Chapter NR 631

AIR EMISSION STANDARDS FOR PROCESS VENTS

NR 631.01 Purpose. The purpose of this chapter is to specify general requirements for process vents for distillation, fractionation, thin-film evaporation, solvent extraction, air or stream stripping operations that manage hazardous wastes with organic concentrations of at least 10-ppmw.

History: Cr. Register, May, 1995, No. 473, eff. 6-1-95.

NR 631.02 Applicability. (1) This chapter applies to owners and operators of facilities that treat, store, or dispose of hazardous wastes.

(2) Except for s. NR 631.07 (4) and (5), this chapter applies to process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations that manage hazardous wastes with organic concentrations of at least 10-ppmw, if these operations are conducted in:

(a) Units that are subject to the licensing requirements of ch. NR 680, or

(b) Hazardous waste recycling units that are located on hazardous waste management facilities otherwise subject to the licensing requirements of ch. NR 680.

(3) If the owner or operator of process vents subject to the requirements of ss. NR 631.06 to 631.09 has received a license from the department under chs. NR 600 to 685 prior to December 21, 1990, the requirements of ss. NR 631.06 to 631.09 shall be incorporated into the license when it is reviewed under s. NR 680.45 (6) to (8).

Note: The requirements of ss. NR 631.06 to 631.09 apply to process vents on hazardous waste recycling units which were exempt under s. NR 625.04 (4) prior to the adoption of this chapter. Other exemptions under ss. NR 605.05, 610.07 (1), 610.08 (1), 615.05 (4) and 630.04 are not affected by these requirements.

History: Cr. Register, May, 1995, No. 473, eff. 6-1-95.

NR 631.03 Definitions. As used in this chapter, all terms shall have the meaning given them in s. NR 600.03. In addition, the following definitions apply to this chapter and to ch. NR 632:

(1) "Bottoms receiver" means a container or tank used to receive and collect the heavier bottoms fractions of the distillation feed stream that remain in the liquid phase.

(2) "Condenser" means a heat-transfer device that reduces a thermodynamic fluid from its vapor phase to its liquid phase.

(3) "Connector" means flanged, screwed, welded or other joined fittings used to connect 2 pipelines or a pipeline and a piece of equipment. For the purposes of reporting and recordkeeping, connector means flanged fittings that are not covered by insulation or other materials that prevent location of the fittings.

(4) "Control device" means an enclosed combustion device, vapor recovery system or flare. Any device the primary function of which is the recovery or capture of solvents or other organics for use, reuse or sale, such as a primary condenser on a solvent recovery unit, is not a control device.

(5) "Control device shutdown" means the cessation of operation of a control device for any purpose.

(6) "Distillate receiver" means a container or tank used to receive and collect liquid material condensed from the overhead condenser of a distillation unit and from which the condensed liquid is pumped to larger storage tanks or other process units.

(7) "Equipment" means each valve, pump, compressor, pressure relief device, sampling connection system, open-ended valve or line, or flange, and any control devices or systems required by chs. NR 631 and 632.

(8) "First attempt at repair" means to take rapid action for the purpose of stopping or reducing leakage of organic material to the atmosphere using best practices.

(9) "Hazardous waste management unit shutdown" means a work practice or operational procedure that stops operation of a hazardous waste management unit or part of a hazardous waste management unit. An unscheduled work practice or operational procedure that stops operation of a hazardous waste management unit or part of a hazardous waste management unit for less than 24 hours is not a hazardous waste management unit shutdown. The use of spare equipment and technically feasible bypassing of equipment without stopping operation are not hazardous waste management unit shutdowns.

(10) "Hot well" means a container for collecting condensate as in a steam condenser serving a vacuum-jet or steam-jet ejector.

(11) "In gas/vapor service" means that the piece of equipment contains or contacts a hazardous waste stream that is in the gaseous state at operating conditions.

(12) "In heavy liquid service" means that the piece of equipment is not in gas/vapor service or in light liquid service.

(13) "In light liquid service" means that the piece of equipment contains or contacts a waste stream where the vapor pressure of one or more of the components in the

stream is greater than 0.3 kilopascals (kPa) at 20° C, the total concentration of the pure components having a vapor pressure greater than 0.3 kPa at 20° C is equal to or greater than 20% by weight, and the fluid is a liquid at operating conditions.

(14) "Malfunction" means any sudden failure of a control device or a hazardous waste management unit or failure of a hazardous waste management unit to operate in a normal or usual manner, so that organic emissions are increased.

(15) "Open-ended valve or line" means any valve, except pressure relief valves, having one side of the valve seat in contact with process fluid and one side open to the atmosphere, either directly or through open piping.

(16) "PPMV" means parts per million by volume.

(17) "PPMW" means parts per million by weight.

(18) "Process heater" means a device that transfers heat liberated by burning fuel to fluids contained in tubes, including all fluids except water that are heated to produce steam.

