CHAPTER 33.1-15-05
EMISSIONS OF PARTICULATE MATTER RESTRICTED

Section
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33.1-15-05-01. Restriction of emission of particulate matter from industrial processes.

1. **General provisions.**

   a. This section applies to any operation, process, or activity from which particulate matter is emitted except the burning of fuel for indirect heating in which the products of combustion do not come into direct contact with process materials, the burning of refuse, and the processing of salvable material by burning.

   b. The process weight rate per hour referred to in this section shall be based upon the normal operation maximum capacity of the equipment, and if such normal maximum capacity should be increased by process or equipment changes, the new normal maximum capacity shall be used as the process weight in determining the allowable emissions.

2. **Emission limitations.** No person shall cause, suffer, allow, or permit the emission of particulate matter in any one hour from any source in excess of the amount shown in table 3 for the process weight allocated to such source.

   a. Exceptions.

      (1) [Reserved].

      (2) The department may prescribe air quality control requirements that are more restrictive and more extensive than provided in subsection 2 if the particulate matter emitted is a radioactive, toxic, or deleterious substance which may affect human health or well-being or that would cause significant damage to animal or plant life.

      (3) Any existing emission source which has particulate collection equipment with a collection efficiency of ninety-nine and seven-tenths percent or more by weight shall be considered as meeting the provisions of subsection 2. The efficiency of the particulate collection equipment shall be determined as outlined in section 33.1-15-05-04 with the process being served by the particulate collection equipment being run at normal operation maximum capacity.

      (4) Any portable emission source, not operated at the same premise for more than six months, shall be considered as meeting the provisions of subsection 2 if the source stack or stacks are equipped with particulate collection efficiency of eighty-five percent or more by weight as determined in paragraph 3, and all of the following conditions are met:

         (a) The source must not be located within a city.

         (b) The source must not be located within one-half mile [.80 kilometers] of any occupied residence, and within one mile [1.61 kilometers] of the source there shall be no more than two occupied residences.

(c) The source must not be located within one-quarter mile [.40 kilometers] of any highway or public road.

b. Grievance procedure. If any party is aggrieved by the department's decision as referenced in paragraph 2 of subdivision a, that party may request a hearing before the department to review such decision. Such hearing must be conducted according to North Dakota Century Code chapter 28-32. If a hearing is requested, the requirements of paragraph 2 of subdivision a are not effective until ordered by the department at the conclusion of the hearing process.

Table 3. Maximum Allowable Rates of Emission of Particulate Matter from Industrial Processes

English		Metric	
Process Weight Rate (p)	Allowable Emission Rate (E)	Process Weight Rate (p)	Allowable Emission Rate (E)
tons/hr	lb/hr	metric tons/hr	kg/hr
0.05	0.551	0.045	0.25
0.25	1.62	0.23	0.74
0.50	2.58	0.45	1.16
2.50	7.58	2.27	3.43
5.00	12.05	4.54	5.46
10.00	19.18	9.07	8.67
25.00	35.43	22.68	16.03
50.00	44.58	45.36	20.21
250.00	60.96	226.80	27.65
500.00	68.96	453.59	31.29
1,000.00	77.59	907.19	35.21
2,500.00	90.06	2,267.96	40.87

Interpolation of the data in this table for process weight rates up to 30 tons/hr [27.21 metric tons/hr] shall be accomplished by the use of the equations:

$E = 4.10\ p^{0.67}$ (English units)

$E = 1.98\ p^{0.67}$ (Metric units)

and interpolation and extrapolation of the data for process weight rates in excess of 30 tons/hr [27.21 metric tons/hr] shall be accomplished by the use of the equations:

$E = 55.0\ p^{0.11} - 40$ (English units)

$E = 25.25\ p^{0.11} - 18.2$ (Metric units)

where E = allowable emission rate in lb/hr [kg/hr] and p = process weight rate in tons/hr [metric tons/hr].

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General Authority: NDCC 23.1-06-04; S.L. 2017, ch. 199, § 1
Law Implemented: NDCC 23.1-06-04, 23.1-06-13; S.L. 2017, ch. 199, § 21

33.1-15-05-02. Maximum allowable emission of particulate matter from fuel burning equipment used for indirect heating.

