CHAPTER 7011
MINNESOTA POLLUTION CONTROL AGENCY
AIR QUALITY DIVISION
STANDARDS FOR STATIONARY SOURCES

7011.0060 DEFINITIONS.

Subpart 1 **Scope.** The definitions in parts 7005 0100 and 7007 0100 apply to the terms used in parts 7011 0060 to 7011 0080 unless the terms are defined in this part The definitions in this part apply to the terms used in parts 7011 0060 to 7011 0080.

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

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

Subp 4 **Listed control equipment.** "Listed control equipment" means the control equipment at a stationary source listed in part 7011 0070, subpart 1, Table A

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

Statutory Authority: *MS s 116 07*

History: *19 SR 1345*

7011.0061 INCORPORATION BY REFERENCE.

For the purpose of parts 7011 0060 to 7011 0080, the document, Industrial Ventilation – A Manual of Recommended Practice, American Conference of Governmental Industrial Hygienists, 6500 Glenway Avenue, Building D–7, Cincinnati, OH, 45211–4438 (1984), is incorporated by reference American Conference of Governmental Industrial Hygienists is

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Statutory Authority: *MS s 116 07*

History: *19 SR 1345*

7011.0065 APPLICABILITY.

Subpart 1. **Applicability.** The owner or operator of a stationary source shall comply with parts 7011 0060 to 7011 0080 if the owner or operator used the control equipment efficiencies for listed control equipment established pursuant to part 7011 0070 to calculate potential to emit, from emissions units that discharge through the listed control equipment, to

A determine what type of permit is required, pursuant to part 7007 0150, subpart 4, item B,

B determine what type of amendment to a part 70 or state permit is required, pursuant to part 7007 1200,

C qualify for an insignificant modification under part 7007 1250, or

D qualify for registration permit option D under part 7007 1130.

Subp 2 **Exceptions to applicability.** Notwithstanding subpart 1, the owner or operator of a stationary source need not comply with parts 7011 0060 to 7011 0080, if.

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

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

Statutory Authority: *MS s 116 07*

History: *19 SR 1345*

7011.0070 LISTED CONTROL EQUIPMENT AND CONTROL EQUIPMENT EFFICIENCIES.

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

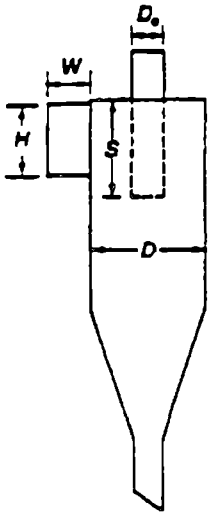
CONTROL EQUIPMENT EFFICIENCY–TABLE A

ID#	CONTROL EQUIPMENT DESCRIPTION	POLLUTANT	CONTROL EFFICIENCY	
			TOTAL ENCLOSURE	HOOD
	PM CONTROL CATEGORY–CYCLONES means a device where airflow is forced to spin in a vortex through a tube			

007	Centrifugal Collector (cyclone)–high efficiency means· a cyclonic device with parameters stated in drawing 1 and table 1	PM,PM–10	80%	64%
008	Centrifugal Collector (cyclone)–medium efficiency means a cyclonic device with parameters stated in drawing 1 and table 1	PM,PM–10	50%	40%
009	Centrifugal Collector (cyclone)–low efficiency means a cyclonic device with parameters stated in drawing 1 and table 1	PM,PM–10	10%	8%
076	Multiple Cyclone without Fly Ash Reinjection means a cyclonic device with more than one tube where fly ash is not reinjected	PM,PM–10	80%	NA
077	Multiple Cyclone with Fly Ash Reinjection means a cyclonic device with more than one tube where fly ash is reinjected	PM,PM–10	50%	NA
085	Wet Cyclone Separator or Cyclonic Scrubbers means. a cyclonic device that sprays water into a cyclone	PM,PM–10	50%	40%
012	PM CONTROL CATEGORY–ELECTROSTATIC PRECIPITATORS means. a control device m which the incoming particulate matter receives an electrical charge and is then collected on a surface with the opposite electrical charge			
	–assumed efficiency for boiler fly ash control	PM–10	40%	NA
	–assumed efficiency for other applications	PM–10	70%	56%
	PM CONTROL CATEGORY–OTHER CONTROLS			
016	Fabric Filter means. a control device in which the incoming gas stream passes through a porous fabric filter forming a dust cake	PM,PM–10	99%	79%

052	Spray Tower means a control device in which the incoming gas stream passes through a chamber in which it contacts a liquid spray	PM,PM–10	20%	16%
053	Venturi Scrubber means a control device in which the incoming gas stream passes through a venturi into which a low pressure liquid is introduced	PM,PM–10	90%	72%
055	Impingement Plate Scrubber means a control device in which the incoming gas stream passes a liquid spray and is then directed at high velocity into a plate	PM,PM–10	25%	20%
058	Mat or Panel Filter means. a control device in which the incoming gas stream passes through a panel of coarse fibers Panels are removable for cleaning or replacement and provide little resistance to air flow	PM,PM–10	92%	NA
	VOC CONTROL CATEGORY			
019	Afterburners (thermal or catalytic oxidation) means: a device used to reduce VOCs to the products of combustion through thermal (high temperature) oxidation or catalytic (use of a catalyst) oxidation in a combustion chamber	VOC	95%	76%
023	Flaring or Direct Combustor means a device in which air, combustible organic waste gases, and supplementary fuel (if needed) react in the flame zone (e g , at the flare tip) to destroy the VOCs	VOC	98%	78%

Drawing 1



SOURCE Lapple, 1951

Table 1
Cyclone Type

Ratio Dimensions	High Efficiency	Medium Efficiency	Low Efficiency
Height of inlet, H/D	≤0 44	>0 5 and <0 8	≥0 8
Width of inlet, W/D	≤0 2	>0 2 and <0 375	≥0.375
Diameter of gas exit, D_e/D	≤0 4	>0 4 and <0 75	≥0 75
Length of vortex finder, S/D	≤0 5	>0 5 and <0 875	≥0 875

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

Subp 2 **Alternative control equipment efficiencies; control efficiencies for hazardous air pollutants.** The owner or operator of a stationary source may use an alternative control equipment efficiency for the control equipment listed in subpart 1, if the actual control efficiency has been verified by a performance test approved by the commissioner under parts 7017 2001 to 7017 2060 The owner or operator of a stationary source may use a control equipment efficiency for listed control equipment for a hazardous air pollutant, if the control efficiency has been verified by a performance test approved by the commissioner under parts 7017 2001 to 7017 2060 The request for the alternative control efficiency may be made through a permit application for a part 70, state, registration, or general permit, or in a required notice or application submitted under parts 7007 1150 to 7007 1500 The owner or

operator of a stationary source must attain at all times the alternative control efficiency for a piece of listed control equipment at the stationary source established under this subpart

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

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

Statutory Authority: *MS s 116 07*

History: *19 SR 1345*

7011.0075 CONTROL EQUIPMENT GENERAL REQUIREMENTS.

Subpart 1 **Operation of control equipment.** The owner or operator of a stationary source shall operate all listed control equipment located at the stationary source whenever operating the emission units controlled by the listed control equipment in compliance with parts 7011 0060 to 7011 0080 Unless specifically allowed by a part 70, state, or general permit, each piece of listed control equipment shall at all times be operated in the range established by the control equipment manufacturer's specifications for each monitoring parameter listed in part 7011 0080, or within the operating parameters set by the commissioner as the result of the most recent performance test conducted to determine control efficiency under parts 7017 2001 to 7017 2060 if those are more restrictive

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

A maintain an 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 part 7011 0080 or by source specific monitoring requirements specified in a part 70, state, or general permit The monitoring equipment must be installed prior to operation of any new process equipment controlled by the control equipment or, for stationary sources in operation on 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 deviations from any monitored operating parameter as required by part 7011 0080 "Deviation" means any recorded reading outside of the specification or range of specifications allowed by subpart 1 or established by a part 70, state, or general permit This report shall be on a form approved by the commissioner For any given calendar quarter, and within 30 days after the end of the quarter, the owner or operator shall

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

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

Subp 6 **Demonstration of control equipment efficiency.** The owner or operator shall, upon request of the commissioner or the administrator, conduct a performance test under parts 7017 2001 to 7017 2060 to determine the efficiency of the control equipment In addition to the reasons specified in part 7017 2020, subpart 1, the commissioner or the administrator may make such a request to verify that the control equipment at a stationary source is attaining the efficiency determined in part 7011 0070.

Subp 7 **Recalculation of potential to emit.**

A The owner or operator shall recalculate the potential to emit of the stationary source under part 7007 0150, subpart 4, or under part 7007 1200 for amendments to part 70 or state permits, if the owner or operator becomes aware of any information indicating that the calculation originally performed under part 7007 0150, subpart 4, or 7007 1200, would change because the listed control equipment is not as efficient as originally assumed under part 7011 0070 or changes have been made to decrease the listed control equipment's efficiency The owner or operator shall submit this recalculation to the commissioner within 30 days of becoming aware of the information.