(19) "Process vent" means any open-ended pipe or stack that is vented to the atmosphere either directly, through a vacuum-producing system, or through a tank, such as a distillate receiver, condenser, bottoms receiver, surge control tank, separator tank or hot well, associated with hazardous waste distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations.

(20) "Repaired" means that equipment is adjusted, or otherwise altered, to eliminate a leak.

(21) "Sensor" means a device that measures a physical quantity or the change in a physical quantity, such as temperature, pressure, flow rate, pH or liquid level.

(22) "Separator tank" means a device used for separation of 2 immiscible liquids.

(23) "Startup" means the setting in operation of a hazardous waste management unit or control device for any purpose.

(24) "Vapor incinerator" means any enclosed combustion device that is used for destroying organic compounds and does not extract energy in the form of steam or process heat.

(25) "Vented" means discharged through an opening, typically an open-ended pipe or stack, allowing the passage of a stream of liquids, gases or fumes into the atmosphere. The passage of liquids, gases or fumes is caused by mechanical means such as compressors or vacuum-producing systems or by process-related means such as evaporation produced by heating and not caused by working losses, such as tank loading and unloading, or by natural means such as diurnal temperature changes.

(26) "Zero air" means a hydrocarbon concentration of less than 10 ppm.

History: Cr. Register, May, 1995, No. 473, eff. 6-1-95.

NR 631.05 General. Except as otherwise provided in s. NR 631.02, no person may operate a distillation, fractionation, thin-film evaporation, solvent extraction, or air or stream stripping operation managing hazardous wastes with organic concentrations of at least 10 ppmw, unless the person has obtained an operating license, interim license, variance or waiver from the department, in accordance with the requirements of s. NR 680.09 or ch. NR 680 or operates a legitimate recovery and reclamation unit in compliance with ss. NR 625.04 and 625.06.

History: Cr. Register, May, 1995, No. 473, eff. 6-1-95.

NR 631.06 Standards. (1) PROCESS VENTS. (a) The owner or operator of a facility with process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations managing hazardous wastes with organic concentrations of at least 10 ppmw shall either:

1. Reduce total organic emissions from all affected process vents at the facility below 1.4 kg/h (3 lb/h) and 2.8 Mg/yr (3.1 tons/yr), or

2. Reduce, by use of a control device, total organic emissions from all affected process vents at the facility by 95 weight percent.

(b) If the owner or operator installs a closed-vent system and control device to comply with the provisions of par. (a), the closed-vent system and control device shall meet the requirements of sub. (2).

(c) Determinations of vent emissions and emission reductions or total organic compound concentrations achieved by add-on control devices may be based on engineering calculations or performance tests. If performance tests are used to determine vent emissions, emission reductions, or total organic compound concentrations achieved by add-on control devices, the performance tests shall conform with the requirements of s. NR 631.07 (3).

(d) When an owner or operator and the department do not agree on determinations of vent emissions, emission reductions or total organic compound concentrations achieved by add-on control devices based on engineering calculations, the procedures in s. NR 631.07 (3) shall be used to resolve the disagreement.

(2) CLOSED VENT SYSTEMS AND CONTROL DEVICES. (a) 1. Owners or operators of closed-vent systems and control devices used to comply with provisions of this chapter shall comply with the provisions of this subsection.

2. The owner or operator of a facility in existence on or before December 21, 1990, who cannot install a closed-vent system and control device to comply with the provisions of this chapter on the date that the facility becomes subject to this chapter shall prepare an implementation schedule that includes dates by which the closed-vent system and control device will be installed and in operation. The controls shall be installed as soon as possible, but the implementation schedule may allow up to 18 months after the date that the facility becomes subject to this chapter for installation and startup.

3. All units that begin operation after December 21, 1990, shall comply with the rules immediately by having control devices installed and operating on startup of the affected unit.

(b) A control device involving vapor recovery, such as a condenser or adsorber, shall be designed and operated to

recover the organic vapors vented to it with an efficiency of 95 weight percent or greater unless the total organic emission limits of sub. (1) (a) 1. for all affected process vents can be attained at an efficiency less than 95 weight percent.

(c) An enclosed combustion device, such as a vapor incinerator, boiler or process heater, shall be designed and operated to reduce the organic emissions vented to it by 95 weight percent or greater; to achieve a total organic compound concentration of 20 ppmv, expressed as the sum of the actual concentration of compounds, not carbon equivalents, on a dry basis corrected to 3 percent oxygen; or to provide a minimum residence time of 0.50 seconds at a minimum temperature of 760° C. If a boiler or process heater is used as the control device, then the vent stream shall be introduced into the flame zone of the boiler or process heater.

(d) 1. A flare shall be designed for and operated with no visible emissions as determined by the methods specified in par. (e) 1., except for periods not to exceed a total of 5 minutes during any 2 consecutive hours.

