Chapter NR 633

AIR EMISSION STANDARDS FOR TANKS, SURFACE IMPOUNDMENTS AND CONTAINERS

NR 633.01 Purpose. The purpose of this chapter is to specify general requirements for the control of air emissions from facilities that treat, store or dispose of hazardous waste in tanks, surface impoundments or containers.

History: Cr. Register, May, 1998, No. 509, eff. 6–1–98.

NR 633.02 Applicability. **(1)** This chapter applies to owners and operators of all facilities that treat, store or dispose of hazardous waste in tanks, surface impoundments or containers subject to either ch. NR 645, 660 or 640 except as sub. (2) provides otherwise.

(2) The requirements of this chapter do not apply to the following waste management units at the facility:

(a) A waste management unit that holds hazardous waste placed in the unit before June 5, 1995, and in which no hazardous waste is added to the unit on or after June 5, 1995.

(b) A container that has a design capacity less than or equal to 0.1 m^3.

(c) A tank in which an owner or operator has stopped adding hazardous waste and the owner or operator has begun implementing or completed closure pursuant to an approved closure plan.

(d) A surface impoundment in which an owner or operator has stopped adding hazardous waste, except to implement an approved closure plan, and the owner or operator has begun implementing or completed closure pursuant to an approved closure plan.

(e) A waste management unit that is used solely for on–site treatment or storage of hazardous waste that is generated as the result of implementing remedial activities required under the corrective action authorities of ss. NR 635.17 and 291.37, Stats., or authorities under section 3004 (u), 3004 (v) or 3008 (h) of the federal resource conservation and recovery act as defined in s. 291.01 (17), Stats.; the "investigation and remediation of environmental contamination" authorities of chs. NR 700 to 736, the "hazardous substance spills" authority of ch. 292, Stats., or the comprehensive environmental response, compensation and liability act (CERCLA) as defined in s. NR 700.03.

(f) A waste management unit that is used solely for the management of radioactive mixed waste in accordance with all applicable regulations under the authority of the U.S. atomic energy act and the U.S. nuclear waste policy act.

(g) A hazardous waste management unit that the owner or operator certifies is equipped with and operating air emission controls in accordance with the requirements of an applicable clean air act regulation codified under 40 CFR part 60, part 61 or part 63. For the purpose of complying with this paragraph, a tank for which the air emission control includes an enclosure, as opposed to a cover, shall be in compliance with the enclosure and control device requirements of s. NR 633.07 (8), except as provided in s. NR 633.07 (2) (e).

(h) A tank that has a process vent.

(3) If the owner or operator of a facility subject to this chapter has received a license from the department under chs. NR 600 to 685 prior to June 5, 1995, the requirements of this chapter shall be incorporated into the license when it is reviewed under s. NR 680.45 (6) to (8). Until the date when the owner and operator receives a final permit incorporating the requirements of this chapter, the owner and operator is subject to the requirements of s. NR 680.22.

Note: Publications containing the CFR references referred to in this chapter may be obtained from:

Superintendent of Documents
U.S. Government Printing Office
P.O. Box 371954
Pittsburgh, PA 15250–7954
(202) 512–1800

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

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NR 633.03 Definitions. As used in this chapter, all terms shall have the meaning given them in ss. NR 600.03 and 631.03. In addition, the following terms apply to this chapter:

(1) "Average volatile organic concentration" or "average VO concentration" means the mass–weighted average volatile organic concentration of a hazardous waste as determined in accordance with the requirements of s. NR 633.06.

(2) "Closure device" means a cap, hatch, lid, plug, seal, valve or other type of fitting that blocks an opening in a cover such that when the device is secured in the closed position it prevents or reduces air pollutant emissions to the atmosphere. Closure devices include devices that are detachable from the cover, including a sampling port cap; manually operated devices, including a hinged access lid or hatch, and devices that are automatically operated, including a spring–loaded pressure relief valve.

(3) "Continuous seal" means a seal that forms a continuous closure that completely covers the space between the edge of the floating roof and the wall of a tank. A continuous seal may be a vapor–mounted seal, liquid–mounted seal or metallic shoe seal. A continuous seal may be constructed of fastened segments so as to form a continuous seal.

(4) "Cover" means a device that provides a continuous barrier over the hazardous waste managed in a unit to prevent or reduce air pollutant emissions to the atmosphere. A cover may have openings, such as access hatches, sampling ports or gauge wells, that are necessary for operation, inspection, maintenance and repair of the unit on which the cover is used. A cover may be a separate piece of equipment which can be detached and removed from the unit or a cover may be formed by structural features permanently integrated into the design of the unit.

(5) "Enclosure" means a structure that surrounds a tank or container, captures organic vapors emitted from the tank or container, and vents the captured vapors through a closed–vent system to a control device.

(6) "External floating roof" means a pontoon–type or double–deck type cover that rests on the surface of the material managed in a tank with no fixed roof.

(7) "Fixed roof" means a cover that is mounted on a unit in a stationary position and does not move with fluctuations in the level of the material managed in the unit.

(8) "Floating membrane cover" means a cover consisting of a synthetic flexible membrane material that rests upon and is supported by the hazardous waste being managed in a surface impoundment.

(9) "Floating roof" means a cover consisting of a double deck, pontoon single deck or internal floating cover which rests upon and is supported by the material being contained, and is equipped with a continuous seal.

(10) "Hard–piping" means pipe or tubing that is manufactured and properly installed in accordance with relevant standards and good engineering practices.

(11) "In light material service" means the container is used to manage a material for which both of the following conditions apply:

(a) The vapor pressure of one or more of the organic constituents in the material is greater than 0.3 kilopascals (kPa) at 20°C; and

(b) The total concentration of the pure organic constituents having a vapor pressure greater than 0.3 kPa at 20°C is equal to or greater than 20% by weight.

(12) "Internal floating roof" means a cover that rests or floats on the material surface, but not necessarily in complete contact with it, inside a tank that has a fixed roof.

(13) "Liquid–mounted seal" means a foam or liquid–filled primary seal mounted in contact with the hazardous waste between the tank wall and the floating roof continuously around the circumference of the tank.

(14) "Maximum organic vapor pressure" means the sum of the individual organic constituent partial pressures exerted by the material contained in a tank, at the maximum vapor pressure–causing conditions, including temperature, agitation and the pH effects of combining wastes, reasonably expected to occur in the tank.

Note: For the purpose of this chapter, maximum organic vapor pressure is determined using the procedures specified in s. NR 633.06 (3).