B. The owner or operator shall, upon request of the commissioner or the administrator, recalculate the potential to emit of the stationary source under part 7007 0150, subpart 4, or part 7007.1200 for amendments to part 70 and state permits, and submit the recalculation to the commissioner or the administrator by the date specified in the request

Statutory Authority: *MS s 116.07*

History: *19 SR 1345*

7011.0080 MONITORING AND RECORD KEEPING FOR LISTED CONTROL EQUIPMENT.

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

EPA Identification Number(s)	Pollution Control Equipment Type	Monitoring Parameter(s)	Record Keeping Requirement
007, 008, 009, 076, 077	Centrifugal collector (cyclone)	Pressure drop	Record pressure drop every 24 hours if in operation

011A, 011B, 012A, 012B	Electrostatic precipitator	Primary and secondary voltage, primary and secondary current, sparking rate, and number of fields on–line	Record each parameter every 24 hours if in operation
016	Fabric filter (bag house)	Pressure drop	Record pressure drop every 24 hours if in operation
052	Spray tower	Liquid flow rate and pressure drop	Record each parameter every 24 hours if in operation
053, 055	Venturi scrubber, impingement plate scrubber	Pressure drop and liquid flow rate	Record each parameter every 24 hours if in operation
058A, 058B	HEPA and other wall filters	Condition of the filters, including, but not limited to, alignment, saturation, and tears and holes	Record of filter(s) condition every 24 hours if in operation
085	Wet cyclone separator	Pressure drop, and water pressure	Record each parameter every 24 hours if in operation
019	Thermal incinerator	Combustion temperature or inlet and outlet temperatures	Continuous hard copy readout of temperatures or manual readings every 15 minutes
019	Catalytic incinerator	Inlet and outlet temperatures, and catalyst bed reactivity as per manufacturer's specifications	Continuous hard copy readout of temperatures or manual readings every 15 minutes; and results of catalyst bed reactivity

023	Flaring	Temperature indicating presence of a flame	Continuous hard copy readout of temperatures or manual readings every 15 minutes

Statutory Authority: *MS s 116 07*

History: *19 SR 1345*

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 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 parts 7005 0200 to 7005 0280 for adjustment of the opacity standard applicable to an emissions unit In addition to the items required under parts 7005 0200 to 7005 0280, the application must contain data that demonstrates that

A based on tests conducted under parts 7017.1000 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,

[For text of items B and C, see M R]

[For text of subps 2 and 3, see M R]

Statutory Authority: *MS s 116 07*

History: *18 SR 1412*

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

[For text of items A to G, see M.R.]

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 1412*

7011.0551 RECORD KEEPING AND REPORTING FOR UNITS INDIRECTLY 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 7011.1285 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*

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 m 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·

$$E = CF \quad \left(\frac{20\ 90}{20\ 9 - \%O_2}\right)$$

where

[For text of items A to G, see M R]

Statutory Authority: *MS s 116 07*

History: *18 SR 1412*

7011.0625 RECORD KEEPING AND REPORTING FOR UNITS DIRECTLY 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 1285 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 solid waste, 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*

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.

[For text of items A and B, see M R]

Statutory Authority: *MS s 116 07*

History: *18 SR 1412*

7011.0825 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 minimum sampling time and minimum sample volume for each run, except when other times and volumes are approved by the agency, shall be as follows 60 minutes and 30 dscf (0 85 dscm) for the kiln, and 60 minutes and 40 6 dscf (1 15 dscm) for the clinker cooler

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

For each run, particulate matter emissions, expressed in pounds per ton of kiln feed, shall be determined by dividing the emission rate in pounds per hour by the kiln feed rate The emission rate shall be determined by the equation, lb/hr = Q_S x c, where Q_S = volumetric flow rate of the total effluent in dscf/hr as determined in accordance with part 7011 0820, item B, and c = particulate concentration in lb/dscf as determined in accordance with part 7011 0820, item D.

Statutory Authority: *MS s 116 07*

History: *18 SR 1412*

7011.0920 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 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

Statutory Authority: *MS s 116 07*

History: *18 SR 1412*

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: *18 SR 1412*

7011.1201 DEFINITIONS.

Subpart 1 **Scope.** As used in parts 7007 0200, 7007.0250, 7007 0501, 7007 0801, and 7011 1201 to 7011 1285 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 1285, 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 **Certified operator.** "Certified operator" means the person who has obtained certification from the state signifying the person's qualification to be the person in direct charge and control of the operation of a solid waste combustion system, including the duties of start–up, operation, or shutdown of the solid waste combustion system Certified operator includes chief facility operator, shift supervisor, and operator supervisor

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 total of the design capacities for all waste combustor units at a stationary source is 400 x 10^6 Btu/hr or more, the waste combustor units combust primarily mixed municipal solid waste or RDF, and the waste combustor was issued a permit for construction on or before December 20, 1989

Subp 10. **Class B waste combustor.** "Class B waste combustor" means that the total of the design capacities for all waste combustor units at a stationary source is 93 75 x 10^6 Btu/hr or more and less than 400 x 10^6 Btu/hr, the waste combustor units combust primarily mixed municipal solid waste or RDF, and the waste combustor was issued a permit for construction on or before December 20, 1989

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 x 10^6 Btu/hr or more and less than 93 75 x 10^6 Btu/hr, the waste combustor units combust primarily mixed municipal solid waste or RDF, and the waste combustor was issued a permit on or before December 20, 1989

Subp 12. **Class D waste combustor.** "Class D waste combustor" means that the design capacity of a waste combustor unit is 3 0 x 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 x 10^6 Btu/hr or more, and the waste combustor is issued a permit for construction after December 20, 1989

Subp 14 **Class II waste combustor.** "Class II waste combustor" means that the design capacity for a waste combustor unit is 15 x 10^6 Btu/hr or more and less than 93 75 x 10^6 Btu/hr, and the waste combustor is issued a permit for construction after December 20, 1989

Subp 15. **Class III waste combustor.** "Class III waste combustor" means that the design capacity for a waste combustor unit is 3 0 x 10^6 Btu/hr or more and less than 15 x 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 x 10^6 Btu/hr

Subp 17 **Cofired unit.** "Cofired unit" means an emissions unit which combusts mixed municipal solid waste 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 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 1285, 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, 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 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 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, or reconstructed emissions unit of a waste combustor, or emissions unit of a waste combustor that is modified or reconstructed to meet the requirements of parts 7011 1201 to 7011 1285, 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 or reconstruction of a waste combustor is necessary to meet the requirements of parts 7011.1201 to 7011 1285, then normal start–up means the period of time between June 20 1994, and the applicable date in part 7011 1215, subpart 5 or 6

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 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 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 46 **Waste combustor.** "Waste combustor" means any emissions unit or emission facility where 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 **Waste tire.** "Waste tire" has the meaning given in Minnesota Statutes, section 115A 90, subdivision 11.

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: *18 SR 2584*

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 1285, 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 Constitution Avenue, Saint Paul, Minnesota 55155

(1) Standards for the Qualification and Certification of Resource Recovery Facility Operators, ASME QRO–1–1989, March 1990

(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*

7011.1206 [Repealed, 18 SR 2584]

7011.1207 [Repealed, 18 SR 2584]

7011.1210 NOTIFICATION REQUIRED OF CLASS IV WASTE COMBUSTORS.

Subpart 1 **Class IV waste combustors at hospitals.** The owner or operator of a Class IV waste combustor located at a hospital that was operating on June 20, 1994, shall notify the commissioner by September 19, 1994, of the existence of the waste combustor The notice submitted by owners and operators of these waste combustors shall contain:

A the name of the owner and operator, and the address of the waste combustor installation,

B a schedule showing that the waste combustor will meet the requirements of parts 7011 1201 to 7011 1285 on January 30, 1996, or upon expiration of a current permit for those waste combustors to which permits were issued between December 1, 1992, and June 20, 1994, and

C the information in subpart 2, items B to H

Subp 2 **Waste combustors at hospitals.** The owner or operator of a Class IV waste combustor located at a hospital and installed after June 20, 1994, shall notify the commissioner 90 days prior to the installation of the waste combustor The notice submitted by the owner or operator of this Class IV waste combustor shall contain the information in items A to H

A The name of the owner and operator, and the address of the waste combustor installation

B The results of a current fractional analysis and the heat value of the solid waste stream The fractional analysis shall be conducted according to part 7007 0501, subpart 2, item A, subitem (1) Published data may be used to determine heat value of the solid waste stream If published data is unavailable, the owner or operator shall use the methods described in part 7007 0501, subpart 2, item A, subitem (4), to determine heat value of the solid waste stream

C The waste combustor manufacturer and model number, the diameter in feet, the exit height of the stack in feet, and the minimum stack height that is required to be installed by part 7011 1235, subpart 1, for the proposed waste combustor

D The design capacity of the waste combustor in million Btu's per hour

E A plan that describes how solid wastes that contain mercury will be identified, separated, and collected before the waste is combusted in accordance with part 7011 1255

F A plan for disposal of the ash generated, as described in part 7007 0501, subpart 7

G A schedule for a performance test to demonstrate compliance with emission limits m part 7011 1225, according to the schedule in part 7011 1270 The owner or operator shall use the methods described in part 7011 1265 when conducting compliance tests

H The signature of the owner or operator with the following certification

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete Further, the waste combustor complies with the design, installation, and operating requirements of Minnesota Rules, parts 7011 1201 to 7011 1285, applicable to a Class IV waste combustor"

Statutory Authority: *MS s 116 07*

History: *18 SR 2584*

7011.1215 APPLICABILITY OF STANDARDS OF PERFORMANCE FOR WASTE COMBUSTORS.

Subpart 1 **Waste combustors.** A person who constructs, modifies, reconstructs, or operates a waste combustor shall comply with parts 7011.1201 to 7011 1285, except as provided in subparts 2 and 3

Subp 2 **Cofired facilities.** A person who constructs, modifies, reconstructs, or operates a cofired unit is not a waste combustor, and shall comply with the applicable requirements of parts 7011 0500 to 7011 0551 or 7011 0600 to 7011.0625

Subp. 3 **Exemptions from standards of performance.** Crematoria, pathological waste combustors, and waste combustors used solely for the disposal of animal carcasses are exempt from the requirements of parts 7011 1210 to 7011 1285, and shall meet the conditions of this subpart

A No owner or operator of a crematorium, pathological waste combustor unit, or waste combustor unit used solely for the disposal of animal carcasses shall cause to be emitted into the atmosphere gases which are greater than 20 percent opacity

B Waste combustor owners and operators shall install and operate an afterburner which maintains flue gases at 1,200 degrees Fahrenheit for at least 0 3 seconds.