2. A flare shall be operated with a flame present at all times, as determined by the methods specified in subd. 4. c.

3. A flare shall be used only if the net heating value of the gas being combusted is 11.2 MJ/scm (300 Btu/scf) or greater if the flare is steam-assisted or air-assisted; or if the net heating value of the gas being combusted is 7.45 MJ/scm (200 Btu/scf) or greater if the flare is nonassisted. The net heating value of the gas being combusted shall be determined by the methods specified in par. (e) 2.

4. a. A steam-assisted or nonassisted flare shall be designed for and operated with an exit velocity, as determined by the methods specified in par. (e) 3., less than 18.3 m/s (60 ft/s), except as provided in subpars. b. and c.

b. A steam-assisted or nonassisted flare shall be designed for and operated with an exit velocity, as determined by the methods specified in par. (e) 3., equal to or greater than 18.3 m/s (60 ft/s) but less than 122 m/s (400 ft/s) if the net heating value of the gas being combusted is greater than 37.3 MJ/scm (1,000 Btu/scf).

c. A steam-assisted or nonassisted flare shall be designed for and operated with an exit velocity, as determined by the methods specified in par. (e) 3., less than the velocity, V_{max}, as determined by the method specified in par. (e) 4. and less than 122 m/s (400 ft/s).

5. An air-assisted flare shall be designed and operated with an exit velocity less than the velocity, V_{max}, as determined by the method specified in par. (e) 5.

6. A flare used to comply with this section shall be steam-assisted, air-assisted or nonassisted.

(e) 1. Reference Method 22 in 40 CFR part 60 shall be used to determine the compliance of a flare with the visible emission provisions of this section. The observation period is 2 hours and shall be used according to Method 22.

Note: The publication containing the CFR reference may be obtained from:

Superintendent of Documents
U.S. Government Printing Office
P.O. Box 371954
Pittsburgh, PA 15250-7954
(202) 783-3238

The publication is available for inspection at the offices of the department, the secretary of state and the revisor of statutes.

2. The net heating value of the gas being combusted in a flare shall be calculated using the following equation:

$$H_T = K\left[\sum_{i=1}^{n} C_i H_i\right]$$

where:

H_T = Net heating value of the sample, MJ/scm; where the net enthalpy per mole of offgas is based on combustion at 25° C and 760 mm Hg, but the standard temperature for determining the volume corresponding to 1 mol is 20° C;

K = Constant, 1.74×10^{-7} (1/ppm) (g mol/scm) (MJ/kcal) where standard temperature for (g mol/scm) is 20° C;

C_i = Concentration of sample component i in ppm on a wet basis, as measured for organics by Reference Method 18 in 40 CFR part 60 and measured for hydrogen and carbon monoxide by ASTM D 1946-82; and

Note: The publication containing the CFR reference and the ASTM standard may be obtained from:

Superintendent of Documents
U.S. Government Printing Office
P.O. Box 371954
Pittsburgh, PA 15250-7954
(202) 783-3238

American Society for Testing and Materials
1916 Race Street
Philadelphia, PA 19103

This publication is available for inspection at the offices of the department, the secretary of state and the revisor of statutes.

H_i = Net heat of combustion of sample component i, kcal/9 mol at 25° C and 760 mm Hg. The heats of combustion may be determined using ASTM D 2382-83 if published values are not available or cannot be calculated.

Note: The publication containing this standard may be obtained from:

American Society for Testing and Materials
1916 Race Street
Philadelphia, PA 19103

This publication is available for inspection at the offices of the department, the secretary of state and the revisor of statues.

3. The actual exit velocity of a flare shall be determined by dividing the volumetric flow rate, in units of standard temperature and pressure, as determined by Reference Methods 2, 2A, 2C, or 2D in 40 CFR part 60 as appropriate, by the unobstructed (free) cross-sectional area of the flare tip.

Note: The publication containing the CFR reference may be obtained from:

Superintendent of Documents
U.S. Government Printing Office
P.O. Box 371954
Pittsburgh, PA 15250-7954
(202) 783-3238

This publication is available for inspection at the offices of the department, the secretary of state and the revisor of statutes.

4. The maximum allowed velocity in m/s, V_{max}, for a flare complying with par. (d) 4.c. shall be determined by the following equation:

$Log_{10}(V_{max})=(H_T+28.8)/31.7$

where:

28.8	=	Constant,
31.7	=	Constant,
H_T	=	The net heating value as determined in paragraph (e) (2).

5. The maximum allowed velocity in m/s, V_{max}, for an air-assisted flare shall be determined by the following equation:

$V_{max} = 8.706+0.7084\ (H_T)$

where:

8.706	=	Constant,
0.7084	=	Constant,
H_T	=	The net heating value as determined in par. (e) 2.

(f) The owner or operator shall monitor and inspect each control device required to comply with this section to ensure proper operation and maintenance of the control device by implementing the following requirements:

1. Install, calibrate, maintain and operate according to the manufacturer's specifications a flow indicator that provides a record of vent stream flow from each affected process vent to the control device at least once every hour. The flow indicator sensor shall be installed in the vent stream at the nearest feasible point to the control device inlet but before the point at which the vent streams are combined.