(15) "Metallic shoe seal" means a continuous seal that is constructed of metal sheets which are held vertically against the wall of the tank by springs, weighted levers or other mechanisms and is connected to the floating roof by braces or other means. A flexible coated fabric known as an envelope spans the annular space between the metal sheet and the floating roof.

(16) "No detectable organic emissions" means no escape of organic compounds to the atmosphere as determined using the procedure specified in s. NR 633.06 (4).

(17) "Point of waste origination" means:

(a) When the facility owner or operator is the generator of the hazardous waste, the point where a solid waste produced by a system, process or waste management unit is determined to be a hazardous waste as defined in chs. NR 600 to 685.

Note: In this case, this term is being used in a manner similar to the use of the term "point of generation" in air standards established for waste management operations under authority of the clean air act in 40 CFR parts 60, 61 and 63.

(b) When the facility owner or operator is not the generator of the hazardous waste, the point where the owner or operator accepts delivery or takes possession of the hazardous waste.

(18) "Point of waste treatment" means the point where a hazardous waste to be treated in accordance with s. NR 633.05 (3) (b) exits the treatment process.

Note: Any waste determination shall be made before the waste is conveyed, handled or otherwise managed in a manner that allows the waste to volatilize to the atmosphere.

(19) "Safety device" means a closure device such as a pressure relief valve, frangible disc, fusible plug or any other type of device which functions exclusively to prevent physical damage or permanent deformation to a unit or its air emission control equipment by venting gases or vapors directly to the atmosphere during unsafe conditions resulting from an unplanned, accidental or emergency event. For the purpose of this chapter, a safety device is not used for routine venting of gases or vapors from the vapor headspace underneath a cover such as during filling of the unit or to adjust the pressure in this vapor headspace in response to normal daily diurnal ambient temperature fluctuations. A safety device is designed to remain in a closed position during normal operations and open only when the internal pressure, or another relevant parameter, exceeds the device threshold setting applicable to the air emission control equipment as determined by the owner or operator based on manufacturer recommendations, applicable regulations, fire protection and prevention codes, standard engineering codes and practices, or other requirements for the safe handling of flammable, ignitable, explosive, reactive or hazardous materials.

(20) "Single–seal system" means a floating roof having one continuous seal. This seal may be vapor–mounted, liquid–mounted or a metallic shoe seal.

(21) "Vapor–mounted seal" means a continuous seal that is mounted such that there is a vapor space between the hazardous waste in the unit and the bottom of the seal.

(22) "Volatile organic concentration" or "VO concentration" means the fraction by weight of the volatile organic compounds contained in a hazardous waste expressed in terms of parts per million (ppmw) as determined by direct measurement or by knowledge of the waste in accordance with the requirements of s. NR 633.06.

Note: For the purpose of determining the VO concentration of a hazardous waste, organic compounds with a Henry's law constant value of at least 0.1 mole–fraction–in–the–gas–phase/mole–fraction–in the liquid–phase (0.1 Y/X), which can also be expressed as 1.8×10^{-6} atmospheres/gram–mole/m^3, at 25 degrees Celsius must be included. Appendix I of this chapter presents a list of compounds known to have a Henry's law constant value less than the cutoff level.

(23) "Waste determination" means performing all applicable procedures in accordance with the requirements of s. NR 633.06 to determine whether a hazardous waste meets standards specified in this chapter.

Note: Examples of a waste determination include performing the procedures in accordance with s. NR 633.06 to make any of the following determinations: to determine the average VO concentration of a hazardous waste at the point of waste origination; to determine the average VO concentration of a hazardous waste at the point of waste treatment and compare the results to the exit concentration limit specified for the process used to treat the hazardous waste; to determine the organic reduction efficiency and the organic biodegradation efficiency for a biological process used to treat a hazardous waste and compare the results to the applicable standards; or to determine the maximum volatile organic vapor pressure for a hazardous waste in a tank and compare the results to the applicable standards.

(24) "Waste stabilization process" means any physical or chemical process used to either reduce the mobility of hazardous constituents in a hazardous waste or eliminate free liquids as determined by Test Method 9095, the "Paint Filter Liquids Test," in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication No. SW–846, as incorporated by reference in s. NR 600.10 (2) (b) 1. and (c). A waste stabilization process includes mixing the hazardous waste with binders or other materials, and curing the resulting hazardous waste and binder mixture. Other synonymous terms used to refer to this process are "waste fixation" or "waste solidification."

History: Cr. Register, May, 1998, No. 509, eff. 6–1–98.

NR 633.04 Schedule for implementation of air emission standards. (1) Owners or operators of facilities existing on June 5, 1995, and subject to chs. NR 640, 645 and 660 shall meet the following requirements:

(a) Install and begin operation of all control equipment required by this chapter by June 5, 1995, except as provided in par. (b).

(b) When control equipment required by this chapter cannot be installed and in operation by June 5, 1995, the owner or operator shall:

1. Install and begin operation of the control equipment as soon as possible but no later than December 8, 1997.

2. Prepare an implementation schedule that includes the following information:

a. Specific calendar dates for award of contracts or issuance of purchase orders for the control equipment,

b. Initiation of on–site installation of the control equipment, and

c. Completion of the control equipment installation and performance of any testing to demonstrate that the installed equipment meets the applicable standards of this chapter.

3. For facilities subject to the recordkeeping requirements of s. NR 680.22 (15), enter the implementation schedule specified in subd. 2. in the operating record no later than June 5, 1995.

4. For facilities not subject to s. NR 680.22 (15), the owner or operator shall enter the implementation schedule specified in subd. 2. in a permanent, readily available file located at the facility no later than June 5, 1995.

(2) Owners or operators of facilities in existence on the effective date of statutory or regulatory amendments that render the facility subject to chs. NR 640, 645 and 660 shall meet the following requirements:

(a) Install and begin operation of all control equipment required by this chapter by the effective date of the amendment except as provided in par. (b).

(b) When control equipment required by this chapter cannot be installed and begin operation by the effective date of the amendment, the owner or operator shall:

1. Install and operate the control equipment as soon as possible but no later than 30 months after the effective date of the amendment.

2. For facilities subject to the recordkeeping requirements of s. NR 680.22 (15), enter and maintain the implementation schedule specified in sub. (1) (b) 2. in the operating record no later than the effective date of the amendment.

3. For facilities not subject to s. NR 680.22 (15), enter and maintain the implementation schedule specified in sub. (1) (b) 2. in a permanent, readily available file located at the facility site no later than the effective date of the amendment.