C Ash shall be stored and transported in such a manner to prevent avoidable amounts of particulate matter to become airborne

Subp 4 **Standards.** The standards of parts 7011 1227, 7011 1229, 7011 1231, 7011 1233, and 7011 1240, subparts 2 and 6, apply at all times when waste is being combusted, except during periods of start–up, shutdown, or malfunction, provided that the duration of start–up, shutdown, or malfunction does not exceed three hours "Malfunction" means any sudden and unavoidable failure of air pollution control equipment or process equipment or of a process to operate in a normal or usual manner. Failures that are caused entirely or in part by poor maintenance, careless operation, or any other preventable upset condition or preventable equipment breakdown are not considered malfunctions

Subp 5 **Transition for Class A, B, or C waste combustors.** Notwithstanding subpart 1, a Class A, B, or C waste combustor holding a permit on June 20, 1994, shall comply with the requirements of parts 7011 1201 to 7011 1285 by June 20, 1997

Subp 6 **Transition for Class D, III, or IV waste combustors.** Notwithstanding subpart 1, Class D, III, or IV waste combustors installed and operable on June 20, 1994, shall comply with parts 7011 1201 to 7011 1285 by January 30, 1996 Notwithstanding subpart 1, Class IV waste combustors operating under an air emissions permit issued between December 1, 1992, and June 20, 1994, shall comply with parts 7011 1201 to 7011 1285 upon expiration of that permit

Statutory Authority: *MS s 116 07*

History: *18 SR 2584*

7011.1220 PROHIBITIONS.

Subpart 1 **Prohibited waste combustors.** No person shall operate a Class IV waste combustor unless that waste combustor is

A a waste combustor located at a hospital,

B a crematorium, pathological waste combustor, or waste combustor used solely for the disposal of animal carcasses, or

C a metals recovery incinerator

Subp 2 **Solid wastes requiring special approval.** No waste combustor shall combust yard waste or waste tires unless specifically allowed to do so in the air emission permit for the waste combustor

Statutory Authority: *MS s 116 07*

History: *18 SR 2584*

7011.1225 STANDARDS OF PERFORMANCE FOR WASTE COMBUSTORS.

Subpart 1 **Permit in existence for Class A, B, or C waste combustor.** No owner or operator of a Class A, B, or C waste combustor shall cause to be emitted into the atmosphere from each waste combustor unit gases which contain particulate matter, polychlorinated dibenzo–p–dioxins and polychlorinated dibenzofurans (PCDD/PCDF), mercury, carbon monoxide, sulfur dioxide, or hydrogen chloride in excess of the standards of performance shown in part 7011 1227 Emissions shall be calculated under standard conditions corrected to seven percent oxygen on a dry volume basis An owner or operator of a mixed municipal solid waste or RDF waste combustor may determine compliance with the emission limitations using carbon dioxide measurements corrected to an equivalent of seven percent oxygen The relationship between carbon dioxide and oxygen shall be established at each compliance test.

Subp 2 **Class I or II waste combustors.** No owner or operator of a Class I or II waste combustor shall cause to be emitted into the atmosphere from each waste combustor unit gases that contain particulate matter, polychlorinated dibenzo–p–dioxms and polychlori-

nated dibenzofurans (PCDD/PCDF), mercury, carbon monoxide, nitrogen oxides, sulfur dioxide, or hydrogen chloride in excess of the standards of performance shown in part 7011 1229 Emissions shall be calculated under standard conditions, corrected to seven percent oxygen on a dry volume basis An owner or operator of a mixed municipal solid waste or RDF waste combustor may determine compliance with the emission limitations using carbon dioxide measurements corrected to an equivalent of seven percent oxygen The relationship between carbon dioxide and oxygen shall be established at each compliance test

Subp 3 **Class III waste combustors.** No owner or operator of a Class III waste combustor shall cause to be emitted into the atmosphere from each waste combustor unit gases that contain particulate matter, PCDD/PCDF, mercury, carbon monoxide, or opacity in excess of the standards of performance in part 7011 1231 Emissions shall be calculated under standard conditions, corrected to seven percent oxygen on a dry volume basis An owner or operator may determine compliance with the emission limitations using carbon dioxide measurements corrected to an equivalent of seven percent oxygen The relationship between carbon dioxide and oxygen shall be established at each compliance test

Subp. 4 **Class D waste combustors.** Except as provided in this subpart, no owner or operator of a Class D waste combustor shall cause to be emitted into the atmosphere from each waste combustor unit gases that contain particulate matter, PCDD/PCDF, carbon monoxide, or opacity in excess of the standards of performance m part 7011 1231. Emissions shall be calculated under standard conditions, corrected to seven percent oxygen on a dry volume basis An owner or operator may determine compliance with the emission limitations using carbon dioxide measurements corrected to an equivalent of seven percent oxygen The relationship between carbon dioxide and oxygen shall be established at each compliance test

A Class D waste combustor that was burning more than 30 percent by weight of RDF on January 1, 1991, shall comply with the applicable standards of performance in parts 7011 0500 to 7011 0551 or 7011 0600 to 7011 0625, for equipment burning solid waste

Subp 5 **Class IV waste combustors.** No owner or operator of a Class IV waste combustor shall cause to be emitted into the atmosphere from each waste combustor unit gases that contain particulate matter, carbon monoxide, or opacity in excess of those concentrations in part 7011 1233 Emissions shall be calculated under standard conditions, corrected to seven percent oxygen on a dry volume basis. An owner or operator may determine compliance with the emission limitations using carbon dioxide measurements corrected to an equivalent of seven percent oxygen. The relationship between carbon dioxide and oxygen shall be established at each compliance test.

Statutory Authority: *MS s 116 07*

History: *18 SR 2584*

7011.1227 TABLE 1.

The table in this part governs emission limitations for Class A, B, and C waste combustors For acid gas limitations, either the applicable percent reduction or the parts per million by volume emission limitation, whichever is less stringent, is the emission limitation for the waste combustor

		Class C	Class B	Class A
Particulate Matter				
Front–half			0 015 gr/dscf	0 015 gr/dscf
Total		0 020 gr/dscf	0 020 gr/dscf	0 020 gr/dscf
PCDD/PCDF				
Total		500 ng/dscm	30 ng/dscm	30 ng/dscm
Acid Gases	HCl	NA	90% control or 25 ppm	90% control or 25 ppm
	SO_2	NA	70% control or 30 ppm	70% control or 30 ppm

Carbon Monoxide			
Modular	50 ppm	50 ppm	50 ppm
Mass burn, or fluidized bed	100 ppm	100 ppm	100 ppm
RDF stoker	150 ppm	200 ppm	200 ppm
Opacity	10%	10%	10%
Mercury (short–term)			
Modular with ESP	1,000 µg/dscm	NA	NA
Mass burn	1,000 µg/dscm	100 µg/dscm or 85% removal	100 µg/dscm or 85% removal
RDF (90–day test interval)		50 µg/dscm or 85% removal	50 µg/dscm or 85% removal
Modular, mass burn, or fluidized bed with wet or dry scrubber	100 µg/dscm or 85% removal	100 µg/dscm or 85% removal	100 µg/dscm or 85% removal
Mercury (long–term)			
Modular with ESP	600 µg/dscm		
Mass burn	600 µg/dscm	60 µg/dscm or 85% removal	60 µg/dscm or 85% removal
RDF (90–day test interval)		30 µg/dscm or 85% removal	30 µg/dscm or 85% removal
Modular, mass burn, or fluidized bed with wet or dry scrubber	60 µg/dscm or 85% removal		
RDF (15–month test interval)		30 µg/dscm or 85% removal	30 µg/dscm or 85% removal

Statutory Authority: *MS s 116 07*

History: *18 SR 2584*

7011.1229 TABLE 2.

The table in this part governs emission limitations for Class I and II waste combustors For acid gas limitations, either the applicable percent reduction or the parts per million by volume emission limitation, whichever is less stringent, is the emission limitation for the waste combustor

Size	Class II	Class I
Particulate Matter		
Front–half	0.015 gr/dscf	0 015 gr/dscf
Total	0.020 gr/dscf	0 020 gr/dscf
PCDD/PCDF (total)	30 ng/dscm	30 ng/dscm

Acid Gases		
HCl	90% control or 25 ppm	95% control or 25 ppm
SO_2	80% control or 30 ppm	80% control or 30 ppm
Carbon monoxide		
Modular	50 ppm	50 ppm
Mass burn or fluidized bed	100 ppm	100 ppm
RDF stoker	150 ppm	150 ppm
Opacity	10%	10%
NO_x	NA	180 ppm
Mercury (short–term)		
Modular	100 µg/dscm or 85% removal	100 µg/dscm or 85% removal
Mass Burn	100 µg/dscm or 85% removal	100 µg/dscm or 85% removal
RDF (90–day test interval)	50 µg/dscm or 85% removal	50 µg/dscm or 85% removal
FBC	100 µg/dscm or 85% removal	100 µg/dscm or 85% removal
Mercury (long–term)		
Modular	60 µg/dscm or 85% removal	60 µg/dscm or 85% removal
Mass burn	60 µg/dscm or 85% removal	60 µg/dscm or 85% removal
RDF (90–day test interval)	30 µg/dscm or 85% removal	30 µg/dscm or 85% removal
FBC	60 µg/dscm or 85% removal	60 µg/dscm or 85% removal
RDF (15–month test interval)	30 µg/dscm or 85% removal	30 µg/dscm or 85% removal

Statutory Authority: *MS s 116 07*

History: *18 SR 2584*

7011.1231 TABLE 3.

The table in this part governs emission limitations for Class III and D waste combustors

Size	Class III	Class D
Particulate Matter		
Total	0 020 gr/dscf	0.035 gr/dscf
PCDD/PCDF		
Total	60 ng/dscm	200 ng/dscm
Carbon monoxide		
Modular	50 ppm	50 ppm
RDF	275 ppm	275 ppm
Opacity	10%	20%
Mercury		
Short–term	500 µg/dscm or 85% removal	

Long–term	300 µg/dscm or 85% removal

Statutory Authority: *MS s 116 07*

History: *18 SR 2584*

7011.1233 TABLE 4.

The table in this part governs emissions from Class IV waste combustors

Use	Hospital	Metal Recovery
Particulate Matter Total	0 08 gr/dscf	0 035 gr/dscf
Opacity	20%	20%
Carbon Monoxide	50 ppm	50 ppm