1. **General provisions.**

   a. This section applies to installations in which fuel is burned for the primary purpose of producing steam, hot water, hot air, or other indirect heating of liquids, gases, or solids and, in the course of doing so, the products of combustion do not come into direct contact with process materials. Fuels include those such as coal, coke, lignite, coke breeze, fuel oil, and wood but do not include refuse. When any products or byproducts of a manufacturing process are burned for the same purpose or in conjunction with any fuel, the same maximum emission limitations shall apply.

   b. The maximum allowable particulate matter which may be emitted from fuel burning units at a source is determined by the maximum or manufacturer's rated heat input of each unit.

   c. Fuel burning equipment that meets the applicability requirements of subdivision a in which a gaseous fuel is burned alone or in combination with other gaseous fuels is exempt from the emission limitations in subsection 2. Fuel burning equipment that burns a gaseous fuel, or fuels, in combination with other fuels is subject to the emission limitations in subsection 2.

2. **Emission limitations.**

   a. Existing installations. No person shall cause or permit the emission of particulate matter, caused by combustion of fuel in any existing fuel burning equipment, from any stack or chimney in excess of eighty-hundredths pounds of particulates per million British thermal units [344 nanograms per joule] heat input. Provided, however, as technology develops for making new control equipment compatible, both technically and economically, with present plants they shall comply with limitations on emissions of particulate matter from fuel burning installations as outlined in subdivision b when directed by the department.

   b. New installations. No person shall cause or permit the emission of particulate matter, caused by the combustion of fuel in any new fuel burning equipment, from any stack or chimney in excess of the quantity set forth in table 4.

   c. Means shall be provided in all newly constructed units and wherever practicable in existing units to allow the periodic measurement of fly ash and other particulate matter.

   d. No person may burn or cause or permit the burning of refuse, including preservative treated wood, in any installation which was designed for the sole purpose of burning fuel unless approved by the department.

   e. Existing or new installations, with a heat input of not more than ten million British thermal units per hour and sources with multiple boilers with a total aggregate heat input of not more than ten million British thermal units per hour, shall be exempt from the applicable allowable emission rate set forth in subdivision a or in table 4, respectively. These sources shall be subject to visible emission and ambient air quality standards.

   f. Any new or existing source whose heat input is greater than two hundred fifty million British thermal units per hour and is equipped with state-of-the-art control technology capable of complying with the particulate emission limitations of subparagraph 1 of

paragraph a of section 60.42 of subpart D of chapter 33.1-15-12 [40 CFR 60.42(a)(1)] shall comply with such limitations when directed by the department.

g. If any party is aggrieved by the department's decision as referenced in subdivision a or f, that party may request a hearing before the department to review such decision. Such hearing must be conducted according to North Dakota Century Code chapter 28-32. If a hearing is requested, the emission limitations as referenced in subdivision a or f (whichever is applicable) are not effective until ordered by the department at the conclusion of the hearing process.

Table 4. Maximum Allowable Rates of Emission of Particulate Matter from New Fuel Burning Equipment

Heat Input (H)	Allowable Emission Rate (E)	Heat Input (H)	Allowable Emission Rate (E)
10^6 Btu/hr	lb/10^6 Btu	joules/hr	nanogram/joule
10 or less	0.600	1.05×10^{10}	258
20	0.548	2.11×10^{10}	235
30	0.519	3.16×10^{10}	224
40	0.500	4.22×10^{10}	215
50	0.486	5.27×10^{10}	209
100	0.444	1.05×10^{11}	191
150	0.421	1.58×10^{11}	181
200	0.405	2.11×10^{11}	174
250	0.394	2.64×10^{11}	169

Interpolation and extrapolation of the data in this table shall be accomplished by the use of equations:

$E = 0.811\ H^{-0.131}$ (English units)

$E = 5{,}307\ H^{-0.131}$ (Metric units)

where E = allowable emission rate in lb/million Btu of heat input [nanogram/joule] and H = heat input in millions of Btu/hr [joules/hr].

History: Effective January 1, 2019.
General Authority: NDCC 23.1-06-04; S.L. 2017, ch. 199, § 1
Law Implemented: NDCC 23.1-06-04, 23.1-06-13; S.L. 2017, ch. 199, § 21

33.1-15-05-03. Refuse incinerators.

1. **Applicability.**

a. The owner or operator of an incinerator of any design capacity for refuse, except trash and refuse derived fuel, must comply with 40 CFR part 60, subpart Ea, which is incorporated by reference in chapter 33.1-15-12.

b. Beginning August 1, 1996, no owner or operator of an incinerator for refuse may incinerate materials of any type or form which are recyclable, unless the owner demonstrates to the department that recycling for a waste material is not reasonably available. Documents subject to state or federal privacy regulations may be incinerated when no other acceptable method of disposal is reasonably available.

c. Beginning August 1, 1997, each existing incinerator for trash must meet the same standards as a new incinerator for trash.

d. As used in this section, "new incinerator" means an incinerator, the construction for which has not been approved by the department prior to August 1, 1995.