2. Install, calibrate, maintain and operate according to the manufacturer's specifications a device to continuously monitor control device operation as follows:

a. For a thermal vapor incinerator, a temperature monitoring device equipped with a continuous recorder. The device shall have an accuracy of ±1 percent of the temperature being monitored in °C or ±0.5° C, whichever is greater. The temperature sensor shall be installed at a location in the combustion chamber downstream of the combustion zone.

b. For a catalytic vapor incinerator, a temperature monitoring device equipped with a continuous recorder. The device shall be capable of monitoring temperature at 2 locations and have an accuracy of ±1 percent of the temperature being monitored in °C or ±0.5° C, whichever is greater. One temperature sensor shall be installed in the vent stream at the nearest feasible point to the catalyst bed inlet and a second temperature sensor shall be installed in the vent stream at the nearest feasible point to the catalyst bed outlet.

c. For a flare, a heat sensing monitoring device equipped with a continuous recorder that indicates the continuous ignition of the pilot flame.

d. For a boiler or process heater having a design heat input capacity less than 44 MW, a temperature monitoring device equipped with a continuous recorder. The device shall have an accuracy of ±1 percent of the temperature being monitored in °C or ±0.5° C, whichever is greater. The temperature sensor shall be installed at a location in the furnace downstream of the combustion zone.

e. For a boiler or process heater having a design heat input capacity greater than or equal to 44 MW, a monitoring device equipped with a continuous recorder to measure a parameters that indicates good combustion operating practices are being used.

f. For a condenser, either a monitoring device equipped with a continuous recorder to measure the concentration level of the organic compounds in the exhaust vent stream from the condenser, or a temperature monitoring device equipped with a continuous recorder. The device shall be capable of monitoring temperature at 2 locations and have an accuracy of ±1 percent of the temperature being monitored in °C or ±0.5° C, whichever is greater. One temperature sensor shall be installed at a location in the exhaust vent stream from the condenser, and a second temperature sensor shall be installed at a location in the coolant fluid exiting the condenser.

g. For a carbon adsorption system that regenerates the carbon bed directly in the control device such as a fixed-bed carbon adsorber, either a monitoring device equipped with a continuous recorder to measure the concentration level of the organic compounds in the exhaust vent stream from the carbon bed, or a monitoring device equipped with a continuous recorder to measure a parameter that indicates the carbon bed is regenerated on a regular, predetermined time cycle.

3. Inspect the readings from each monitoring device required by par. (f) 1. and 2. at least once each operating day to check control device operation and, if necessary, immediately implement the corrective measures necessary to ensure the control device operates in compliance with the requirements of this section.

(g) An owner or operator using a carbon adsorption system such as a fixed-bed carbon adsorber that regenerates the carbon bed directly onsite in the control device shall replace the existing carbon in the control device with fresh carbon at a regular, predetermined time interval that is no longer than the carbon service life established as a requirement of s. NR 631.08 (2) (d) 3. f.

(h) An owner or operator using a carbon adsorption system such as a carbon canister that does not regenerate the carbon bed directly onsite in the control device shall replace the existing carbon in the control device with fresh carbon on a regular basis by using one of the following procedures:

1. Monitor the concentration level of the organic compounds in the exhaust vent stream from the carbon ad-

sorption system on a regular schedule, and replace the existing carbon with fresh carbon immediately when carbon breakthrough is indicated. The monitoring frequency shall be daily or at an interval no greater than 20% of the time required to consume the total carbon working capacity established as a requirement of s. NR 631.08 (2) (d) 3. g., whichever is longer.

2. Replace the existing carbon with fresh carbon at a regular, predetermined time interval that is less than the design carbon replacement interval established as a requirement of s. NR 631.08 (2) (d) 3. g.

(i) An alternative operational or process parameter may be monitored if it can be demonstrated that another parameter will ensure that the control device is operated in conformance with these standards and the control device's design specifications.

(j) An owner or operator of an affected facility seeking to comply with the provisions of this chapter by using a control device other than a thermal vapor incinerator, catalytic vapor incinerator, flare, boiler, process heater, condenser or carbon adsorption system is required to develop documentation including sufficient information to describe the control device operation and identify the process parameter or parameters that indicate proper operation and maintenance of the control device.

(k) 1. Closed-vent systems shall be designed for and operated with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background and by visual inspections, as determined by the methods specified as s. NR 631.07 (2).

2. Closed-vent systems shall be monitored to determine compliance with this section during the initial leak detection monitoring, which shall be conducted by the date that the facility becomes subject to this section, annually, and at other times as requested by the department.

3. Detectable emissions, as indicated by an instrument reading greater than or equal to 500 ppm and visual inspections, shall be controlled as soon as practicable, but not later than 15 calendar days after the emission is detected.

4. A first attempt at repair shall be made no later than 5 calendar days after the emission is detected.

(l) Closed-vent systems and control devices used to comply with this section shall be operated at all times when emissions may be vented to them.