(3) The department may elect to extend the implementation date for control equipment at a facility, on a case–by–case basis, to a date later than December 8, 1997, when special circumstances that are beyond the facility owner's or operator's control delay installation or operation of control equipment and the owner or operator has made all reasonable and prudent attempts to comply with the requirements of this chapter.

History: Cr. Register, May, 1998, No. 509, eff. 6–1–98.

NR 633.05 General. This section applies to the management of hazardous waste in tanks, surface impoundments and containers subject to this chapter.

(1) The owner or operator shall control air pollutant emissions from each waste management unit in accordance with standards specified in ss. NR 633.07 to 633.10, as applicable to the waste management unit, except as provided for in sub. (2).

(2) The following are exempt from the standards specified in ss. NR 633.07 to 633.10:

(a) A tank, surface impoundment or container for which all hazardous waste entering the unit has an average VO concentration at the point of waste origination of less than 500 parts per million by weight (ppmw). The average VO concentration shall be determined using the procedures specified in s. NR 633.06. The owner or operator shall review and update, as necessary, this determination at least once every 12 months following the date of the initial determination for the hazardous waste streams entering the unit.

(b) A tank, surface impoundment or container for which the organic content of all the hazardous waste entering the waste management unit has been reduced by an organic destruction or removal process that achieves any one of the following conditions:

1. A process that removes or destroys the organic compounds contained in the hazardous waste to a level such that the average VO concentration of the hazardous waste at the point of waste treatment is less than the exit concentration limit (C_t) established for the process. The average VO concentration of the hazardous waste at the point of waste treatment and the exit concentration limit for the process shall be determined using the procedures specified in s. NR 633.06 (2).

2. A process that removes or destroys the organic compounds contained in the hazardous waste to a level such that the organic reduction efficiency (R) for the process is equal to or greater than 95%, and the average VO concentration of the hazardous waste at the point of waste treatment is less than 100 ppmw. The organic reduction efficiency for the process and the average VO concentration of the hazardous waste at the point of waste treatment shall be determined using the procedures specified in s. NR 633.06 (2).

3. A process that removes or destroys the organic compounds contained in the hazardous waste to a level such that the actual organic mass removal rate (MR) for the process is equal to or greater than the required organic mass removal rate (RMR) established for the process. The required organic mass removal rate and the actual organic mass removal rate for the process shall be determined using the procedures specified in s. NR 633.06 (2).

4. A biological process that destroys or degrades the organic compounds contained in the hazardous waste, such that either of the following conditions is met:

a. The organic reduction efficiency (R) for the process is equal to or greater than 95%, and the organic biodegradation efficiency (R_{bio}) for the process is equal to or greater than 95%. The organic reduction efficiency and the organic biodegradation efficiency for the process shall be determined using the procedures specified in s. NR 633.06 (2).

b. The total actual organic mass biodegradation rate (MR_{bio}) for all hazardous waste treated by the process is equal to or greater than the required organic mass removal rate (RMR). The required organic mass removal rate and the actual organic mass biodegradation rate for the process shall be determined using the procedures specified in s. NR 633.06 (2).

5. A process that removes or destroys the organic compounds contained in the hazardous waste and meets all of the following conditions:

a. From the point of waste origination through the point where the hazardous waste enters the treatment process, the hazardous waste is managed continuously in waste management units which use air emission controls in accordance with the standards specified in ss. NR 633.07 to 633.10, as applicable to the waste management unit.

b. From the point of waste origination through the point where the hazardous waste enters the treatment process, any transfer of the hazardous waste is accomplished through continuous hard–piping or other closed system transfer that does not allow exposure of the waste to the atmosphere.

Note: EPA considers a drain system that meets the requirements of 40 CFR part 63, subpart RR—National Emission Standards for Individual Drain Systems to be a closed system.

c. The average VO concentration of the hazardous waste at the point of waste treatment is less than the lowest average VO

concentration at the point of waste origination determined for each of the individual waste streams entering the process or 500 ppmw, whichever value is lower. The average VO concentration of each individual waste stream at the point of waste origination shall be determined using the procedures specified in s. NR 633.06 (2). The average VO concentration of the hazardous waste at the point of waste treatment shall be determined using the procedures specified in s. NR 633.06 (1).

6. A process that removes or destroys the organic compounds contained in the hazardous waste to a level such that the organic reduction efficiency (R) for the process is equal to or greater than 95% and the owner or operator certifies that the average VO concentration at the point of waste origination for each of the individual waste streams entering the process is less than 10,000 ppmw. The organic reduction efficiency for the process and the average VO concentration of the hazardous waste at the point of waste origination shall be determined using the procedures specified in s. NR 633.06 (1) or (2).

7. A hazardous waste incinerator for which the owner or operator has either:

a. Been issued an operating license under s. NR 680.32 which implements the requirements of ch. NR 665; or

b. Has designed and operates the incinerator in accordance with the interim status requirements of ch. NR 665.

8. A boiler or industrial furnace for which the owner or operator has either:

a. Been issued an operating license under s. NR 680.32 which implements the requirements of 40 CFR part 266, subpart H, or

b. Has designed and operates the boiler or industrial furnace in accordance with the interim status requirements of 40 CFR part 266, subpart H.

9. For the purpose of determining the performance of an organic destruction or removal process in accordance with the conditions in each of subds. 1. to 6., the owner or operator shall account for VO concentrations determined to be below the limit of detection of the analytical method by using the following VO concentration:

a. If Method 25D in 40 CFR part 60, appendix A is used for the analysis, one–half the blank value determined in the method.

b. If any other analytical method is used, one–half the limit of detection established for the method.

(c) A tank used for biological treatment of hazardous waste in accordance with the requirements of par. (b) 4.

(d) A tank, surface impoundment, or container for which all hazardous waste placed in the unit either:

1. Meets the numerical concentration limits for organic hazardous constituents, applicable to the hazardous waste, as specified in s. NR 675.20 Table "Treatment Standards for Hazardous Waste"; or

2. Has been treated by the treatment technology established for the waste in s. NR 675.22 (1), or treated by an equivalent method of treatment approved by the department pursuant to s. NR 675.22 (2).