2. **Existing trash incinerators.** This subsection applies to any owner or operator of an incinerator for trash of any design capacity existing on August 1, 1995.

a. Prohibited waste. No infectious waste, radioactive waste, hazardous waste, special waste, industrial waste, or any other solid waste may be burned in an incinerator designed for trash unless the incinerator's performance, design, and operating standards for those solid wastes are also met.

b. Operator training. The owner or operator of an incinerator for trash shall provide both written and oral instructions for each operator in the proper operation of the incinerator.

c. Recordkeeping and reporting.

(1) The owner or operator of an incinerator for trash shall keep a log indicating the dates and approximate quantities of waste received from an onsite source, and from each offsite source, including the transporter. The log shall be kept and maintained for a minimum period of three years from the date waste is received.

(2) An owner or operator of an incinerator for trash shall record in the log any operational error or failure of one-hour or more duration of combustion equipment, emission control equipment, waste charging equipment, or monitoring equipment.

(3) When requested by the department, the owner or operator of an incinerator for trash shall provide a summary of the daily burning and hours of operation.

3. **New trash incinerators.** In addition to subsection 2, this subsection applies to an owner or operator of a new incinerator for trash.

a. Design. Each new incinerator for trash must be equipped with a primary combustion chamber or zone which provides complete combustion of solid waste and a secondary combustion chamber or zone which provides turbulent mixing. Auxiliary fuel burners are required in all chambers. The department may approve an alternate design provided the design achieves the performance requirements of this section.

b. Opacity. No owner or operator of a new incinerator for trash may allow to be discharged into the atmosphere any air contaminant which exhibits an opacity greater than ten percent except that a maximum of twenty percent opacity is permissible for not more than one 6-minute period per hour.

c. Operating temperature. Each new incinerator for trash shall maintain the flue gas temperature in the secondary combustion chamber or zone at one thousand five hundred

degrees Fahrenheit [815 degrees Celsius] or greater for a minimum of one-half-second retention time.

d. Monitoring. Each new incinerator for trash shall be equipped with a continuous temperature monitor, with readout, to monitor the temperature of the gases exiting the secondary combustion chamber or zone.

e. Stack height. Each new incinerator for trash shall be equipped with a stack for the discharge of flue gases of sufficient height to prevent ambient concentrations of air contaminants greater than allowed by chapter 33.1-15-02. The minimum stack height is forty feet [12.2 meters] unless it is demonstrated that a stack height less than forty feet [12.2 meters] will meet the standards of chapter 33.1-15-02. The department may require taller stacks when it is necessary to meet the standards of chapter 33.1-15-02.

f. Waste charging.

(1) The waste charging system for a new incinerator for trash must be designed to prevent disruption of the combustion process as waste is charged.

(2) The waste charging system must be designed to prevent overcharging to assure complete combustion. No owner or operator may cause an incinerator for trash to operate at a load greater than one hundred percent of design capacity.

History: Effective January 1, 2019.
General Authority: NDCC 23.1-06-04; S.L. 2017, ch. 199, § 1
Law Implemented: NDCC 23.1-06-08, 23.1-06-09; S.L. 2017, ch. 199, § 21

33.1-15-05-03.1. Other waste incinerators.

1. **Salvage incinerators.** The department may require construction, operational, and recordkeeping standards and procedures for salvage incinerators. No industrial waste, radioactive waste, hazardous waste, or infectious waste may be burned in a salvage incinerator, unless specifically approved by the department.

2. **Air curtain destructors.** The department may require construction, operational, and recordkeeping standards and procedures for air curtain destructors based upon factors such as characteristics and quantities of materials to be destroyed by burning and site location.

3. **Industrial waste and special waste incinerators.** The department may require construction, operational, emission, monitoring, recordkeeping, and reporting standards and procedures for incinerators of industrial waste based upon factors such as characteristics and quantities of the industrial waste and site location.