History: Cr. Register, May, 1995, No. 473, eff. 6-1-95.

NR 631.07 Test methods and procedures. (1) Each owner or operator subject to this chapter shall comply with the requirements of this section.

(2) When a closed-vent system is tested for compliance with no detectable emissions, as required in s. NR 631.06 (2) (k) 1., the test shall comply with the following requirements:

(a) Monitoring shall comply with Reference Method 21 in 40 CFR part 60.

Note: The publication containing the CFR reference may be obtained from:

Superintendent of Documents
U.S. Government Printing Office
P.O. Box 371954
Pittsburgh, PA 15250-7954
(202) 783-3238

This publication is available for inspection at the offices of the department, the secretary of state and the revisor of statutes.

(b) The detection instrument shall meet the performance criteria of Reference Method 21.

(c) The instrument shall be calibrated before use on each day of its use by the procedures specified in Reference Method 21.

(d) Calibration gases shall be:

1. Zero air.

2. A mixture of methane or n-hexane and air at a concentration of approximately, but less than, 10,000 ppm methane or n-hexane.

(e) The background level shall be determined as set forth in Reference Method 21.

(f) The instrument probe shall be traversed around all potential leak interfaces as close to the interface as possible as described in Reference Method 21.

(g) The arithmetic difference between the maximum concentration indicated by the instrument and the background level shall be compared with 500 ppm for determining compliance.

(3) Performance tests to determine compliance with s. NR 631.06 (1) (a) and with the total organic compound concentration limit of s. NR 631.06 (2) (c) shall comply with the following:

(a) Performance tests to determine total organic compound concentrations and mass flow rates entering and exiting control devices shall be conducted and data reduced in accordance with the following reference methods and calculation procedures:

1. Method 2 in 40 CFR part 60 for velocity and volumetric flow rate.

Note: The publication containing the CFR reference may be obtained from:

Superintendent of Documents
U.S. Government Printing Office
P.O. Box 371954
Pittsburgh, PA 15250-7954
(202) 783-3238

This publication is available for inspection at the offices of the department, the secretary of state and the revisor of statutes.

2. Method 18 in 40 CFR part 60 for organic content.

Note: The publication containing the CFR reference may be obtained from:

Superintendent of Documents
U.S. Government Printing Office
P.O. Box 371954
Pittsburgh, PA 15250-7954
(202) 783-3238

This publication is available for inspection at the offices of the department, the secretary of state and the revisor of statutes.

3. Each performance test shall consist of 3 separate runs; each run conducted for at least 1 hour under the conditions that exist when the hazardous waste management unit is operating at the highest load or capacity level reasonably expected to occur. For the purpose of determining total organic compound concentrations and mass flow rates, the average of results of all runs shall apply. The average shall be computed on a time-weighted basis.

4. Total organic mass flow rates shall be determined by the following equation:

$$E_h = Q_{2sd}\left\{\sum_{i=1}^{n} C_i MW_i\right\} \quad [0.0416] \quad [10^{-6}]$$

where:

E_h	=	Total organic mass flow rate, kg/h;
Q_{sd}	=	Volumetric flow rate of gases entering or exiting control device, as determined by Method 2, dscm/h;
n	=	Number of organic compounds in the vent gas;
C_i	=	Organic concentration in ppm, dry basis, of compound i in the vent gas, as determined by Method 18;
MW_i	=	Molecular weight of organic compound i in the vent gas, kg/kg-mol;
0.0416	=	Conversion factor for molar volume, kg-mol/m^3 (@ 293 K and 760 mm Hg);
10^{-6}	=	Conversion from ppm, ppm^{-1}.

5. The annual total organic emission rate shall be determined by the following equation:

$$E_A = (E_h)\,(H)$$

where:

E_A	=	Total organic mass emission rate, kg/y;
E_h	=	Total organic mass flow rate for the process vent, kg/h;
H	=	Total annual hours of operations for the affected unit, h.

6. Total organic emissions from all affected process vents at the facility shall be determined by summing the hourly total organic mass emission rates, E_h as determined in subd. 4. and by summing the annual total organic mass emission rates E_A, as determined in subd. 5., for all affected process vents at the facility.

(b) The owner or operator shall record such process information as may be necessary to determine the conditions of the performance tests. Operations during periods of startup, shutdown and malfunction do not constitute representative conditions for the purpose of a performance test.

(c) The owner or operator of an affected facility shall provide, or cause to be provided, performance testing facilities as follows:

1. Sampling ports adequate for the test methods specified in par. (a).

2. Safe sampling platforms.

3. Safe access to sampling platforms.

4. Utilities for sampling and testing equipment.

(d) For the purpose of making compliance determinations, the time-weighted average of the results of the 3 runs shall apply. In the event that a sample is accidentally lost or conditions occur in which one of the 3 runs shall be discontinued because of forced shutdown, failure of an irreplaceable portion of the sample train, extreme meteorological conditions, or other circumstances beyond the owner or operator's control, compliance may, upon the department's approval, be determined using the average of the results of the 2 other runs.

