achieved. If PCDD/PCDF testing is not required to be conducted, the maximum demonstrated capacity is the capacity achieved during the conduct of the most recent test for which compliance with particulate matter standards and carbon monoxide in part 7011.1225 is demonstrated.

Subp. 33. **Metals recovery incinerator.** "Metals recovery incinerator" means a furnace or incinerator used primarily to recover precious and nonprecious metals by burning the combustible fraction from waste. An aluminum sweat furnace is not a metals recovery incinerator.

Subp. 34. **Mixed municipal solid waste.** "Mixed municipal solid waste" has the meaning given in Minnesota Statutes, section 115A.03, subdivision 21.

Subp. 34a. **Modification or modified municipal waste combustor unit.** "Modification" or "modified municipal waste combustor unit" means a municipal waste combustor unit to which changes have been made after June 19, 1996, if the cumulative cost of the changes, over the life of the unit, exceed 50 percent of the original cost of construction and installation of the unit (not including the cost of any land purchased in connection with such construction or installation) updated to current costs; or any physical change in the municipal waste combustor unit or change in the method of operation of the municipal waste combustor which increases the amount of any air pollutant emitted by the unit for which standards have been established under section 129 or section 111 of the Clean Air Act. Increases in the amount of any air pollutant emitted by the municipal waste combustor unit are determined at 100 percent physical load capability and downstream of all air pollution control devices, with no consideration given for load restrictions based on permits or other nonphysical operational restrictions.

Subp. 35. **Modular waste combustor.** "Modular waste combustor" means a classification of combustion systems that are not field-erected, and have more than one combustion chamber. Combustion systems included in this classification are modular starved air and modular excess air combustors.

Subp. 36. **Normal start-up.** "Normal start-up" means the period of time between the initial start-up of a new, modified, retrofitted, or reconstructed emissions unit of a waste combustor, or emissions unit of a waste combustor that is modified, retrofitted, or reconstructed to meet the requirements of parts 7011.1201 to 7011.1290, and the lesser of 60 days after achieving the maximum production rate at which the emissions unit will operate or 180 days after initial start-up.

If no modification, retrofit, or reconstruction of a Class D or IV waste combustor is necessary to meet the requirements of parts 7011.1201 to 7011.1290, then normal start-up

means the period of time between June 20, 1994, and the applicable date in part 7011.1215, subpart 6.

If no modification, retrofit, or reconstruction of a Class A or C waste combustor is necessary to meet the requirements of parts 7011.1201 to 7011.1290, then normal start-up means the period of time between May 18, 1998, and the date by which the waste combustor must demonstrate compliance with waste combustor emission standards of part 7011.1225, as allowed in part 7011.1215, subparts 5 and 5a.

Subp. 36a. **One-hour average.** "One-hour average" means the arithmetic mean of all the individual data points collected by a monitor in an hour. Each hourly average begins at the top of the hour and ends at the top of the succeeding hour.

Subp. 37. **Operator supervisor.** "Operator supervisor" means the Class IV waste combustor personnel who has direct responsibility for control of the operation of a waste combustor and is responsible for overall on-site supervision, technical direction, management, and performance of the facility. This personnel may also be responsible for operating the waste combustor including start-up, operation, shutdown, and maintenance of the equipment.

Subp. 38. **Paint burn-off oven.** "Paint burn-off oven" means an oven or furnace designed, installed, and operated to burn off paint overspray from hooks and other painting process accessories.

Subp. 39. **Pathological waste.** "Pathological waste" has the meaning given in Minnesota Statutes, section 116.76, subdivision 14.

Subp. 40. **Polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans or PCDD/PCDF.** "Polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans" or "PCDD/PCDF" means the total of tetra-through octa-polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans.

Subp. 41. **Problem material.** "Problem material" has the meaning given in Minnesota Statutes, section 115A.03, subdivision 24a.

Subp. 42. **RDF stoker.** "RDF stoker" means a steam generating unit that combusts RDF in a semisuspension firing mode using air-fed distributors.