(e) A tank used for bulk feed of hazardous waste to a waste incinerator and all of the following conditions are met:

1. The tank is located inside an enclosure vented to a control device that is designed and operated in accordance with all applicable requirements specified under 40 CFR part 61, subpart FF—National Emission Standards for Benzene Waste Operations for a facility at which the total annual benzene quantity from the facility waste is equal to or greater than 10 megagrams per year;

2. The enclosure and control device serving the tank were installed and began operation prior to November 25, 1996 and

3. The enclosure is designed and operated in accordance with the criteria for a permanent total enclosure as specified in "Procedure T—Criteria for and Verification of a Permanent or Temporary Total Enclosure" under 40 CFR 52.741, appendix B. The enclosure may have permanent or temporary openings to allow worker access; passage of material into or out of the enclosure by conveyor, vehicles, or other mechanical or electrical equipment; or to direct air flow into the enclosure. The owner or operator shall perform the verification procedure for the enclosure as specified in Section 5.0 to "Procedure T—Criteria for and Verification of a Permanent or Temporary Total Enclosure" annually.

(3) The department may at any time perform or request that the owner or operator perform a waste determination for a hazardous waste managed in a tank, surface impoundment or container exempted from using air emission controls under the provisions of this section as follows:

(a) The waste determination for average VO concentration of a hazardous waste at the point of waste origination shall be performed using direct measurement in accordance with the applicable requirements of s. NR 633.06 (1). The waste determination for a hazardous waste at the point of waste treatment shall be performed in accordance with the applicable requirements of s. NR 633.06 (2).

(b) In performing a waste determination pursuant to par. (a), the sample preparation and analysis shall be conducted as follows:

1. In accordance with the method used by the owner or operator to perform the waste analysis, except in the case specified in subd. 2.

2. If the department determines that the method used by the owner or operator was not appropriate for the hazardous waste managed in the tank, surface impoundment or container, then the department may choose an appropriate method.

(c) In a case when the owner or operator is requested to perform the waste determination, the department may elect to have an authorized representative observe the collection of the hazardous waste samples used for the analysis.

(d) In a case when the results of the waste determination performed or requested by the department do not agree with the results of a waste determination performed by the owner or operator using knowledge of the waste, then the results of the waste determination performed in accordance with the requirements of par. (a) shall be used to establish compliance with the requirements of this chapter.

(e) In a case when the owner or operator has used an averaging period greater than one hour for determining the average VO concentration of a hazardous waste at the point of waste origination, the department may elect to establish compliance with this chapter by performing or requesting that the owner or operator perform a waste determination using direct measurement based on waste samples collected within a 1–hour period as follows:

1. The average VO concentration of the hazardous waste at the point of waste origination shall be determined by direct measurement in accordance with the requirements of s. NR 633.06 (1).

2. Results of the waste determination performed or requested by the department showing that the average VO concentration of the hazardous waste at the point of waste origination is equal to or greater than 500 ppmw shall constitute noncompliance with this chapter except in a case as provided for in subd. 3.

3. For the case when the average VO concentration of the hazardous waste at the point of waste origination previously has been determined by the owner or operator using an averaging period greater than one hour to be less than 500 ppmw but because of normal operating process variations the VO concentration of the hazardous waste determined by direct measurement for any given 1–hour period may be equal to or greater than 500 ppmw, information, such as test results, measurements, calculations and other documentation, that was used by the owner or operator to determine the average VO concentration of the hazardous waste and recorded in the facility records in accordance with the requirements of ss. NR 633.06 (1) and 633.12 shall be considered by the

department together with the results of the waste determination performed or requested by the department in establishing compliance with this chapter.

History: Cr. Register, May, 1998, No. 509, eff. 6–1–98.

NR 633.06 Waste determination procedures. (1) WASTE DETERMINATION PROCEDURE TO DETERMINE AVERAGE VOLATILE ORGANIC (VO) CONCENTRATION OF A HAZARDOUS WASTE AT THE POINT OF WASTE ORIGINATION. (a) An owner or operator shall determine the average VO concentration at the point of waste origination for each hazardous waste placed in a waste management unit exempted under s. NR 633.05 (2) (a) from using air emission controls in accordance with standards specified in ss. NR 633.07 to 633.10, as applicable to the waste management unit.

(b) The average VO concentration of a hazardous waste at the point of waste origination shall be determined using either direct measurement as specified in par. (c) or knowledge as specified in par. (d).

(c) The procedures specified in this paragraph shall be used to make a direct measurement to determine average VO concentration of a hazardous waste at the point of waste origination.

1. Identification. The owner or operator shall identify and record the point of waste origination for the hazardous waste.

2. Sampling. Samples of the hazardous waste stream shall be collected at the point of waste origination in a manner such that volatilization of organic compounds contained in the waste and in the subsequent sample is minimized and an adequately representative sample is collected and maintained for analysis by the selected method.

a. The averaging period to be used for determining the average VO concentration for the hazardous waste stream on a mass–weighted average basis shall be designated and recorded. The averaging period can represent any time interval that the owner or operator determines is appropriate for the hazardous waste stream but may not exceed one year.

b. A sufficient number of samples, but no less than 4 samples, shall be collected for the hazardous waste stream to represent the complete range of compositions and quantities that occur during the entire averaging period due to normal variations in the operating conditions for the source or process generating the hazardous waste stream. Examples of such normal variations are seasonal variations in waste quantity or fluctuations in ambient temperature.

c. All samples shall be collected and handled in accordance with written procedures prepared by the owner or operator and documented in a site sampling plan. This plan shall describe the procedure by which representative samples of the hazardous waste stream are collected such that a minimum loss of organic compounds occurs throughout the sample collection and handling process, and by which sample integrity is maintained. A copy of the written sampling plan shall be maintained on–site in the facility operating records.

Note: An example of an acceptable sampling plan includes a plan incorporating sample collection and handling procedures in accordance with the requirements specified in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW–846, as incorporated by reference in s. NR 600.10 (2) (b) 1. and (c), or in Method 25D in 40 CFR part 60, appendix A.

3. Analysis. Each collected sample shall be prepared and analyzed in accordance with one or more of the methods listed in this subdivision, including appropriate quality assurance and quality control (QA/QC) checks and use of target compounds for calibration. If Method 25D in 40 CFR part 60, appendix A is not used, then one or more methods shall be chosen that are appropriate to ensure that the waste determination accounts for and reflects all organic compounds in the waste with Henry's law constant values at least 0.1 mole–fraction–in–the–gas–phase/mole–fraction–in–the–liquid–phase (0.1 Y/X), which can also be expressed as 1.8×10^{-6} atmospheres/gram–mole/m^3 at 25°C. If an owner or operator uses EPA Method 624, 625, 1624 or 1625 in 40 CFR part 136, appendix A to analyze one or more compounds that are not on that method's published list, the Alternative Test Procedure contained in 40 CFR 136.4 and 136.5 shall be followed. If an owner or operator uses EPA Method 8260 or 8270 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA Publication SW–846, as incorporated by reference in s. NR 600.10 (2) (b) 1. and (c), to analyze one or more compounds that are not on that method's published list, the procedures in subpar. h. shall be followed.