(4) To show that a process vent associated with a hazardous waste distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operation is not subject to the requirements of this section, the owner or operator shall make an initial determination that the time-weighted, annual average total organic concentration of the waste managed by the waste management unit is less than 10 ppmw using one of the following 2 methods:

(a) Direct measurement of the organic concentration of the waste using the following procedures:

1. The owner or operator shall take a minimum of 4 grab samples of waste for each waste stream managed in the affected unit under process conditions expected to cause the maximum waste organic concentration.

2. For waste generated onsite, the grab samples shall be collected at a point before the waste is exposed to the atmosphere such as in an enclosed pipe or other closed system that is used to transfer the waste after generation to the first affected distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operation. For waste generated offsite, the grab samples shall be collected at the inlet to the first waste management unit that receives the waste provided the waste has been transferred to the facility in a closed system such as a tank truck and the waste is not diluted or mixed with other waste.

3. Each sample shall be analyzed and the total organic concentration of the sample shall be computed using Method 9060 or 8240 of SW-846.

Note: The publication SW-846 may be obtained from:

National Technical Information Service
U.S. Department of Commerce
Springfield, Virginia 22161

This publication is available for inspection at the offices of the department, the secretary of state and the revisor of statutes.

4. The arithmetic mean of the results of the analyses of the 4 samples shall apply for each waste stream managed in the unit in determining the time-weighted, annual average total organic concentration of the waste. The time-weighted average is to be calculated using the annual quantity of each waste stream processed and the mean organic concentration of each waste stream managed in the unit.

(b) Using knowledge of the waste to determine that its total organic concentration is less than 10 ppmw. The waste determination shall be documented. Examples of documentation that shall be used to support a determina-

tion under this paragraph include production process information documenting that no organic compounds are used, information that the waste is generated by a process that is identical to a process at the same or another facility that has previously been demonstrated by direct measurement to generate a waste stream having a total organic content less than 10 ppmw, or prior speciation analysis results on the same waste stream where it can also be documented that no process changes have occurred since that analysis that could affect the waste total organic concentration.

(5) The determination that distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations manage hazardous wastes with time-weighted, annual average total organic concentrations less than 10 ppmw shall be made as follows:

(a) An initial determination shall be made by the later of:

1. June 1, 1995, or

2. The date when the waste is first managed in a waste management unit.

(b) Subsequent to the initial determination, a determination shall be made as follows:

1. For continuously generated waste, annually, and

2. Whenever there is a change in the waste being managed or a change in the process that generates or treats the waste.

(6) When an owner or operator and the department do not agree on whether a distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operation manages a hazardous waste with organic concentrations of at least 10 ppmw based on knowledge of the waste, the procedures in Method 8240 may be used to resolve the dispute.

History: Cr. Register, May, 1995, No. 473, eff. 6-1-95.

NR 631.08 Recordkeeping requirements. (1) (a) Each owner or operator subject to the provisions of this chapter shall comply with the recordkeeping requirements of this section.

(b) An owner or operator of more than one hazardous waste management unit subject to the provisions of this section may comply with the recordkeeping requirements for these hazardous waste management units in one recordkeeping system if the system identifies each record by each hazardous waste management unit.

(2) Owners and operators shall record the following information in the facility operating record:

(a) For facilities that comply with the provisions of s. NR 631.06 (2) (a) 2., an implementation schedule that includes dates by which the closed-vent system and control device will be installed and in operation. The schedule shall also include a rationale of why the installation cannot be completed at an earlier date. The implementation schedule shall be in the facility operating record by the effective date that the facility becomes subject to the provisions of this chapter.

(b) Up-to-date documentation of compliance with the process vent standards in s. NR 631.06 (1), including:

1. Information and data identifying all affected process vents, annual throughput and operating hours of each affected unit, estimated emission rates for each affected vent and for the overall facility and the approximate location within the facility of each affected unit, by identifying the hazardous waste management units on a facility plot plan.

2. Information and data supporting determinations of vent emissions and emission reductions achieved by add-on control devices based on engineering calculations or source tests. For the purpose of determining compliance, determinations of vent emissions and emission reductions shall be made using operating parameter values, including temperatures, flow rates or vent stream organic compounds and concentrations, that represent the conditions that result in maximum organic emissions, such as when the waste management unit is operating at the highest load or capacity level reasonably expected to occur. A new waste determination shall be made if the owner or operator takes any action, such as managing a waste of different composition or increasing operating hours of affected waste management units, that would result in an increase in total organic emissions from affected process vents at the facility.

(c) Where an owner or operator chooses to use test data to determine the organic removal efficiency or total organic compound concentration achieved by the control device, a performance test plan shall be prepared. The test plan shall include:

1. A description of how it is determined that the planned test is going to be conducted when the hazardous waste management unit is operating at the highest load or capacity level reasonably expected to occur. This shall include the estimated or design flow rate and organic content of each vent stream and define the acceptable operating ranges of key process and control device parameters during the test program.