Subp. 42a. **Reconstruction.** "Reconstruction" means rebuilding a municipal waste combustor unit for which the reconstruction commenced after June 19, 1996, and the cumulative costs of the construction over the life of the unit exceed 50 percent of the original cost of construction and installation of the unit (not including any cost of land purchased in connection with the construction or installation) updated to current costs (current dollars).

Subp. 43. **Refuse-derived fuel or RDF.** "Refuse-derived fuel" or "RDF" has the meaning given in Minnesota Statutes, section 116.90, subdivision 1, paragraph (d).

Subp. 43a. **Retrofit.** "Retrofit" means the installation of air pollution control, combustion, or monitoring equipment to a waste combustor for purposes of reducing air pollution emissions. If installing air pollution control equipment, combustion equipment, or monitoring equipment would be a modification as defined in subpart 34a, or reconstruction as defined in subpart 42a, then the activity is not a retrofit.

Subp. 44. **Shift supervisor.** "Shift supervisor" means the person in direct charge and control of the operation of a waste combustor and who is responsible for on-site supervision, technical direction, management, and overall performance of the facility during an assigned shift.

Subp. 45. **Solid waste.** "Solid waste" has the meaning given in Minnesota Statutes, section 116.06, subdivision 22.

Subp. 45a. **Tires.** "Tires" has the meaning given in Minnesota Statutes, section 115A.90, subdivision 7.

Subp. 46. **Waste combustor.** "Waste combustor" means any emissions unit or emission facility where mixed municipal solid waste, solid waste, or refuse-derived fuel is combusted, and includes incinerators, energy recovery facilities, or other combustion devices. A metals recovery incinerator is a waste combustor. A combustion device combusting primarily wood, or at least 70 percent fossil fuel and wood in combination with up to 30 percent papermill wastewater treatment plant sludge, is not a waste combustor. A soil treatment facility, paint burn-off oven, wood heater, or residential fireplace is not a waste combustor.

Subp. 47. [Repealed, 22 SR 1975]

Subp. 48. **Wood.** "Wood" means wood, wood residue, bark, or any derivative fuel or residue thereof, in any form, including sawdust, sander dust, wood chips, wood scraps, slabs, millings, shavings, and processed pellets made from wood and other forest residues.

Subp. 49. **Wood heater.** "Wood heater" means an enclosed woodburning appliance capable of and intended for space heating and domestic water heating that meets the following criteria:

A. an air-to-fuel ratio in the combustion chamber averaging less than 35 to 1 as determined by the test procedure prescribed in Code of Federal Regulations, title 40, section 60.534, as amended, performed at an accredited laboratory;

B. a useable firebox volume of less than 20 cubic feet;

C. a minimum burn rate less than five kg/hr as determined by the test procedure prescribed in Code of Federal Regulations, title 40, section 60.534, as amended, performed at an accredited laboratory; and

D. a maximum weight of 800 kilograms. In determining the weight of the appliance for these purposes, fixtures and devices that are normally sold separately, such as flue pipe, chimney, and masonry components that are not an integral part of the appliance or heat distribution ducting shall not be included.

Subp. 50. **Yard waste.** "Yard waste" means garden wastes, leaves, lawn cuttings, weeds, and prunings.

Statutory Authority: *MS s 116.07*

History: *L 1987 c 186 s 15; 18 SR 614; 18 SR 2584; 22 SR 1975*

7011.1202 [Repealed, 18 SR 2584]

7011.1203 [Repealed, 18 SR 2584]

7011.1204 [Repealed, 18 SR 2584]

7011.1205 INCORPORATIONS BY REFERENCE.

For the purpose of parts 7007.0501, 7007.0801, and 7011.1201 to 7011.1290, the documents in items A to C are incorporated by reference. These documents are subject to frequent change.

A. Annual Book of American Society for Testing and Materials Standards (ASTM), Part 26, Gaseous Fuels, Coal and Coke; Atmospheric Analysis, 1981 Edition. This publication is available through the Minitex interlibrary loan system.

B. Test Methods for Evaluating Solid Waste, SW-846, United States Environmental Protection Agency, Office of Solid Waste and Emergency Response, Third Edition, November 1986. This publication is available through the Minitex interlibrary loan system.