Statutory Authority: *MS s 116 07*

History: *18 SR 2584*

7011.1235 REQUIREMENTS OF CLASS IV WASTE COMBUSTORS.

Subpart 1 **Stack height.** The exit height of the stack at a Class IV waste combustor shall be equal to or greater than H plus 0 5L where H is the building height and L is the lesser of the building height or the maximum projected width of the building

The building which gives the greatest value for H plus 0 5L shall determine the stack exit height. All buildings nearby the stack shall be considered in determining stack exit height

Maximum projected width is the longest diagonal distance of the building footprint The stack is considered to be nearby a building if it is within five times the lesser of the building height or building width

In the alternative, a Class IV waste combustor may use a stack with an exit height less than that required by the formula in this subpart, if the facility

A demonstrates that it can achieve the same ambient concentrations achieved with the exit height required by this subpart, and

B obtains a permit under parts 7007 0250 and 7007 0501

Subp 2 **Combustion chamber.** The final combustion chamber of a Class IV waste combustor shall be designed and operated to maintain combustion gases at a minimum of 1,800 degrees Fahrenheit for one second in a zone after the last overfire air or secondary air has entered the combustion chamber

Subp 3 **Mercury and ash plans.** The plans submitted under part 7011 1210, subpart 2, items E and F, within the time provided in part 7011 1215, subpart 6, shall be implemented upon submittal

Statutory Authority: *MS s 116.07*

History: *18 SR 2584*

7011.1240 OPERATING REQUIREMENTS.

Subpart 1. **Presence of certified operator.** A certified operator who holds an appropriate certificate as described by part 7011 1280 shall be present at the waste combustor facility at all times when solid waste is being combusted The certification shall be appropriate to the waste combustor class

Subp 2 **Particulate matter control device operating temperature.** The inlet gas stream to the most efficient particulate matter control device on a waste combustor as measured by part 7011 1260, subpart 4, item A, shall have a temperature of no greater than 30 degrees Fahrenheit above the mean temperature measured for this gas stream during the most recent performance test for polychlorinated dibenzo–p–dioxins and polychlorinated dibenzofurans that demonstrated compliance at all times when solid waste is being combusted.

Subp 3 **Start–up on waste prohibited.** During start–up from a cold furnace, auxiliary fuels shall be used to achieve combustion chamber operating temperature

Subp 4 **Use of auxiliary fuel.** Auxiliary fuel shall be used to maintain the operating temperature in the combustion chamber from the time the solid waste feed has been discontinued until the combustion chamber is clear of combustible material or active combustion ceases to exist in the combustion chamber.

Subp 5 **Range of operation.** No owner or operator of a waste combustor shall operate the waste combustor while combusting solid waste at a level above 110 percent of the maximum demonstrated capacity of the combustion system, without conducting a performance test under part 7011 1265, which demonstrates compliance with the emission limitations of part 7011 1225 at greater than 110 percent of the maximum demonstrated capacity

Subp 6 **Mercury additive feedrate.** The feedrate of additives used to control mercury shall be maintained at all times at a rate no less than that arithmetic average of the feedrates used during the most recent performance test for mercury which demonstrated compliance with the emission limit.

Subp 7 **Dumpstack use and reporting requirements.** The dumpstack of a waste combustor must not be used for conducting routine inspection or maintenance on the control equipment or the combustion system without prior approval of the commissioner

A dumpstack shall only be used at a waste combustor when plant or worker safety would be in jeopardy without its use

The owner or operator of a waste combustor shall record in the daily operating record required in part 7011 1285, subpart 2, the date of use of the dumpstack, the length of time the dumpstack was used, the operating conditions of the waste combustor during dumpstack use, and the reason for using the dumpstack

Subp. 8 **Shutdown or breakdown reporting requirements.** The owner or operator of a waste combustor shall comply with part 7019 1000 and Minnesota Statutes, section 116 85

Subp 9 **Notification.** The owner or operator of a waste combustor must notify the commissioner in writing at least ten days before the initial start–up of a waste combustor

Statutory Authority: *MS s 116 07*

History: *18 SR 2584*

7011.1245 GENERAL WASTE COMBUSTOR FACILITY REQUIREMENTS.

The owner or operator of a waste combustor shall design, construct, and operate the facility in compliance with the solid waste management requirements as set forth in items A to H Plans required in the items in this part shall identify those required portions of the plan which are not applicable

A security requirements in part 7035 2535, subpart 3,

B general inspection requirements in part 7035 2535, subpart 4,

C. household hazardous waste management requirements of part 7035.2535, subpart 6,

D emergency preparedness and prevention plans and emergency procedures shall be prepared in accordance with parts 7035 2595 and 7035 2605,

E. contingency action plans in part 7035 2615,

F closure plans in part 7035 2625 and closure procedures in part 7035 2635,

G solid waste transfer facility requirements as required in part 7035 2865; and

H for waste combustors accepting infectious wastes, infectious waste management requirements of parts 7035.9100 to 7035.9150

Statutory Authority: *MS s 116 07*

History: *18 SR 2584*

7011.1250 INDUSTRIAL SOLID WASTE MANAGEMENT PLAN.

Subpart 1 **Preparation of industrial waste management plan.** The waste combustor owner or operator shall prepare a plan for the management of industrial solid wastes in accor-

dance with part 7035 2535, subpart 5, items A and B. The plan must also include the contents listed in subpart 2 The owner or operator shall submit the plan to the commissioner with the waste combustor's permit application

Subp 2. **Contents of plan.** The plan must address how the following additional categories of solid waste will be managed to comply with the requirements of part 7035.2535, subpart 5, item A, subitems (2) to (4), as well as state whether each of the following solid wastes will be accepted at the facility

A spilled fossil fuels and the sorbents used to collect the spilled fossil fuels,

B infectious and pathological wastes,

C media contaminated with oil,

D problem materials as defined in Minnesota Statutes, section 115A.03, subdivision 24a; and

E any other solid wastes that can be identified that would adversely impact waste combustor operations or result in environmental and health problems if combusted

Subp 3 **Modification.** The owner or operator shall modify the industrial waste management plan whenever the management practices or solid wastes identified in the plan have changed The owner or operator shall submit the amended plan to the commissioner for approval

Statutory Authority: *MS s 116 07*

History: *18 SR 2584*

7011.1255 PLAN TO SEPARATE SOLID WASTES WHICH CONTAIN MERCURY.

Subpart 1 **Preparation of a mercury waste separation plan.** If a mercury waste separation plan is required by part 7007 0501 or 7011 1210, the waste combustor owner or operator must prepare a plan to identify, separate, and collect before combustion solid wastes which contain mercury

Subp 2 **Contents of plan.** The plan shall, at a minimum, include the collection of household batteries, electrical devices and switches, electric lighting components, and solid wastes from laboratories where mercury is used, and shall include a plan to identify, separate, and collect before combustion other significant sources of mercury.

The plan shall also contain

A the name and title of the person responsible for implementing the plan,

B. an identification of solid waste streams and generators targeted under the plan,

C a description of the methods that will be used to separate and dispose of mercury–containing solid wastes, including the name of the person or persons responsible for identifying, separating, collecting, transporting, recycling, and disposing of the separated mercury–containing solid waste stream;

D an estimate of the number of pounds per year of mercury that will be removed from the solid waste stream when the plan is implemented, and

E a description of the methods to be used to generate public awareness of the mercury separation plan and to generate public participation and cooperation

Subp. 3 **Revising the plan periodically.** Except for Class C waste combustors, in each application for reissuance of a permit, or every five years for Class IV waste combustors, the plan shall be revised to improve identification, separation, and collection before combustion of mercury from the solid waste stream. The Class C waste combustor owner or operator must submit an updated plan to the commissioner every year after initial issuance of a permit under chapter 7007 The updated plan must identify improvements that have been made to the plan to increase identification, separation, and collection before combustion of mercury from the solid waste stream If no changes are being made, the Class C waste combustor operator must state that no changes are being made for that year

Statutory Authority: *MS s 116 07*

History: *18 SR 2584*

7011.1260 CONTINUOUS MONITORING.

Subpart 1 **Combustion chamber temperature monitor.** The owner or operator of a waste combustor shall install and operate at all times temperature monitors that continuously read and record the temperature at the point in the combustion unit one second downstream of the entrance of the last overfire or secondary air injection The owner or operator may elect to place temperature monitors at another point downstream from the entrance of the last overfire or secondary air injection, provided that the owner or operator conducts mapping of the operating combustion chambers to develop temperature isopleths and correlates these temperatures to the downstream temperature monitors

Subp 2 **Particulate matter control device temperature monitors.** The owner or operator of a waste combustor shall install and operate at all times temperature monitors that continuously read and record the temperatures of the flue gas at the inlet of the most efficient particulate matter control device

Subp 3 **Continuous monitors.** The owner or operator of a waste combustor shall install and operate a continuous momtoring system when burning solid waste Monitoring systems that continuously read and record the following outputs shall be installed

A in Class I, II, III, A, B, C, or D waste combustors

(1) for carbon monoxide at the waste combustor outlet,

(2) for steam flow or an alternative unit load measurement parameter as described in part 7011 1265, subpart 4a, in waste combustors which recover heat with a boiler,

(3) for flue gas opacity, at a location after which the flue gas has exited the air pollution control equipment, and

(4) for oxygen or carbon dioxide, to report corrected concentrations of regulated pollutants,

B in all classifications of waste combustors subject to nitrogen oxides emission limits for nitrogen oxides, and

C in all classifications of waste combustors subject to sulfur dioxide emission limits for sulfur dioxide For those facilities for which compliance is determined by the percent reduction of emissions, monitors shall be installed at the inlets and outlets of the air pollution control system

Subp 4 **Averaging periods.** Except as provided in this subpart and subpart 5, the requirements of part 7017 1000 apply to continuous monitoring data collection, reduction, and averaging periods.