2. A detailed engineering description of the closed-vent system and control device including:

a. Manufacturer's name and model number of control device.

b. Type of control device.

c. Dimensions of the control device.

d. Capacity.

e. Construction materials.

3. A detailed description of sampling and monitoring procedures, including sampling and monitoring locations in the system, the equipment to be used, sampling and monitoring frequency, and planned analytical procedures for sample analysis.

(d) Documentation of compliance with s. NR 631.06 (2) shall include the following information:

1. A list of all information references and sources used in preparing the documentation.

2. Records, including the dates, of each compliance test required by s. NR 631.06 (2) (k) 1.

3. If engineering calculations are used, a design analysis, specifications, drawings, schematics, and piping and instrumentation diagrams based on the appropriate sections of "APTI Course 415: Control of Gaseous Emissions" or other engineering texts acceptable to the department that present basic control device design information. Documentation provided by the control device manufacturer or vendor that describes the control device design in accordance with subpars. a. to g. may be used to comply with this requirement. The design analysis shall address the vent stream characteristics and control device operation parameters as follows:

Note: The publication APTI Course 415: Control of Gaseous Emissions, EPA Publication EPA-450/2-81-005, December 1981, may be obtained from:

National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161

This publication is available for inspection at the offices of the department, the secretary of state and the revisor of statutes.

a. For a thermal vapor incinerator, the design analysis shall consider the vent stream composition, constituent concentrations and flow rate. The design analysis shall also establish the design minimum and average temperature in the combustion zone and the combustion zone residence time.

b. For a catalytic vapor incinerator, the design analysis shall consider the vent stream composition, constituent concentrations and flow rate. The design analysis shall also establish the design minimum and average temperatures across the catalyst bed inlet and outlet.

c. For a boiler or process heater, the design analysis shall consider the vent stream composition, constituent concentrations and flow rate. The design analysis shall also establish the design minimum and average flame zone temperatures, combustion zone residence time, and description of method and location where the vent stream is introduced into the combustion zone.

d. For a flare, the design analysis shall consider the vent stream composition, constituent concentrations and flow rate. The design analysis shall also consider the requirements specified in s. NR 631.06 (2) (d).

e. For a condenser, the design analysis shall consider the vent stream composition, constituent concentrations, flow rate, relative humidity and temperature. The design analysis shall also establish the design outlet organic compound concentration level, design average temperature of the condenser exhaust vent stream and design average temperatures of the coolant fluid at the condenser inlet and outlet.

f. For a carbon adsorption system such as a fixed-bed adsorber that regenerates the carbon bed directly onsite in the control device, the design analysis shall consider the vent stream composition, constituent concentrations, flow rate, relative humidity and temperature. The design analysis shall also establish the design exhaust vent stream organic compound concentration level, number and capacity of carbon beds, type and working capacity of activated carbon used for carbon beds, design total steam flow over the period of each complete carbon bed regeneration cycle, duration of the carbon bed steaming and cooling/drying cycles, design carbon bed temperature after regeneration, design carbon bed regeneration time and design service life of carbon.

g. For a carbon adsorption system such as a carbon canister that does not regenerate the carbon bed directly onsite in the control device, the design analysis shall consider the vent stream composition, constituent concentrations, flow rate, relative humidity and temperature. The design analysis shall also establish the design outlet organic concentration level, capacity of carbon bed, type and working capacity of activated carbon used for carbon bed and design carbon replacement interval based on the total carbon working capacity of the control device and source operating schedule.

4. A statement signed and dated by the owner or operator certifying that the operating parameters used in the design analysis reasonably represent the conditions that exist when the hazardous waste management unit is or would be operating at the highest load or capacity level reasonably expected to occur.

5. A statement signed and dated by the owner or operator certifying that the control device is designed to operate at an efficiency of 95% or greater unless the total organic concentration limit of s. NR 631.06 (1) (a) is achieved at an efficiency less than 95 weight percent or the total organic emission limits of s. NR 631.06 (1) (a) for affected process vents at the facility can be attained by a control device involving vapor recovery at an efficiency less than 95 weight percent. A statement provided by the control device manufacturer or vendor certifying that the control equipment meets the design specifications may be used to comply with this requirement.

6. If performance tests are used to demonstrate compliance, all test results.

(3) Design documentation and monitoring, operating and inspection information for each closed-vent system and control device required to comply with the provisions of this chapter shall be recorded and kept up-to-date in the facility operating record. The information shall include:

(a) Description and date of each modification that is made to the closed-vent system or control device design.

(b) Identification of operating parameter, description of monitoring device and diagram of monitoring sensor location or locations used to comply with s. NR 631.06 (2) (f) 1. and 2.

(c) Monitoring, operating and inspection information required by s. NR 631.06 (2) (f) to (k).