Note: Each of the analytical methods listed in subpars. b. to g. has an associated list of approved chemical compounds, for which EPA considers the method appropriate for measurement.

Note: At the owner or operator's discretion, the concentration of each individual chemical constituent measured in the waste by a method other than Method 25D may be corrected to the concentration had it been measured using Method 25D by multiplying the measured concentration by the constituent–specific adjustment factor (f_{m25D}) as specified in par. (d) 3.

Note: Constituent–specific adjustment factors (f_{m25D}) can be obtained by contacting the Waste and Chemical Processes Group, Office of Air Quality Planning and Standards, Research Triangle Park, NC 27711.

a. Method 25D in 40 CFR part 60, appendix A.

b. Method 624 in 40 CFR part 136, appendix A.

c. Method 625 in 40 CFR part 136, appendix A. Perform corrections to the compounds for which the analysis is being conducted based on the "accuracy as recovery" using the factors in Table 7 of the method.

d. Method 1624 in 40 CFR part 136, appendix A.

e. Method 1625 in 40 CFR part 136, appendix A.

f. Method 8260 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA Publication SW–846, as incorporated by reference in s. NR 600.10 (2) (b) 1. and (c). Maintain a formal quality assurance program consistent with the requirements of Method 8260. The quality assurance program shall include both documentation of site–specific procedures to minimize the loss of compounds due to volatilization, biodegradation, reaction or sorption during the sample collection, storage, preparation, introduction and analysis steps, as well as measurement of the overall accuracy and precision of the specific procedures.

g. Method 8270 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA Publication SW–846, as incorporated by reference in s. NR 600.10 (2) (b) 1. and (c). Maintain a formal quality assurance program consistent with the requirements of Method 8270. The quality assurance program shall include both documentation of site–specific procedures to minimize the loss of compounds due to volatilization, biodegradation, reaction or sorption during the sample collection, storage and preparation steps, as well as measurement of the overall accuracy and precision of the specific procedures.

h. Any other EPA standard method that has been validated in accordance with "Alternative Validation Procedure for EPA Waste and Wastewater Methods", 40 CFR part 63, appendix D. As an alternative, other EPA standard methods may be validated by the procedure specified in subd. 3.i.

i. Any other analysis method that has been validated in accordance with the procedures specified in Section 5.1 or Section 5.3, and the corresponding calculations in Section 6.1 or Section 6.3, of Method 301 in 40 CFR part 63, appendix A. The data are acceptable if they meet the criteria specified in Section 6.1.5 or Section 6.3.3 of Method 301. If correction is required under section 6.3.3 of Method 301, the data are acceptable if the correction factor is within the range 0.7 to 1.30. Other sections of Method 301 are not required.

4. Calculations. The average VO concentration (C) on a mass–weighted basis shall be calculated by using the results for all samples analyzed in accordance with subd. 3. and the following equation:

$$\overline{C} = \frac{1}{Q_T} \times \sum_{i=1}^{n}(Q_i \times C_i)$$

Where:

$\overline{C}$ = Average VO concentration of the hazardous waste at the point of waste origination on a mass–weighted basis, ppmw.

i = Individual sample "i" of the hazardous waste.

n = Total number of samples of the hazardous waste collected (at least 4) for the averaging period (not to exceed 1 year).

Q_i = Mass quantity of hazardous waste stream represented by C_i, kg/hr.

Q_T = Total mass quantity of hazardous waste during the averaging period, kg/hr.

C_i = Measured VO concentration of sample "i" as determined in accordance with subd. 3., ppmw.

(d) Where owner or operator knowledge is used to determine average VO concentration of a hazardous waste at the point of waste origination, the owner or operator shall follow the procedures specified in this paragraph.

1. Documentation shall be prepared that presents the information used as the basis for the owner or operator's knowledge of the hazardous waste stream's average VO concentration.

Note: Examples of information that may be used as the basis for knowledge include material balances for the source or process generating the hazardous waste stream; constituent–specific chemical test data for the hazardous waste stream from previous testing that are still applicable to the current waste stream; previous test data for other locations managing the same type of waste stream; or other knowledge based on information included in manifests, shipping papers, or waste certification notices.

2. If test data are used as the basis for knowledge, the owner or operator shall document the test method, sampling protocol and the means by which sampling variability and analytical variability are accounted for in the determination of the average VO concentration.

Note: An owner or operator may use organic concentration test data for the hazardous waste stream that are validated in accordance with Method 301 in 40 CFR part 63, appendix A as the basis for knowledge of the waste.

3. An owner or operator using chemical constituent–specific concentration test data as the basis for knowledge of the hazardous waste may adjust the test data to the corresponding average VO concentration value which would have been obtained had the waste samples been analyzed using Method 25D in 40 CFR part 60, appendix A. To adjust these data, the measured concentration for each individual chemical constituent contained in the waste shall be multiplied by the appropriate constituent–specific adjustment factor (f_{m25D}).

4. In the event that the department and the owner or operator disagree on a determination of the average VO concentration for a hazardous waste stream using knowledge, the results from a determination of average VO concentration using direct measurement as specified in par. (c) shall be used to establish compliance with the applicable requirements of this chapter. The department may perform or request that the owner or operator perform this determination using direct measurement.

(2) WASTE DETERMINATION PROCEDURES FOR TREATED HAZARDOUS WASTE. (a) An owner or operator shall perform the applicable waste determination for each treated hazardous waste placed in a waste management unit exempted under s. NR 633.05 (2) (b) from using air emission controls in accordance with standards specified in ss. NR 633.07 to 633.10, as applicable to the waste management unit.

(b) The owner or operator shall designate and record the specific provision in s. NR 633.05 (2) (b) under which the waste determination is being performed. The waste determination for the treated hazardous waste shall be performed using the applicable procedures specified in pars. (c) to (i).

(c) The procedures specified in this paragraph shall be used to determine the average VO concentration of a hazardous waste at the point of waste treatment.