4. **Crematoriums.**

a. No owner or operator of combustion units operated as a human or animal crematorium or in an animal farm operation for animal disposal may burn any other type or form of materials or solid waste unless specifically approved by the department.

b. No owner or operator of a crematorium may allow to be discharged into the atmosphere any air contaminant, which exhibits an opacity greater than ten percent except that a maximum of twenty percent is permissible for not more than one 6-minute period per hour.

c. A crematorium constructed and operated after August 1, 1995, must be equipped with two or more chambers and with auxiliary fuel burners, designed to assure a temperature

in a secondary chamber of at least one thousand six hundred degrees Fahrenheit [871 degrees Celsius] for a minimum of one-second retention time.

d. Monitoring. Each new crematorium must be equipped with a continuous temperature monitor, with readout, to monitor the temperature of the gases exiting the secondary combustion chamber or zone. Each human crematorium installed or reinstalled after September 1, 2002, must be equipped with a temperature recorder.

e. Charging. A crematorium must be charged in accordance with the manufacturer's procedures or recommendations. Deviations from these procedures or recommendations are allowed provided credible evidence has been submitted to the department that indicates the deviations will reduce air contaminant emissions. Such evidence shall be provided prior to implementation of the deviations.

f. Operation. Operators of human crematoriums shall be trained in the proper operation of the unit. A copy of the operation and maintenance manual for the unit shall be available onsite. A trained crematorium operator must be onsite at a human crematorium while the cremation process is taking place.

g. General. The department may establish additional construction, operational, emission, monitoring, recordkeeping, and reporting standards and procedures for crematoriums based upon factors such as quantities of material charged, emissions, and site location.

History: Effective January 1, 2019.
General Authority: NDCC 23.1-06-04; S.L. 2017, ch. 199, § 1
Law Implemented: NDCC 23.1-06-08, 23.1-06-09; S.L. 2017, ch. 199, § 21

33.1-15-05-04. Methods of measurement.

1. The reference methods in appendix A to chapter 33.1-15-12, its replacement or other methods, as approved by the department shall be used to determine compliance with sections 33.1-15-05-01 and 33.1-15-05-02 as follows:

   a. Method 1 for selection of sampling site and sample traverses.

   b. Method 2 for determination of stack gas velocity and volumetric flow rate.

   c. Method 3 for gas analysis.

   d. Method 4 for determination of moisture in the stack gas.

   e. Method 5 for concentration of particulate matter and the associated moisture content. The sampling time for each run shall be at least sixty minutes and the minimum sampling volume shall be thirty dry cubic feet at standard conditions [0.85 dry cubic meter at standard conditions] except that smaller sampling times or volumes when necessitated by process variables or other factors may be approved by the department.

      (1) For each run using method 5 for fuel burning equipment, the emissions expressed in pounds per million British thermal units [nanograms per joule] shall be determined by the following procedures:

$$E = CF_d \left(\frac{20.9}{20.9 - \%O_2}\right) \quad \text{or} \quad E = CF_c \left(\frac{100}{\%CO_2}\right)$$

where:

(a) E = pollutant emission, lb/million Btu [ng/j].

(b) C = pollutant concentration, lb/dscf [ng/dscm].

(c) $\%O_2$ = oxygen content by volume, dry basis.

(d) $\%CO_2$ = carbon dioxide content by volume, dry basis.

The percent oxygen and percent carbon dioxide shall be determined by using the integrated or grab sampling and analysis procedures of method 3, 3A, 3B, or 3C, as appropriate, by traversing the duct at the same sampling locations used for each run of method 5.

(e) F_d and F_c = factors as listed in method 19 appendix A of chapter 33.1-15-12.

(2) For each run using method 5 for industrial processes, the emission rate expressed in pounds per hour shall be determined by the equation lb/hr = (Q_s) (c) where:

Q_s = volumetric flow rate of the total effluent in dscf/hr and

c = particulate concentration in lb/dscf.

2. The heat content of fuels shall be determined in accordance with A.S.T.M. methods D2015-66(72) (solid fuels), D240-64(73) (liquid fuels), or D1826-64(70) (gaseous fuels), as applicable.

3. The determination of particulate matter emissions with an aerodynamic diameter less than or equal to ten micrometers [PM_{10}] and particulate matter emissions with an aerodynamic diameter less than or equal to two and one-half micrometers [$PM_{2.5}$] must be made in accordance with the methods established in 40 Code of Federal Regulations part 51, appendix M, as applicable.

History: Effective January 1, 2019.
General Authority: NDCC 23.1-06-04; S.L. 2017, ch. 199, § 1
Law Implemented: NDCC 23.1-06-04; S.L. 2017, ch. 199, § 21