(d) The date, time and duration of each period that occurs while the control device is operating when any monitored parameter exceeds the value established in the control device design analysis as follows:

1. For a thermal vapor incinerator designed to operate with a minimum residence time of 0.50 second at a minimum temperature of 760° C, period when the combustion temperature is below 760° C.

2. For a thermal vapor incinerator designed to operate with an organic emission reduction efficiency of 95 weight percent or greater, period when the combustion zone temperature is more than 28° C below the design average combustion zone temperature established as a requirement of sub. (2) (d) 3. a.

3. For a catalytic vapor incinerator, the period when:

a. The temperature of the vent stream at the catalyst bed inlet is more than 28° C below the average temperature of the inlet vent stream established as a requirement of sub. (2) (d) 3. b., or

b. The temperature difference across the catalyst bed is less than 80% of the design average temperature difference established as a requirement of sub. (2) (d) 3. b.

4. For a boiler or process heater, the period when:

a. The flame zone temperature is more than 28° C below the design average flame zone temperature established as a requirement of sub. (2) (d) 3. c., or

b. Position changes where the vent stream is introduced to the combustion zone from the location established as a requirement of sub. (2) (d) 3. c.

5. For a flare, the period when the pilot flame is not ignited.

6. For a condenser that complies with s. NR 631.06 (2) (f) 2.f. by measuring concentration levels, the period when the organic compound concentration level or readings of organic compounds in the exhaust vent stream from the condenser are more than 20% greater than the design outlet organic compound concentration level established as a requirement of sub. (2) (d) 3. e.

7. For a condenser that complies with s. NR 631.06 (2) (f) 2.f. by monitoring temperature, the period when:

a. The temperature of the exhaust vent stream from the condenser is more than 6° C above the design average exhaust vent stream temperature established as a requirement of sub. (2) (d) 3. e.; or

b. The temperature of the coolant fluid exiting the condenser is more than 6° C above the design average coolant fluid temperature at the condenser outlet established as a requirement of sub. (2) (d) 3. e.

8. For a carbon adsorption system such as a fixed-bed carbon adsorber that regenerates the carbon bed directly onsite in the control device and complies with s. NR 631.06 (2) (f) 2.g. by measuring concentration levels, the period when the organic compound concentration level or readings of organic compounds in the exhaust vent stream from the carbon bed are more than 20% greater than the design exhaust vent stream organic compound concentration level established as a requirement of sub. (2) (d) 3. f.

9. For a carbon adsorption system such as a fixed-bed carbon adsorber that regenerates the carbon bed directly onsite in the control device and complies with s. NR 631.06 (2) (f) 2.g. by parameter measurement, the period when the vent stream continues to flow through the control device beyond the predetermined carbon bed regeneration time established as a requirement of sub. (2) (d) 3. e.

(e) An explanation for each period recorded under par. (d) of the cause for control device operating parameter exceeding the design value and the measures implemented to correct the control device operation.

(f) For a carbon adsorption system operated subject to requirements specified in s. NR 631.06 (2) (g) or (h) 2., the date when existing carbon in the control device is replaced with fresh carbon.

(g) For a carbon adsorption system operated subject to s. NR 631.06 (2) (h) 1., a log that records:

1. The date and time when control device is monitored for carbon breakthrough and the monitoring device reading.

2. The date when existing carbon in the control device is replaced with fresh carbon.

(h) The date of each control device startup and shutdown.

(4) Records of the monitoring, operating and inspection information required by sub. (3) (c) to (h) need be kept only 3 years.

(5) For a control device other than a thermal vapor incinerator, catalytic vapor incinerator, flare, boiler, process heater, condenser or carbon adsorption system, the department shall specify the appropriate recordkeeping requirements.

(6) Up-to-date information and data used to determine whether or not a process vent is subject to the requirements in s. NR 631.06 (1) including supporting documentation as required by s. NR 631.07 (4) (b) when application of the knowledge of the nature of the hazardous waste stream or the process by which it was produced is used, shall be recorded in a log that is kept in the facility operating record.

History: Cr. Register, May, 1995, No. 473, eff. 6-1-95.

NR 631.09 Reporting requirements. (1) A person who is subject to this chapter shall submit a semiannual report to the department by dates specified by the department. The report shall include the following information:

(a) The EPA identification number, name and address of the facility.

(b) For each month during the semiannual reporting period, dates when the control device exceeded or operated outside of the design specifications as defined in s. NR 631.08 (3) (d) and as indicated by the control device monitoring required by s. NR 631.06 (2) (f) and such exceedances were not corrected within 24 hours, or that a flare operated with visible emissions as defined in s. NR 631.06 (2) (d) 1. and as determined by Method 22 monitoring, the duration and cause of each exceedance or visible emissions, and any corrective measures taken.

(2) If, during the semiannual reporting period, the control device does not exceed or operate outside of the design specifications as defined in s. NR 631.08 (3) (d) for more than 24 hours or a flare does not operate with visible emissions as defined in s. NR 631.06 (2) (d) 1., a report to the department is not required.

History: Cr. Register, May, 1995, No. 473, eff. 6-1-95.