A For combustion chamber temperature monitoring and particulate matter control device inlet temperature monitoring, four–hour arithmetic block averages calculated from four one–hour arithmetic averages Each one–hour arithmetic average shall consist of at least ten data points equally spaced in time

B For steam flow or alternative unit load measurement parameter as described in part 7011 1265, subpart 4a, four–hour arithmetic block averages

C At waste combustors other than mass burn rotary waterwall combustors or RDF waste combustors for carbon monoxide, a four–hour block average For mass burn rotary waterwall combustors or RDF stokers, the averaging period for carbon monoxide shall be a daily 24–hour arithmetic average measured between 12 midnight and the following midnight The four–hour and 24–hour average shall be calculated from one–hour arithmetic averages At least four points equally spaced in time shall be used to calculate each one–hour average

D. For sulfur dioxide, the geometric average of the one–hour arithmetic average emission rates during each 24–hour daily period measured from midnight to midnight At least four data points equally spaced in time shall be used to calculate each one–hour arithmetic average.

E For nitrogen oxides, the arithmetic average of the one–hour arithmetic average emission rates during each 24–hour daily period measured from midnight to midnight At least four data points equally spaced in time shall be used to calculate each one–hour arithmetic average

F For opacity, a six–minute average, calculated using 36 or more data points equally spaced over a six–minute period

Subp. 5 **Operation of continuous monitors.** The owner or operator of a waste combustor with continuous monitors shall comply with the requirements of part 7017 1000, except as provided in items A to H

A Following the initial compliance test as required under part 7011 1270, the owner or operator of a waste combustor shall submit the initial compliance report as required under part 7011 1285, subpart 5

B Continuous monitors shall be operated so as to measure and record data for at least 90 percent of the hours the emission unit is operated each calendar quarter Valid monitoring data shall be obtained for at least 75 percent of the hours per day for 75 percent of the days per month that the waste combustor is operating and combusting solid waste

C All valid monitoring data shall be used to calculate emission rates, emission reductions, and operating parameters, even if the conditions of item B are not met.

D When continuous emissions data for sulfur dioxide removal efficiency or sulfur dioxide or nitrogen oxide emission rates are not obtained because of monitor breakdowns, repairs, calibration checks, and zero and span adjustments, emission data calculations to determine compliance shall be made using other monitoring systems or other data collection methods as approved by the commissioner or Code of Federal Regulations, title 40, part 60, Appendix A, Method 19, as amended, to provide valid emission data in order to meet the requirements of item B

E Zero drift and span drift checks of emission monitoring systems shall be conducted in accordance with Code of Federal Regulations, title 40, section 60 13, as amended.

F The span value of the sulfur dioxide continuous monitors at the inlet to the sulfur dioxide control device is 125 percent of the maximum estimated hourly potential sulfur dioxide emissions of the waste combustor unit, and the span value of the monitor at the outlet of the sulfur dioxide control device is 50 percent of the maximum estimated hourly potential sulfur dioxide emissions of the waste combustor unit

G Quarterly accuracy determinations and daily calibration drift tests shall be performed in accordance with procedures in Code of Federal Regulations, title 40, part 60, Appendix F, as amended, for sulfur dioxide, nitrogen oxides, and carbon monoxide

H The procedures under Code of Federal Regulations, title 40, section 60 13, as amended, shall be followed for installation, evaluation, and operation of continuous emissions monitoring systems

Subp 6 **Recording data from continuous monitoring.** The owner or operator of a waste combustor shall maintain a record of the information contained in this subpart Waste combustors shall maintain a permanent record of continuously measured emissions. The record of monitoring shall contain

A the calendar date,

B the following measurements recorded in computer–readable format and on paper

(1) all six–minute opacity readings,

(2) all one–hour average sulfur dioxide emission rates at the inlet and outlet of the acid gas control device if compliance is based on a percent reduction, or at the outlet only if compliance is based on the outlet emission limit, and

(3) all one–hour average carbon monoxide and nitrogen oxide emission rates, steam flow or alternative unit load measurement parameter as described in part 7011 1265, subpart 4a, combustion chamber temperature, and particulate matter control device temperatures, and

C. the following average rates

(1) all 24–hour daily geometric average percent reductions in sulfur dioxide emissions and all 24–hour daily geometric average sulfur dioxide emission rates,

(2) all 24–hour daily arithmetic average nitrogen oxides emission rates,

(3) all four–hour block or 24–hour daily arithmetic average carbon monoxide emission rates, as applicable, and

(4) all four–hour block arithmetic average unit load levels and particulate matter control device inlet temperatures

Subp 7 **Exceedences of continuously monitored emission limits.** If accurate and valid data results collected from continuous monitors for sulfur dioxide, nitrogen oxides, or carbon monoxide data exceed emission limits established in part 7011.1225 or in the waste combustor's permit after normal start–up, the waste combustor owner or operator shall undertake the following actions

A The exceedence shall be reported to the commissioner as soon as reasonably possible giving consideration to matters of plant or worker safety, or access to communications

B Appropriate repairs or modifications to return the waste combustor to compliance must be commenced within 72 hours of the exceedence

C If the waste combustor cannot be returned to compliance within 72 hours of the occurrence of the exceedence, the waste combustor shall be shut down If the modifications to return the waste combustor to compliance require the amendment of the air emission facility permit, the waste combustor shall shut down within 72 hours of the exceedence

D When repairs or modifications have been completed, the waste combustor owner or operator shall demonstrate to the commissioner that the waste combustor is in compliance The waste combustor may be started up after the owner or operator has notified the commissioner in writing of the date the owner or operator plans to start up the waste combustor and the date that compliance testing is scheduled Notification shall be given at least ten days m advance of the compliance test date

Statutory Authority: *MS s 116 07*

History: *18 SR 2584*

7011.1265 REQUIRED PERFORMANCE TESTS, METHODS, AND PROCEDURES.

Subpart 1 **Performance test methods and procedures.** An owner or operator of a waste combustor required to conduct performance tests for a waste combustor shall use the performance test methods and procedures specified in part 7017 2000 except as modified in this part Not operating a sorbent injection system for the sole purpose of testing in order to demonstrate compliance with the percent reduction standards for sulfur dioxide and hydrogen chloride is not a modification under part 7007 0100, subpart 14, as proposed at 17 SR 3008, and subsequently adopted

Subp 2 **Performance test methods for criteria pollutants.** An owner or operator of a waste combustor required to conduct performance tests for particulate matter, sulfur dioxide, or nitrogen oxides shall use test methods as described in items A to E

A. Part 7011 0725 shall apply to tests for particulate matter, except that for Class I, II, A, B, and C waste combustors, the minimum sample volume shall be 1 7 dscm (60 dscf) For Class III, IV, and D waste combustors, the minimum sample volume shall be 0.85 dscm (30 dscf) Smaller sampling times or sample volumes shall be approved by the commissioner, when the commissioner determines that they are necessitated by process variables or other factors Particulate matter emissions, expressed in gr/dscf, shall be corrected to seven percent oxygen by using the following formula

$$c_7 = \frac{14c}{(21-\%O_2)}$$

where c_7 is the concentration of particulate matter corrected to seven percent oxygen,

c is the concentration of particulate matter as measured by Code of Federal Regulations, title 40, part 60, Appendix A, Method 5, as amended, or in part 7011 0725, and

$\%O_2$ is the percentage of oxygen as measured by Code of Federal Regulations, title 40, part 60, Appendix A, Method 3, as amended

(1) Front–half particulate matter emission is the concentration of particulate matter as measured by Code of Federal Regulations, title 40, part 60, Appendix A, method 5, as amended

(2) Total particulate matter emission is the concentration of particulate matter as measured by part 7011 0725

For each Code of Federal Regulations, title 40, part 60, Appendix A, Method 5, as amended, run, the emission rate shall be determined using

(a) oxygen or carbon dioxide measurements,

(b) dry basis F factor, and

(c) dry basis emission rate calculation procedures in Code of Federal Regulations, title 40, part 60, Appendix A, Method 19, as amended.

B For sulfur dioxide emissions, Code of Federal Regulations, title 40, part 60, Appendix A, Method 19, section 5.4, as amended, shall be used to determine the daily geometric average percent reduction in the potential sulfur dioxide emission rate Method 19, section 4 3, as amended, shall be used to determine the daily geometric average sulfur dioxide emission rate Compliance with the sulfur dioxide emission limit and percent reduction shall be determined by using a continuous emission monitor to measure sulfur dioxide and calculating a 24–hour daily geometric mean emission rate and daily geometric mean percent reduction using Method 19, sections 4 3 and 5 4, as amended, as applicable For waste combustors which do not operate continuously, compliance shall be determined using a daily geometric mean of all hourly average values for the hours during the day that the facility is operated

C. For nitrogen oxides emissions, Code of Federal Regulations, title 40, part 60, Appendix A, Method 19, section 4 1, as amended, shall be used for determining the daily arithmetic average nitrogen oxides emission rate Compliance with the nitrogen oxides emission standards shall be determined by using a continuous emission monitor for measuring nitrogen oxides and calculating a 24–hour daily arithmetic average emission rate using Method 19, section 4 1, as amended For waste combustors which do not operate continuously, compliance shall be determined using an arithmetic mean of all hourly average values for the hours during the day that the facility is operated

D For opacity emissions, Code of Federal Regulations, title 40, part 60, Appendix A, Method 9, as amended, shall be used to determine compliance with opacity limits

E For Class IV waste combustors carbon monoxide emissions, compliance with the emission limit shall be determined by using Code of Federal Regulations, title 40, part 60, Appendix A, Method 10, as amended

Subp 3 **Performance test methods for other air contaminants.** If not specified in this subpart, the owner or operator shall use test methods in Code of Federal Regulations, title 40, part 60, Appendix A, or part 61, Appendix B, as amended, or other methods determined by the commissioner in writing to be equivalent

A. For hydrogen chloride, the percentage reduction in the potential hydrogen chloride emissions ($\%P_{HCl}$) is computed using the following formula.

$$\%P_{HCl} = \frac{(E_i - E_o)}{E_i}$$

where E_i is the potential hydrogen chloride emission rate, and E_o is the hydrogen chloride emission rate measure at the outlet of the acid gas control device

Code of Federal Regulations, title 40, part 60, Appendix A, Method 26, as amended, shall be used for determining the hydrogen chloride emission rate The minimum sampling time for Method 26 shall be one hour

B For PCDD/PCDF emissions, Code of Federal Regulations, title 40, part 60, Appendix A, Method 23, as amended, shall be used for determining compliance with the PCDD/PCDF emission limits For Class I, II, A, and B facilities, the minimum sample time shall be four hours per test run. For Class III, C, and D facilities, the minimum sample time shall be three hours per test run

C For metal emissions, Code of Federal Regulations, title 40, part 266, Appendix IX, section 3.1, as amended, shall be used for measuring metal emissions, except that m lieu of paragraph 3 1 1 1, the following shall apply· Applicability This method is applicable to the determination of total chromium (Cr), cadmium (Cd), arsenic (As), nickel (Ni), manganese (Mn), beryllium (Be), copper (Cu), zinc (Zn), lead (Pb), selenium (Se), phosphorus (P), thallium (Tl), silver (Ag), antimony (Sb), barium (Ba), and mercury (Hg) emissions from stationary sources This method may not be used for determining particulate emissions when

performing a mercury analysis because changes in the procedures to further facilitate particulate determination may affect the front-half mercury determination.