C. The following material is available from the American Society of Mechanical Engineers (ASME), 345 East 47th Street, New York, New York 10017 or from the State Law Library, Judicial Center, 25 Rev. Dr. Martin Luther King Jr. Blvd., Saint Paul, Minnesota 55155.

(1) Standards for the Qualification and Certification of Resource Recovery Facility Operators, ASME QRO-1-1994, May 1994.

(2) Power Tests Code for Steam Generating Units, PTC 4.1, 1972.

(3) Interim Supplement 19.5 on Instrumentation and Apparatus, Application Part II of Fluid Meters, 6th Edition, 1971.

Statutory Authority: *MS s 116.07*

History: *18 SR 2584; 22 SR 1975*

7011.1206 [Repealed, 18 SR 2584]

7011.1207 [Repealed, 18 SR 2584]

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.

Statutory Authority: *MS s 116.07 subd 4*

History: *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 CO₂ 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 CO₂ 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.

Statutory Authority: *MS s 116.07*

History: *L 1987 c 186 s 15; 18 SR 614; 22 SR 1237; 23 SR 145*

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.

For the purposes of this part, "new sewage sludge incinerator" means a sewage sludge incinerator on which construction, modification, or reconstruction commenced after June 11, 1973.

Statutory Authority: *MS s 116.07*

History: *L 1987 c 186 s 15; 18 SR 614; 22 SR 1237*

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.

Statutory Authority: *MS s 116.07 subd 4*

History: *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.

Statutory Authority: *MS s 116.07 subd 4*

History: *18 SR 614*

7011.1325 PERFORMANCE TEST PROCEDURES.

Subpart 1. **In general.** Performance tests shall be conducted according to the requirements of this part and parts 7017.2001 to 7017.2060.

Subp. 2. **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. 3. **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/ft³) 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:

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

or

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

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/ft³);

S_v = sludge charged to the incinerator during the run, m³ (English units: gal);

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

60×10^{-3} = metric units conversion factor, 1-kg-min/m₃-mg-hr;

8.021 = English units conversion factor, ft³-min/gal-hr.

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

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

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. 4. **Particulate emission rate.** Particulate emission rate shall be determined by:

$$C_{aw} = C_s Q_3 \quad (\text{metric or English units})$$

where:

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

C_s = Particulate matter concentration, mg/m³ (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. 5. **Compliance with standards.** Compliance with part 7011.1310 shall be determined as follows:

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

or

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

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.

Statutory Authority: *MS s 116.07*

History: *18 SR 614; 18 SR 1412*

PETROLEUM REFINERIES

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.

Statutory Authority: *MS s 116.07*

History: *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.

Subp. 4. **Definition.** For the purposes of this part, "existing" means equipment on which construction, modification, or reconstruction did not commence after June 11, 1973.

Statutory Authority: *MS s 116.07*

History: *18 SR 614; 22 SR 1237; 23 SR 145*

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 H₂S 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 SO₂ to the atmosphere if it is shown to the satisfaction of the commissioner that this prevents SO₂ emissions as effectively as compliance with the H₂S 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.

Subp. 4. **Definition.** For the purposes of this part, "new" means equipment on which construction, modification, or reconstruction commenced after June 11, 1973.

Statutory Authority: *MS s 116.07*

History: *L 1987 c 186 s 15; 18 SR 614; 22 SR 1237; 23 SR 145*

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 7011.0500 to 7011.0530 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.

Statutory Authority: *MS s 116.07*

History: *18 SR 614; 22 SR 1237*

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 (SO₂).

(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 7017.1110, subpart 2, 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 7017.1006.

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.

Statutory Authority: *MS s 116.07*

History: *L 1987 c 186 s 15; 18 SR 614; 23 SR 1764*

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 H₂S 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 SO₂;
- E. Method 9 for visual determination of the opacity of emissions from stationary sources.

Statutory Authority: *MS s 116.07 subd 4*

History: *L 1987 c 186 s 15; 18 SR 614*

7011.1430 PERFORMANCE TEST PROCEDURES.

Subpart 1. **In general.** Performance tests shall be conducted according to the requirements of this part and parts 7017.2001 to 7017.2060.