1. Identification. The owner or operator shall identify and record the point of waste treatment for the hazardous waste.

2. Sampling. Samples of the hazardous waste stream shall be collected at the point of waste treatment in a manner such that volatilization of organic compounds contained in the waste and in the subsequent sample is minimized and an adequately representative sample is collected and maintained for analysis by the selected method.

a. The averaging period to be used for determining the average VO concentration for the hazardous waste stream on a mass–weighted average basis shall be designated and recorded. The averaging period may represent any time interval that the owner or operator determines is appropriate for the hazardous waste stream but shall not exceed 1 year.

b. A sufficient number of samples, but no less than 4 samples, shall be collected for the hazardous waste stream to represent the complete range of compositions and quantities that occur during the entire averaging period due to normal variations in the operating conditions for the process treating the hazardous waste stream.

Note: Examples of such normal variations are seasonal variations in waste quantity or fluctuations in ambient temperature.

c. All samples shall be collected and handled in accordance with written procedures prepared by the owner or operator and documented in a site sampling plan. This plan shall describe the procedure by which representative samples of the hazardous waste stream are collected such that a minimum loss of organic compounds occurs throughout the sample collection and handling process, and by which sample integrity is maintained. A copy of the written sampling plan shall be maintained on–site in the facility operating records.

Note: An example of an acceptable sampling plan includes a plan incorporating sample collection and handling procedures in accordance with the requirements specified in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication No. SW–846, as incorporated by reference in s. NR 600.10 (2) (b) 1. and (c), or in Method 25D in 40 CFR part 60, appendix A.

3. Analysis. Each collected sample shall be prepared and analyzed in accordance with one or more of the methods listed in subd. 3.a. to i., including appropriate quality assurance and quality control (QA/QC) checks and use of target compounds for calibration. If Method 25D in 40 CFR part 60, appendix A is not used, then one or more methods shall be chosen that are appropriate to ensure that the waste determination accounts for and reflects all organic compounds in the waste with Henry's law constant values at least 0.1 mole–fraction–in–the–gas–phase/mole–fraction–in–the–liquid–phase (0.1 Y/X), which can also be expressed as 1.8 x 10^{-6} atmospheres/gram–mole/m^3 at 25°C. If an owner or operator uses EPA Method 624, 625, 1624 or 1625 in 40 CFR part 136, appendix A to analyze one or more compounds that are not on that method's published list, the Alternative Test Procedure contained in 40 CFR 136.4 and 136.5 shall be followed. If an owner or operator uses EPA Method 8260 or 8270 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA Publication SW–846, as incorporated by reference in s. NR 600.10 (2) (b) 1. and (c), to analyze one or more compounds that are not on that method's published list, the procedures in subd. 3.h. shall be followed.

Note: Each of the analytical methods listed in subd. 3.b. to g. has an associated list of approved chemical compounds, for which EPA considers the method appropriate for measurement.

Note: At the owner's or operator's discretion, the concentration of each individual chemical constituent measured in the waste by a method other than Method 25D may be corrected to the concentration had it been measured using Method 25D by multiplying the measured concentration by the constituent–specific adjustment factor (f_{m25D}) as specified in sub. (1) (d) 3.

Note: Constituent–specific adjustment factors (f_{m25D}) can be obtained by contacting the Waste and Chemical Processes Group, Office of Air Quality Planning and Standards, Research Triangle Park, NC 27711.

a. Method 25D in 40 CFR part 60, appendix A.

b. Method 624 in 40 CFR part 136, appendix A.

c. Method 625 in 40 CFR part 136, appendix A. Perform corrections to the compounds for which the analysis is being conducted based on the "accuracy as recovery" using the factors in Table 7 of the method.

d. Method 1624 in 40 CFR part 136, appendix A.

e. Method 1625 in 40 CFR part 136, appendix A.

f. Method 8260 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA Publication SW–846, as incorporated by reference in s. NR 600.10 (2) (b) 1. and (c). Maintain a formal quality assurance program consistent with the requirements of Method 8260. The quality assurance program shall include both documentation of site–specific procedures to minimize the loss of compounds due to volatilization, biodegradation, reaction or sorption during the sample collection, storage, preparation, introduction and analysis steps, as well as measurement of the overall accuracy and precision of the specific procedures.

g. Method 8270 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA Publication SW–846, as incorporated by reference in s. NR 600.10 (2) (b) 1. and (c). Maintain a formal quality assurance program consistent with the requirements of Method 8270. The quality assurance program shall include both documentation of site–specific procedures to minimize the loss of compounds due to volatilization, biodegradation, reaction or sorption during the sample collection, storage, preparation, introduction and analysis steps, as well as measurement of the overall accuracy and precision of the specific procedures.

h. Any other EPA standard method that has been validated in accordance with "Alternative Validation Procedure for EPA Waste and Wastewater Methods", 40 CFR part 63, appendix D. As an alternative, other EPA standard methods may be validated by the procedure specified in subd. 3.i.

i. Any other analysis method that has been validated in accordance with the procedures specified in Section 5.1 or Section 5.3, and the corresponding calculations in Section 6.1 or Section 6.3, of Method 301 in 40 CFR part 63, appendix A. The data are acceptable if they meet the criteria specified in Section 6.1.5 or Section 6.3.3 of Method 301. If correction is required under section 6.3.3 of Method 301, the data are acceptable if the correction factor is within the range 0.7 to 1.30. Other sections of Method 301 are not required.

4. Calculations. The average VO concentration (C) on a mass–weighted basis shall be calculated by using the results for all samples analyzed in accordance with subd. 3. and the following equation:

$$\overline{C} = \frac{1}{Q_T} \times \sum_{i=1}^{n} (Q_i \times C_i)$$

Where:

$\overline{C}$ = Average VO concentration of the hazardous waste at the point of waste treatment on a mass–weighted basis, ppmw.

i = Individual sample "i" of the hazardous waste.

n = Total number of samples of the hazardous waste collected (at least 4) for the averaging period (not to exceed 1 year).

Q_i = Mass quantity of hazardous waste stream represented by C_i, kg/hr.

Q_T = Total mass quantity of hazardous waste during the averaging period, kg/hr.

C_i = Measured VO concentration of sample "i" as determined in accordance with the requirements of subd. 3., ppmw.

(d) The procedure specified in this paragraph shall be used to determine the exit concentration limit (C_t) for a treated hazardous waste.