To determine the mercury concentration, the arithmetic average of three or more samples at the outlet of the air pollution control device shall be used The minimum sample volume shall be 30 dscf The maximum sample run time shall be two hours To determine the percent reduction of mercury, concurrent sampling for mercury at the inlet and outlet of the air pollution control system shall be performed at each occurrence of mercury emissions performance testing

Owners and operators of RDF combustors may choose to conduct mercury emissions testing either every 90 days or every 15 months If the owner or operator of an RDF combustor chooses to conduct testing every 90 days, the requirements of subitems (1) and (2) apply If the RDF combustor chooses to test every 15 months, the requirements of subitem (3) apply

(1) Procedures to determine compliance with the short-term mercury emission concentration limit are described in unit (a) If the waste combustor does not show compliance as determined in unit (a), compliance shall be determined as described in units (b) and (c)

(a) The waste combustor is in compliance with the mercury concentration limit if the arithmetic average of three or more samples is less than or equal to the applicable short-term mercury emission concentration limit

(b) If the average computed in unit (a) exceeds the short-term mercury emission concentration limit, the removal efficiency for each run shall be computed as follows

$$\%Hg_{\text{removal efficiency}} = [Hg_{m} - Hg_{out}]/HG_{in} \times 100$$

Where $Hg_{\text{removal efficiency}}$ is the removal efficiency of each sample run, HG_{in} is the mercury concentration measured at the inlet of the air pollution control device, and Hg_{out} is the mercury concentration measured at the outlet

(c) The waste combustor is in compliance with the short-term mercury emission limit, if the arithmetic average of each of the removal efficiencies as computed m unit (b) is greater than or equal to 85 percent

(2) Procedures to determine compliance with the long-term mercury emission concentration limit are described in unit (a) If the waste combustor does not show compliance as determined in unit (a), compliance shall be determined as described in unit (b)

(a) To determine compliance with the mercury emission concentration limit, the arithmetic average of all mercury emission concentrations measured in a compliance test available for the previous calendar year shall be used Initial compliance with the long-term mercury concentration limit shall be determined upon completion of the first calendar year Subsequent compliance shall be determined at each occurrence of mercury emission performance testing

(b) If the average that was computed in unit (a) exceeds the long-term mercury emission concentration, the removal efficiency for each run shall be computed by the equation in subitem (1), unit (b) The waste combustor is in compliance with the long-term mercury emission limit if the arithmetic average of each of the removal efficiencies is greater than or equal to 85 percent

(3) Owners or operators of waste combustors combusting RDF who choose to conduct mercury emission testing every 15 months shall use the procedures in this subitem to determine compliance with mercury emission limits

(a) The waste combustor is in compliance with the 15-month mercury emission concentration limit if the arithmetic average of three or more samples is less than the 15-month test interval mercury emission concentration limit

(b) If the average computed in unit (a) exceeds the 15-month mercury emission concentration limit, the removal efficiency for each run shall be computed by the equation in subitem (1), unit (b) The waste combustor is in compliance with the 15-month mercury emission limit if the arithmetic average of the removal efficiencies is greater than 85 percent

Subp 4 **Steam flow measurement method.** The method contained in ASME Power Test Codes Test Codes for Steam Generating Units, PTC 4 1 (1972), section 4, incorporated

by reference in part 7011 1205, shall be used for calculating the steam flow required under part 7011 1260, subpart 3, item A, subitem (2) The recommendations of Instruments and Apparatus. Measurement of Quantity of Materials, Interim Supplement 19 5 (1971), chapter 4, incorporated by reference in part 7011 1205, shall be followed for design, construction, installation, calibration, and use of nozzles and orifices

Subp 4a **Alternative methods for measuring unit load.** Alternative continuous measuring methods in place of steam flow may be installed and operated, provided that the method continuously measures the waste combustor unit load, is equivalent to results obtained when using the method in subpart 4, and the use of the method is approved by the commissioner

Subp 5 **Performance tests required.** Performance tests shall be conducted on waste combustors to determine the emission rates of the following air contaminants

A lead,

B cadmium,

C mercury, and

D any other air contaminant for which an emission limitation applies to the waste combustor

Subp. 6. **Operation during performance testing.** The owner or operator of a waste combustor shall report to the commissioner the operating conditions including operating parameters of the air pollution control equipment, flue gas temperatures, air flow rates, and pressure drop across the combustion system

Subp 7 **Maximum demonstrated capacity.** For Class I, II, III, A, B, C, and D waste combustors, maximum demonstrated capacity of each waste combustor unit shall be determined during the initial performance test for PCDD/PCDF and each subsequent performance test during which compliance with the PCDD/PCDF emission limit m part 7011 1225 is achieved For Class IV waste combustors, maximum demonstrated capacity shall be determined during the initial performance test and each subsequent performance test during which compliance with emission limits is demonstrated

Subp 8. **Particulate matter control device temperature.** The owner or operator of a waste combustor with postcombustion particulate matter control shall determine and record the average gas stream temperature as measured at the inlet to the most efficient particulate matter control device during the initial and each subsequent performance test for polychlorinated dibenzo–p–dioxins and polychlorinated dibenzofurans demonstrating compliance with the PCDD/PCDF emission limit in part 7011 1225

Subp 9 **Mercury removal equipment operation.** The owner or operator of a waste combustor using additives for the control of mercury shall determine and record the average additive feedrate during the initial and at each subsequent performance test for mercury

Subp 10 **Solid waste composition.** Solid waste composition studies shall be conducted as described in part 7007 0501, subpart 2

Subp 11 **Exceedences of emission limits.** If accurate and valid data results of a performance test demonstrate an exceedence of a standard of performance as described in part 7011 1225 or in the waste combustor's air emission facility permit after normal start–up, the waste combustor owner or operator shall undertake the actions in items A to D.

A The exceedence shall be reported to the commissioner as soon as reasonably possible giving consideration to matters of plant or worker safety, or access to communications and the applicable reporting provisions of part 7007 0800, subpart 6, shall be met

B Within 30 days of the report of the exceedence, the owner or operator shall undertake appropriate repairs or modifications to return the waste combustor to compliance or undertake performance testing for a maximum of 30 days, for the purpose of demonstrating compliance with the emission limit

C If the waste combustor cannot be returned to compliance within 30 days of the report of initial exceedence, the waste combustor shall be shut down If the modifications to return the waste combustor to compliance require the amendment of the air emission facility permit, the waste combustor shall shut down on the 31st day after the report of the exceedence

D When repairs or modifications have been completed, the waste combustor owner or operator shall demonstrate to the commissioner that the waste combustor is in compliance If shutdown was required under item C, the waste combustor may be restarted after the owner of operator has notified the commissioner in writing of the date on which the owner or operator plans to start–up and to begin compliance testing. Notification shall be at least ten days in advance of the compliance test date

Statutory Authority: *MS s 116.07*

History: *18 SR 2584*

7011.1270 PERFORMANCE TEST, WASTE COMPOSITION STUDY, AND ASH SAMPLING FREQUENCY.

The owner or operator of a waste combustor shall conduct the performance tests required in part 7011 1265, subpart 5, based on the schedules in items A to D

A Class I, A, and B waste combustors shall conduct performance tests.

(1) once within the normal start–up,

(2) once annually after the test in subitem (1), but not more than 12 months following the initial performance test,

(3) for mercury emissions every 90 days. Waste combustors combusting RDF may choose to conduct performance tests for mercury every 15 months. If a test shows that an emission limit for mercury from a waste combustor combusting RDF is exceeded, the commissioner shall require testing every 90 days thereafter; and

(4) a current waste composition study every five years

B Class II and C waste combustors shall conduct performance tests

(1) once within the normal start–up, except as provided in subitem (3)(b),

(2) once annually after the test in subitem (1), but not more than 12 months following the initial performance test. If all three annual performance tests for a three–year period show compliance with the particulate matter and PCDD/PCDF standards in part 7011 1215, the owner or operator may continue to conduct annual testing, or may choose to conduct performance tests every 2–1/2 years, except as required by subitem (3) At a minimum, a performance test for particulate matter and PCDD/PCDF shall be conducted every 2–1/2 years, but no more than 30 months following the previous compliance test If a performance test indicates noncompliance with the particulate matter and PCDD/PCDF standards, the owner or operator shall resume annual testing for three years If all three annual performance tests for the three–year period show compliance with particulate matter and PCDD/PCDF standards in part 7011 1215, the owner or operator may conduct performance testing every 2–1/2 years;

(3) for mercury emissions

(a) Class II waste combustors shall test every 90 days Waste combustors combusting RDF may choose to conduct performance tests for mercury emissions every 15 months If a test shows that an emission limit for mercury from a waste combustor combusting RDF is exceeded, the commissioner shall require performance testing every 90 days, and