Subp. 2. **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. 3. **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. 4. **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. 5. **Sampling to determine SO₂ concentration.** The sampling site for determining SO₂ 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 SO₂ concentration by Method 6 shall be at the centroid of the cross section if the cross sectional area is less than 5 m² (54 ft²) or at a point no closer to the walls than 1 meter (39 inches) if the cross sectional area is 5 m² 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. 6. **Coke burn-off rate.** Coke burn-off rate shall be determined by the following formula:

$$R_c = 0.2982 Q_{re} (\%CO_2 + \%CO) + 2.088 Q_{ra} - 0.0994 Q_{re} \\ (\%CO/2 + \%CO_2 + \%O_2) \text{ (metric units)}$$

$$R_c = 0.0186 Q_{re} (\%CO_2 + \%CO) + 0.1303 Q_{ra} - 0.0062 Q_{re} \\ (\%CO/2 + CO_2 + O_2) \text{ (English units)}$$

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-m³;

0.0186 = English units material balance factor divided by 100, lb-min/hr-ft³;

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-m³;

0.1303 = English units material balance factor divided by 100, lb-min/hr-ft³;

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-m³;

0.0062 = English units material balance factor divided by 100, lb-min/hr-ft³.

Subp. 7. **Particulate emissions.** Particulate emissions shall be determined by the following equation:

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

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

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. 8. **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:

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

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. 9. **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:

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

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).

Statutory Authority: *MS s 116.07*

History: *18 SR 614; 18 SR 1412*

LIQUID PETROLEUM AND VOLATILE ORGANIC

LIQUID STORAGE VESSELS

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. 1a. **Commenced.** "Commenced" has the meaning given in Code of Federal Regulations, title 40, section 60.2.

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.

Statutory Authority: *MS s 116.07*

History: *18 SR 614; 23 SR 2224*

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.

Statutory Authority: *MS s 116.07 subd 4*

History: *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.

Statutory Authority: *MS s 116.07 subd 4*

History: *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.

Statutory Authority: *MS s 116.07 subd 4*

History: *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.

C. Existing sulfuric acid production unit. "Existing sulfuric acid production unit" means a sulfuric acid production unit on which construction, modification, or reconstruction did not commence after August 17, 1971.

Statutory Authority: *MS s 116.07*

History: *18 SR 614; 22 SR 1237*

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 H₂SO₄.

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 H₂SO₄.

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 H₂SO₄, in excess of 1.70 pounds per ton of acid produced (0.85 kg per metric ton), the production being expressed as 100 percent H₂SO₄.

Statutory Authority: *MS s 116.07 subd 4*

History: *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 7017.1110, subpart 2, 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.

Statutory Authority: *MS s 116.07*

History: *18 SR 614; 23 SR 1764*

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 SO₂ and acid mist.

Statutory Authority: *MS s 116.07 subd 4*

History: *L 1987 c 186 s 15; 18 SR 614*

7011.1625 PERFORMANCE TEST PROCEDURES.

Subpart 1. **In general.** Performance tests shall be conducted according to the requirements of this part and parts 7017.2001 to 7017.2060.

Subp. 2. **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. 3. **Acid production rate.** Acid production rate, expressed in tons per hour of 100 percent H₂SO₄, 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. 4. **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 H₂SO₄, 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, $Q_s \times c = \text{lb/hr (kg/hr)}$, 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.

Statutory Authority: *MS s 116.07*

History: *L 1987 c 186 s 15; 18 SR 614; 18 SR 1412*

7011.1630 EXCEPTIONS.

Shutdowns and breakdowns of control equipment at any sulfuric acid production unit shall be governed by the provisions of part 7019.1000.

Statutory Authority: *MS s 116.07*

History: *18 SR 614; 18 SR 1412*

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.

Statutory Authority: *MS s 116.07 subd 4*

History: *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 NO₂, 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 NO₂, 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.

For the purposes of this part, "existing nitric acid production unit" means a nitric acid production unit on which construction, modification, or reconstruction did not commence after August 17, 1971.