1. The point of waste origination for each hazardous waste treated by the process at the same time shall be identified.

2. If a single hazardous waste stream is identified in subd. 1., the exit concentration limit (C_t) shall be 500 ppmw.

3. If more than one hazardous waste stream is identified in subd. 1., the average VO concentration of each hazardous waste stream at the point of waste origination shall be determined in accordance with the requirements of sub. (1). The exit concentration limit (C_t) shall be calculated by using the results determined for each individual hazardous waste stream and the following equation:

$$C_t = \frac{\sum_{x=1}^{m} (Q_x \times \overline{C}_x) + \sum_{y=1}^{n} (Q_y \times 500\text{ppmw})}{\sum_{x=1}^{m} Q_x + \sum_{y=1}^{n} Q_y}$$

Where:

C_t = Exit concentration limit for treated hazardous waste, ppmw.

x = Individual hazardous waste stream "x" that has an average VO concentration less than 500 ppmw at the point of waste origination as determined in accordance with the requirements of sub (1).

y = Individual hazardous waste stream "y" that has an average VO concentration equal to or greater than 500 ppmw at the point of waste origination as determined in accordance with the requirements of sub. (1).

m = Total number of "x" hazardous waste streams treated by process.

n = Total number of "y" hazardous waste streams treated by process.

Q_x = Annual mass quantity of hazardous waste stream "x," kg/yr.

Q_y = Annual mass quantity of hazardous waste stream "y," kg/yr.

$\overline{C}x$ = Average VO concentration of hazardous waste stream "x" at the point of waste origination as determined in accordance with the requirements of sub. (1), ppmw.

(e) The procedure specified in this paragraph shall be used to determine the organic reduction efficiency (R) for a treated hazardous waste.

1. The organic reduction efficiency (R) for a treatment process shall be determined based on results for a minimum of 3 consecutive runs.

2. All hazardous waste streams entering the treatment process and all hazardous waste streams exiting the treatment process shall be identified. The owner or operator shall prepare a sampling plan for measuring these streams that accurately reflects the retention time of the hazardous waste in the process.

3. For each run, information shall be determined for each hazardous waste stream identified in subd. 2. using the following procedures:

a. The mass quantity of each hazardous waste stream entering the process (Q_b) and the mass quantity of each hazardous waste stream exiting the process (Q_a) shall be determined.

b. The average VO concentration at the point of waste origination of each hazardous waste stream entering the process ($\overline{C}_b$) during the run shall be determined in accordance with the requirements of sub. (1) (c). The average VO concentration at the point of waste treatment of each waste stream exiting the process ($\overline{C}_a$)

during the run shall be determined in accordance with the requirements of sub. (2) (c).

4. The waste volatile organic mass flow entering the process (E_b) and the waste volatile organic mass flow exiting the process (E_a) shall be calculated by using the results determined in accordance with subd. 3. and the following equations:

$$E_b = \frac{1}{10^6}\sum_{j=1}^{m}(Q_{bj} x C_{\overline{bj}})$$

$$E_a = \frac{1}{10^6}\sum_{j=1}^{m}(Q_{aj} x C_{\overline{aj}})$$

Where:

E_a = Waste volatile organic mass flow exiting process, kg/hr.

E_b = Waste volatile organic mass flow entering process, kg/hr.

m = Total number of runs (at least 3)

j = Individual run "j"

Q_b = Mass quantity of hazardous waste entering process during run "j," kg/hr.

Q_a = Average mass quantity of hazardous waste exiting process during run "j," kg/hr.

$\overline{C}_a$ = Average VO concentration of hazardous waste exiting process during run "j" as determined in accordance with par. (c), ppmw.

$\overline{C}_b$ = Average VO concentration of hazardous waste entering process during run "j" as determined in accordance with par. (c), ppmw.

5. The organic reduction efficiency of the process shall be calculated by using the results determined in accordance with subd. 4. and the following equation:

$$R = \frac{E_b - E_a}{E_b} \times 100\%$$

Where:

R = Organic reduction efficiency, percent.

E_b = Waste volatile organic mass flow entering process as determined in accordance with the requirements of subd. 4., kg/hr.

E_a = Waste volatile organic mass flow exiting process as determined in accordance with the requirements of subd. 4., kg/hr.

(f) The procedure specified in this paragraph shall be used to determine the organic biodegradation efficiency (R_{bio}) for a treated hazardous waste.

1. The fraction of organics biodegraded (F_{bio}) shall be determined using the procedure specified in 40 CFR part 63, appendix C.

2. The R_{bio} shall be calculated by using the following equation:

$$R_{bio} = F_{bio} \times 100\%$$

Where:

R_{bio} = Organic biodegradation efficiency, percent.

F_{bio} = Fraction of organic biodegraded as determined in accordance with the requirements of subd. 1.

(g) The procedure specified in this paragraph shall be used to determine the required organic mass removal rate (RMR) for a treated hazardous waste.

1. All of the hazardous waste streams entering the treatment process shall be identified.

2. The average VO concentration of each hazardous waste stream at the point of waste origination shall be determined in accordance with sub. (1).

3. For each individual hazardous waste stream that has an average VO concentration equal to or greater than 500 ppmw at the point of waste origination, the average volumetric flow rate and the density of the hazardous waste stream at the point of waste origination shall be determined.

4. The RMR shall be calculated by using the average VO concentration, average volumetric flow rate and density determined for each individual hazardous waste stream, and the following equation:

$$RMR = \sum_{y=1}^{n}\left[V_y \times k_y \times \frac{(\overline{C}_y - 500 \text{ ppmw})}{10^6}\right]$$

Where:

RMR = Required organic mass removal rate, kg/hr.

y = Individual hazardous waste stream "y" that has an average VO concentration equal to or greater than 500 ppmw at the point of waste origination as determined in accordance with the requirements of sub. (1).

n = Total number of "y" hazardous waste streams treated by process.

V_y = Average volumetric flow rate of hazardous waste stream "y" at the point of waste origination, m^3/hr.

k_y = Density of hazardous waste stream "y," kg/m^3

$\overline{C}_y$ = Average VO concentration of hazardous waste stream "y" at the point of waste origination as determined in accordance with the requirements of sub. (1), ppmw.

(h) The procedure specified in this paragraph shall be used to determine the actual organic mass removal rate (MR) for a treated hazardous waste.

1. The MR shall be determined based on results for a minimum of 3 consecutive runs. The sampling time for each run shall be one hour.

2. The waste volatile organic mass flow entering the process (E_b) and the waste volatile organic mass flow exiting the process (E_a) shall be determined in accordance with the par. (e) 2.