(b) Class C waste combustors shall commence testing June 20, 1995, and continue testing every 90 days thereafter. Waste combustors combusting RDF may choose to conduct performance tests for mercury emissions every 15 months. If a test shows that emission limits for mercury from a waste combustor combusting RDF are exceeded, the commissioner shall require performance testing every 90 days, and

(4) a current waste composition study every five years

C Class III and D waste combustors shall conduct performance tests

(1) once within the normal start–up;

(2) every 2–1/2 years after the test in subitem (1), but not more than 30 months following the initial performance test,

(3) for Class III waste combustors, emissions of mercury, every 90 days,

(4) for Class D waste combustors, emissions of mercury every 2–1/2 years,

(5) for ash, in accordance with part 7045 0131 every 30 months for toxicity by toxic characteristic leach procedure for arsenic, barium, cadmium, chromium, lead, mercury, selenium, and nickel, and

(6) a current waste composition study every five years

D. Class IV waste combustors shall conduct performance tests

(1) once within the normal start-up,

(2) every five years after the test in subitem (1), but not more than 60 months following the initial performance test; and

(3) for ash, in accordance with part 7045 0131 every 60 months for toxic characteristic leach procedure for arsenic, barium, cadmium, chromium, lead, mercury, selenium, and nickel

Statutory Authority: *MS s 116 07*

History: *18 SR 2584*

7011.1275 PERSONNEL TRAINING.

Subpart 1. **General.** Waste combustor facility personnel described in subpart 2 must complete a program of instruction and on-the-job training based on the operating manual described in subpart 3 The program must train facility personnel to maintain compliance with parts 7011 1201 to 7011.1285 Individual training shall be specific to the position held and shall, at a minimum, address the items in subpart 3.

For personnel described in subpart 2, the training program shall require:

A. initial review of the operating manual prior to assumption of any job-related activities affecting air emissions, except that those hired prior to June 20, 1994, must complete the review by June 20, 1995;

B review of the operating manual relevant to a newly assigned position before assumption of new job-related activities affecting air emissions;

C that those without waste combustor or boiler operation experience, initially review the operating manual and work under the direct supervision of a certified operator or a certified operator's designee before assumption of job-related activities affecting air emissions for the following duration:

(1) for Class I, II, III, A, B, C, or D waste combustor personnel, 40 hours, and

(2) for Class IV waste combustor personnel, 12 hours; and

D. annual review of the operating manual

Subp. 2 **Personnel who shall be trained.** The training program shall train waste combustor personnel who have responsibilities which affect the operation of the waste combustor, including, but not limited to, chief facility operators, shift supervisors, operator supervisors, control room personnel, ash handlers, maintenance personnel, and crane/load handlers.

Subp. 3. **Operating manual requirements.** The owner or operator of a waste combustor shall develop and update on a yearly basis a site specific operating manual that shall, at a minimum, address the following elements of waste combustor unit operation

A a summary of the applicable state rules and federal regulations to the activities described in the facility's air emissions permit,

B a description of basic combustion theory applicable to the facility's waste combustor unit;

C. procedures for receiving, handling, and feeding solid waste,

D. waste combustor unit start-up, shutdown, and malfunction procedures,

E procedures for maintaining proper combustion air levels,

F. procedures for operating the waste combustor within the standards established in parts 7011 1201 to 7011.1285;

G. procedures for responding to periodic upset or off-specification conditions;

H. procedures for minimizing particulate matter carryover,

I procedures for monitoring the degree of solid waste burnout;

J. procedures for handling ash,

K. procedures for monitoring waste combustor emissions,

L procedures for reporting and record keeping,

M timetables and procedures for routine inspection and maintenance of equipment affecting air emissions;

N procedures for activating communications and alarm systems, and

O procedures to implement the facility's industrial waste management plan

The operating manual shall be kept in a location easily accessed by the personnel described in subpart 2.

Subp 4. **Personnel identity.** The owner or operator must maintain as a part of the operating record required by part 7011 1285, subpart 2, a record of the identity of all personnel who have received training and the number of training hours The records shall be provided to the commissioner on demand.

Statutory Authority: *MS s 116.07*

History: *18 SR 2584*

7011.1280 OPERATOR CERTIFICATION.

Subpart 1 **Scope.** The commissioner shall certify a person provided the person can demonstrate the completion of.

A. ASME provisional certification as described in Standard for the Qualification and Certification of Resource Recovery Facility Operators, American Society of Mechanical Engineers (ASME) QRO–1–1989, incorporated by reference in part 7011 1205, for chief facility operators and shift supervisors of municipal waste combustors, or

B the coursework and examination program set forth in subpart 3

Subp 2 **Personnel who shall be certified.** The following personnel shall be certified through the process established in this part.

A for Class I, II, III, A, B, C, or D waste combustors, the chief facility operator and shift supervisors, and

B for Class IV waste combustors, the operator supervisor

Subp 3 **Requirements for operator certification.** To be certified, a person must demonstrate the skill, knowledge, and experience necessary to operate a waste combustor, by meeting the criteria of item A or B

A A certified operator of a Class IV waste combustor shall

(1) hold a high school diploma or equivalent, or demonstrate five years of experience in incinerator operation, general industry, industrial process, or power plant operation,

(2) complete at least 16 hours of training approved by the commissioner which are designed to ensure competency to operate a Class IV waste combustor;

(3) complete the certification process described in subpart 4; and

(4) pass the examination described in subpart 5.

B A certified operator of a Class I, II, III, A, B, C, or D waste combustor shall comply with the requirements in subitems (1) and (2)

(1) Persons who possess a Minnesota Department of Labor and Industry boiler license of at least second class engineer, Grade B, shall

(a) have one year of experience operating a steam generation plant or Class I, II, III, A, B, C, or D waste combustor at the licensure level of at least second class engineer, Grade B, and complete at least 24 hours of training approved by the commissioner which are designed to ensure competency to operate a Class I, II, III, A, B, C, or D waste combustor;

(b) complete the certification process described m subpart 4, and

(c) pass the examination described in subpart 5.

(2) Persons who do not meet the qualifications of subitem (1), unit (a), shall.

(a) have three years of experience operating a Class I, II, III, A, B, C, or D waste combustor or in power generation and complete at least 24 hours of training ap-

proved by the commissioner which are designed to ensure competency to operate a Class I, II, III, A, B, C, or D waste combustor,

(b) complete the certification process described in subpart 4, and

(c) pass the examination described in subpart 5

Subp. 4. **Certification process.**

A. Application for certification shall be made in writing on a form provided by the commissioner

B. Within 15 days of receipt, the commissioner shall review the application for certification and determine the adequacy of the information included in the application If the commissioner determines that additional information or documentation is necessary to assess the eligibility of the applicant, the commissioner shall notify the applicant The application shall be considered incomplete until the applicant provides the required information.

C The commissioner shall notify an applicant of eligibility for certification

Subp. 5 **Examinations.**

A. The commissioner shall approve an examination for the different classes of waste combustors. The examination shall be administered as a written closed book examination.

B. For certification of a person to operate a Class I, II, III, A, B, C, or D waste combustor, the examination shall be in three areas, divided as follows:

(1) 25 percent of the questions on solid waste collection, transfer, and management covering, but not limited to, solid waste composition, collection techniques, seasonal and industrial impact on the character of solid waste, ash disposal, landfills, composting, environmental regulations and requirements, and public perceptions,

(2) 25 percent of the questions on theory covering combustion, chemistry, thermodynamics, material science, waste combustor design principles, mechanical and electrical operation and technology, air pollution control technology theory, and air emission stack monitoring,

(3) 50 percent of the questions on the operation of a waste combustor covering material handling equipment, ash handling and disposal operations within the facility, waste combustor design applications, general operations and maintenance procedures and techniques, control room operations and troubleshooting, operation of pollution control devices, and continuous emissions monitors and their calibration

C For certification of a person to operate a Class IV waste combustor, the examination shall be as follows.

(1) 30 percent of the questions shall cover basic principles, including principles of combustion, products of combustion, solid waste characteristics, and air pollutants,

(2) 30 percent of the questions shall cover equipment including incineration equipment characteristics, automatic control equipment, and emission monitoring equipment; and

(3) 40 percent of the questions shall cover incinerator and monitoring equipment operation including typical operating problems and solutions, maintenance procedures, incinerator operation, ash handling, and solid waste feed management systems

D. A minimum grade of 70 percent shall be required to pass

E An applicant who fails to pass the examination shall be eligible to retake the examination whenever it is next offered by an institution approved by the commissioner

Subp 6 **Certificates.** Within ten days of the examination date, the institution administering the certification examination shall provide to the commissioner a list of individuals who completed the training and those who successfully passed the examination

The commissioner shall issue a certificate when the applicant has met all necessary conditions prescribed in subpart 1. Certificates are valid for three years

Subp 7 **Renewal.**

A A certified individual shall apply for certificate renewal 30 days prior to certificate expiration Renewal certificates shall be issued by the commissioner when the commissioner receives the application, along with evidence that the person has, during the preceding

three years, earned credit for attending training courses offered by the agency or other training courses approved by the commissioner as described in subpart 8, including personnel training described in part 7011 1265, for the number of hours as identified as follows.

(1) Class I, II, III, A, B, C, or D, 24 hours, and

(2) Class IV, eight hours

An individual whose certificate has expired must comply with item B or C.

B. If an individual applies for certificate renewal within one year following the expiration of the certificate, the commissioner may renew the certificate without examination. The individual must meet the training requirements of item A at the time of application before the certificate will be renewed.

C. If an individual applies for certificate renewal more than one year following the expiration of the certificate, the commissioner may renew the certificate when the individual complies with the requirements of subpart 3.