Statutory Authority: *MS s 116.07*

History: *18 SR 614; 22 SR 1237*

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 (NO₂).

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 7017.1110, subpart 2, 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.

Statutory Authority: *MS s 116.07*

History: *18 SR 580; 18 SR 614; 23 SR 1764*

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 NO₂.

Statutory Authority: *MS s 116.07 subd 4*

History: *L 1987 c 186 s 15; 18 SR 614*

7011.1725 PERFORMANCE TEST PROCEDURES.

Subpart 1. **In general.** Performance tests shall be conducted according to the requirements of this part and parts 7017.2001 to 7017.2060.

Subp. 2. **Special 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:

$$Q_s \times c = \text{lb/hr (kg/hr)}$$

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 = NO₂ concentration in lb/dscf (kg/dscm), as determined in accordance with part 7011.1720, item D.

Statutory Authority: *MS s 116.07*

History: *18 SR 614; 18 SR 1412*

IRON AND STEEL PLANTS

7011.2000 DEFINITIONS.

Subpart 1. **Scope.** As used in parts 7011.2000 to 7011.2015, the following words shall have the meanings defined herein.

Subp. 2. **Basic oxygen process furnace.** "Basic oxygen process furnace (BOPF)" means any furnace producing steel by charging scrap metal, hot metal, and flux materials into a vessel and introducing a high volume of an oxygen-rich gas.

Subp. 3. **Steel production cycle.** "Steel production cycle" means the operations required to produce each batch of steel and includes the following major functions: scrap charging, preheating (when used), hot metal charging, primary oxygen blowing, additional oxygen blowing (when used), and tapping.

Statutory Authority: *MS s 116.07 subd 4*

History: *18 SR 614*

7011.2005 STANDARDS OF PERFORMANCE FOR IRON AND STEEL PLANTS.

No owner or operator of an iron and steel plant shall cause to be discharged into the atmosphere from any basic oxygen process furnace any gases which contain particulate matter in excess of 50 mg/dscm (0.022 gr/dscf).

Statutory Authority: *MS s 116.07 subd 4*

History: *18 SR 614*

7011.2010 PERFORMANCE TEST METHODS.

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

- A. Method 1 for sample and velocity traverses;
- B. Method 2 for volumetric flow rate;
- C. Method 3 for gas analysis;
- D. Method 5 for concentration of particulate matter and associated moisture content.

Statutory Authority: *MS s 116.07 subd 4*

History: *18 SR 614*

7011.2015 PERFORMANCE TEST PROCEDURES.

Subpart 1. **In general.** Performance tests shall be conducted according to the requirements of this part and parts 7017.2001 to 7017.2060.

Subp. 2. **Special procedures.** In testing for the concentration of particulate matter and the associated moisture content, the sampling for each run shall continue for an integral number of steel production cycles with total duration of at least 60 minutes. 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. A cycle shall start at the beginning of either the scrap preheat or the oxygen blow and shall terminate immediately prior to tapping.

EMISSION STANDARDS FOR INORGANIC FIBROUS MATERIALS

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.

Statutory Authority: *MS s 116.07 subd 4*

History: *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.

Statutory Authority: *MS s 116.07 subd 4*

History: *L 1987 c 186 s 15; 18 SR 614*

7011.2200 [Repealed, 22 SR 1237]

7011.2205 [Repealed, 22 SR 1237]

7011.2210 [Repealed, 22 SR 1237]

7011.2215 [Repealed, 21 SR 693]

7011.2220 Subpart 1. [Repealed, 22 SR 1237]

Subp. 2. [Repealed, 22 SR 1237]

Subp. 3. [Repealed, 22 SR 1237]

Subp. 4. [Repealed, 21 SR 693]

STATIONARY INTERNAL COMBUSTION ENGINES

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 once operating temperatures have been attained.

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 0.5 pounds per million Btu actual heat input unless an alternative limit is established in an air emission permit after demonstration through modeling of compliance with the sulfur dioxide standards in part 7009.0080.

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.

Statutory Authority: *MS s 116.07*

History: *18 SR 614; 22 SR 1237*