Subp 8 **List of courses.** The commissioner shall biennially prepare and make available to interested parties a list of accredited waste combustor operator training sources and educational activities for which credit may be obtained to meet the training requirements for certification

Subp. 9 **Sanctions.**

A. Criteria The commissioner shall refuse to issue, renew, or reinstate a certificate, suspend or revoke a certificate, or use any lesser remedy against an individual for any of the following reasons·

(1) submittal of false or misleading information or credentials in order to obtain or renew a certificate;

(2) failure to meet the requirements for renewal certification; or

(3) incompetency, negligence, or inappropriate conduct in the performance of duties as a certified operator

B Investigation. Upon receiving a signed written complaint which alleges the existence of grounds for sanctions against a certified operator, the commissioner may initiate an investigation. No revocation, suspension, or other sanction shall be imposed before notice is given to the certified operator and an opportunity for a contested case hearing is provided

C Procedures. Procedures for contested case hearings shall comply with the provisions of the Administrative Procedure Act, Minnesota Statutes, chapter 14.

D Recertification. An individual whose certificate has been revoked shall not be entitled to apply for recertification until at least one year following the effective date of revocation or for any longer period of time specified in the revocation order.

E. Reinstatement after suspension. The commissioner shall reinstate a suspended certificate if the individual whose certificate has been suspended fulfills the terms of the suspension order and meets all applicable requirements of the rules for obtaining a certificate

Subp. 10. **Certification deadlines.** Individuals requiring certification who are employed as a chief facility operator or shift supervisor of a Class A or B waste combustor shall obtain certification by February 11, 1993. All other individuals employed on June 20, 1994, who require certification as described in this part shall obtain certification by June 20, 1996, or normal start–up of a waste combustor, whichever is later.

Statutory Authority: *MS s 116.07*

History: *18 SR 2584*

7011.1285 OPERATING RECORDS AND REPORTS.

Subpart 1. **Scope.** The owner or operator of a waste combustor shall maintain records and submit reports as required in this part The owner or operator of a waste combustor required to obtain a permit under part 7007 0200, subpart 4, or 7007 0250, subpart 5, are also subject to the record keeping and reporting requirements in part 7007 0800, subparts 5 and 6. Records shall be retained for a minimum of five years

Subp. 2. **Daily operating record.** The owner or operator shall maintain a daily record of the operation of the waste combustor The record shall contain:

A. the calendar date;

B the hours of operation,

C. the weight of solid waste combusted,

D the weight of solid waste requiring disposal at a solid waste land disposal facility, including separated noncombustibles, excess solid waste, and ash,

E. the amount and description of industrial solid waste received each day, the generator's name, and the method of handling,

F the measurements and determination of emissions averages as required in part 7011.1260, subpart 6,

G results of performance tests conducted on waste combustor units as required in part 7011 1270,

H instances of dumpstack use,

I the names of persons who have completed initial review or subsequent annual review of the operating manual;

J the reasons for exceeding any of the average emission rates, percent reductions, or operating parameters specified under part 7011.1260, subpart 6, item C, or the opacity limit and a description of corrective actions taken, and

K reasons for not obtaining the minimum number of hours of sulfur dioxide or nitrogen oxides emissions or operational data (carbon monoxide emissions, steam flow or alternative unit load measurement parameter as described in part 7011 1265, subpart 4a, particulate matter control device temperature) and a description of corrective actions taken

Subp 3 **Quarterly reports.** The owner or operator of a Class I, II, III, A, B, C, or D waste combustor shall submit quarterly reports to the commissioner within 30 days after the quarter ending December 30, March 30, June 30, and September 30 of each year The report shall contain the following items·

A calendar date,

B sulfur dioxide, nitrogen oxide, carbon monoxide emissions, and load level and particulate matter control device temperature as required by part 7011 1260, subpart 6, item C,

C instances of dumpstack use,

D the identification of operating days when any of the average emission rates, percent reductions, or operating parameters specified under part 7011 1260, subpart 6, item C, or the opacity level exceeded the applicable limits, with the reasons for such exceedences as well as a description of corrective actions taken,

E the percent of the operating time for the quarter that the opacity CEMS was operating and collecting valid data;

F the identification of operating days for which the minimum number of hours of sulfur dioxide or nitrogen oxides emissions or operational data (carbon monoxide emissions, steam flow or alternative unit load measurement parameter as described in part 7011.1265, subpart 4a, particulate matter control device temperature) have not been obtained, including reasons for not obtaining sufficient data and a description of corrective actions taken,

G the results of daily sulfur dioxide, nitrogen oxides, and carbon monoxide CEMS drift tests and accuracy assessments as required in part 7011 1260, subpart 5,

H. the information required in subpart 2, items C, D, and E, summarized to reflect quarterly totals; and

I a compliance certification as required in part 7007 0800, subpart 6, item C

Subp 4 **Annual reports.** By April 30 of each year, the owner or operator of a Class IV waste combustor shall submit the following information to the commissioner in an annual report·

A. the information required in subpart 2 summarized to reflect annual totals,

B a summary report of any excess emissions that occurred during the year; and

C a compliance certification as required in part 7007.0800, subpart 6, item C

Subp. 4a. **Annual report for Class C waste combustors.** By April 30 of each year, the owner or operator of a Class C waste combustor shall submit a plan to separate wastes which contain mercury, as required by part 7011 1255

Subp 5 **Initial compliance report.** Following the initial compliance test as required under part 7011 1270, the owner or operator of a waste combustor shall submit the initial compliance test data, the performance evaluation of the CEMS using the applicable performance specifications in part 7017 1000, and the maximum demonstrated capacity and particulate matter control device temperature established during the PCDD/PCDF testing.

Subp 6 **Performance test reports.** The owner or operator shall submit a report containing the results of performance tests conducted to determine compliance with waste combustor unit emission limits whenever performance testing is conducted The report shall be submitted within 14 days of the owner's or operator's receipt of the results of the performance test

Statutory Authority: *MS s 116 07*

History: *18 SR 2584*

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

[For text of items A to C, see M R]

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

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

where

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

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

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

Subp 5 **Compliance with standards.** Compliance with part 7011 1310 shall be determined as follows

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

or

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

where

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

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

2,000 = English conversion factor, lb/ton

Statutory Authority: *MS s 116 07*

History: *18 SR 1412*

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 SO_2 concentration.** The sampling site for determining SO_2 concentration by Method 6 shall be the same as for determining volumetric flow rate by Method 2 The sampling point in the duct for determining SO_2 concentration by Method 6 shall be at the centroid of the cross section if the cross sectional area is less than 5 m^2 (54 ft^2) or at a point no closer to the walls than 1 meter (39 inches) if the cross sectional area is 5 m^2 or more and the centroid is more than one meter from the wall The sample shall be extracted at a rate proportional to the gas velocity at the sampling point The minimum sampling time shall be ten minutes and the minimum sampling volume 0 01 dscm (0 35 dscf) for each sample The arithmetic average of two samples shall constitute one run Samples shall be taken at approximately one–hour intervals

Subp 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–m^3,

0 0186 = English units material balance factor divided by 100, lb–min/hr–ft^3,

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

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

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

$\%O_2$ = percent oxygen by volume, dry basis, as determined by Method 3,

2 088 = metric units material balance factor divided by 100, kg–min/hr–m^3;

0 1303 = English units material balance factor divided by 100, lb–min/hr–ft^3,

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

0 0994 = metric units material balance factor divided by 100, kg–min/hr–m^3,

0 0062 = English units material balance factor divided by 100, lb–min/hr–ft^3

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

$R_e = (60x10^{-6})\ Q_{rv}C_x$ (metric units), or

$R_e = (8.57x10^{-3})\ Q_{rv}C_s$ (English units)

where

R_e = particulate emission rate, kg/hr (English units lb–hr),

$60x10^{-6}$ = metric units conversion factor, mm–kg/hr–gr,

$8\ 57x10^{-3}$ = 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/mm),

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

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

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

New Affected Facilities		Existing Affected Facilities	
$R_a = 1\ 0 + \frac{0\ 18\ H}{R_c}$		$R_a = 10\ 0 + \frac{0\ 72\ H}{R_c}$	(Metric Units)
	or		
$R_a = 1.0 + \frac{0.10\ H}{R_c}$		$R_a = 10\ 0 + \frac{0\ 4\ H}{R_c}$	(English Units)

where

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

1 0 = emission standard for new affected facilities, 1 0 kg/1000 kg (English units 1.0 lb/1000 lb) of coke burn–off in the fluid catalytic cracking unit catalyst regenerator;

10 0 = emission standard for existing affected facilities;

0 18 = metric units maximum allowable incremental rate of particulate emissions for new affected facilities gm/million cal,

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

0 72 = metric units maximum allowable incremental rate of particulate emissions for existing affected facilities gm/million cal,

0 4 = English units maximum allowable incremental rate of particulate emissions for existing affected facilities, lb/million Btu,

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

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

Statutory Authority: *MS s 116 07*

History: *18 SR 1412*

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 H_2SO_4, shall be determined during each testing period by a suitable method approved by the agency. The agency may require the production rate to be confirmed by a material balance over the production system

Subp 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 $H_2 SO_4$, shall be determined by dividing the emission rate in lb/hr (kg/hr) by the acid production rate. The emission rate shall be determined by the equation, Q_s x c = lb/hr (kg/hr), where Q_s = volumetric flow rate of the effluent in dscf/hr (dscm/hr) as determined m 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: *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 1412*

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 x c = lb/hr (kg/hr)

where Q_s = volumetric flow rate of the effluent in dscf/hr (dscm/hr), as determined in accordance with part 7011.1720, item B, and c = NO_2 concentration in lb/dscf (kg/dscm), as determined in accordance with part 7011.1720, item D

Statutory Authority: *MS s 116 07*

History: *18 SR 1412*

7011.1915 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 minimum sampling time for each run shall be at least 120 minutes and the sampling rate shall be at least 0.9 dscm/hr (0.53 dscf/min) except that short-

er sampling times, when necessitated by process variables or other factors, may be approved by the agency. Particulate matter sampling shall be conducted during representative periods of charging and refining, but not during pouring of the heat.

Statutory Authority: *MS s 116 07*

History: *18 SR 1412*

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/mm) 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

Statutory Authority: *MS s 116 07*

History: *18 SR 1412*