3. The MR shall be calculated by using the mass flow rate determined in accordance with subd. 2. and the following equation:

Where:

$MR = E_b - E_a$

MR = Actual organic mass removal rate, kg/hr.

E_b = Waste volatile organic mass flow entering process as determined in accordance with par. (e) 4., kg/hr.

E_a = Waste volatile organic mass flow exiting process as determined in accordance with par. (e) 4., kg/hr.

(i) The procedure specified in this paragraph shall be used to determine the actual organic mass biodegradation rate (MR_{bio}) for a treated hazardous waste.

1. The MR_{bio} shall be determined based on results for a minimum of 3 consecutive runs. The sampling time for each run shall be one hour.

2. The waste organic mass flow entering the process (E_b) shall be determined in accordance with par. (e) 4.

3. The fraction of organic biodegraded (F_{bio}) shall be determined using the procedure specified in 40 CFR part 63, appendix C.

4. The MR_{bio} shall be calculated by using the mass flow rates and fraction of organic biodegraded determined in accordance with subds. 2. and 3., respectively, and the following equation: Where:

$MR_{bio} = E_b \times F_{bio}$

MR_{bio} = Actual organic mass biodegradation rate, kg/hr.

E_b = Waste organic mass flow entering process as determined in accordance with par. (e) 4., kg/hr.

F_{bio} = Fraction of organic biodegraded as determined in accordance with the requirements of subd. 3.

(3) PROCEDURE TO DETERMINE THE MAXIMUM ORGANIC VAPOR PRESSURE OF A HAZARDOUS WASTE IN A TANK. (a) An owner or operator shall determine the maximum organic vapor pressure for each hazardous waste placed in a tank using Tank Level 1 controls in accordance with the standards specified in s. NR 633.07 (2).

(b) An owner or operator shall use either direct measurement as specified in par. (c) or knowledge of the waste as specified by par. (d) to determine the maximum organic vapor pressure which is representative of the hazardous waste composition stored or treated in the tank.

(c) Where direct measurement is used to determine the maximum organic vapor pressure of a hazardous waste, the owner or operator shall follow the procedures specified in this paragraph.

1. Sampling. A sufficient number of samples shall be collected to be representative of the waste contained in the tank. All samples shall be collected and handled in accordance with written procedures prepared by the owner or operator and documented in a site sampling plan. This plan shall describe the procedure by which representative samples of the hazardous waste are collected such that a minimum loss of organic compounds occurs throughout the sample collection and handling process and by which sample integrity is maintained. A copy of the written sampling plan shall be maintained on–site in the facility operating records.

Note: An example of an acceptable sampling plan includes a plan incorporating sample collection and handling procedures in accordance with the requirements specified in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication No. SW–846, as incorporated by reference in s. NR 600.10 (2) (b) 1. and (c), or in Method 25D in 40 CFR part 60, appendix A.

2. Analysis. Any appropriate one of the following methods may be used to analyze the samples and compute the maximum organic vapor pressure of the hazardous waste:

a. Method 25E in 40 CFR part 60 appendix A.

b. Methods described in American Petroleum Institute Publication 2517, Third Edition, February 1989, "Evaporative Loss from External Floating–Roof Tanks".

c. Methods obtained from standard reference texts.

d. ASTM Method 2879–92.

e. Any other method approved by the department.

(d) Where knowledge is used to determine the maximum organic vapor pressure of the hazardous waste, the owner or operator shall follow the procedures specified in this paragraph. Documentation shall be prepared and recorded that presents the information used as the basis for the owner or operator's knowledge that the maximum organic vapor pressure of the hazardous waste is less than the maximum vapor pressure limit listed in s. NR 633.07 (1) (a) 1. for the applicable tank design capacity category.

Note: An example of information that may be used is documentation that the hazardous waste is generated by a process for which at other locations it previously has been determined by direct measurement that the waste maximum organic vapor pressure is less than the maximum vapor pressure limit for the appropriate tank design capacity category.

(4) PROCEDURE FOR DETERMINING NO DETECTABLE ORGANIC EMISSIONS FOR THE PURPOSE OF COMPLYING WITH THIS CHAPTER. (a) An owner or operator shall conduct a test for determining no detectable organic emissions for the purpose of complying with this chapter in accordance with the procedures specified in Method 21 of 40 CFR part 60, appendix A. Each potential leak interface on the cover and associated closure devices shall be checked.

Note: A potential leak interface is a location where organic vapor leakage could occur. Potential leak interfaces that are associated with covers and closure devices include, but are not limited to the following: The interface of the cover and its foundation mounting; the periphery of any opening on the cover and its associated closure device; and the sealing seat interface on a spring–loaded pressure relief valve.

(b) The owner or operator shall perform the test when the unit contains a hazardous waste having an organic concentration representative of the range of concentrations for the hazardous waste expected to be managed in the unit. During the test, the cover and closure devices shall be secured in the closed position.

(c) The detection instrument shall meet the performance criteria of Method 21 of 40 CFR part 60, appendix A, except the instrument response factor criteria in section 3.1.2 (a) of Method 21 shall be for the average composition of the organic constituents in the hazardous waste placed in the waste management unit, not for each individual organic constituent.

(d) The detection instrument shall be calibrated before use on each day of its use by the procedures specified in Method 21 of 40 CFR part 60, appendix A.

(e) Calibration gases shall be both of the following:

1. Air containing less than 10 ppmv hydrocarbon in air.

Note: Air containing less than 10 ppmv hydrocarbon is sometimes referred to as "zero air".

2. A mixture of methane in air at a concentration of less than 10,000 ppmv.

Note: The use of the detection instrument and Method 21 may only result in approximate readings.

(f) The background level shall be determined according to the procedures in Method 21 of 40 CFR part 60, appendix A.

(g) Each potential leak interface shall be checked by traversing the instrument probe around the potential leak interface as close to the interface as possible, as described in Method 21 of 40 CFR part 60, appendix A. In the case when the configuration of the cover or closure device prevents a complete traverse of the interface, all accessible portions of the interface shall be sampled. In the case when the configuration of the closure device prevents any sampling at the interface and the device is equipped with a pressure relief device, such as an enclosed extension or horn, the instrument probe inlet shall be placed at approximately the center of the exhaust area to the atmosphere.

Note: Enclosed extensions or horns are some pressure relief devices.

(h) The arithmetic difference between the maximum organic concentration indicated by the instrument and the background level shall be compared with the value of 500 ppmv except when monitoring a seal around a rotating shaft that passes through a cover opening, in which case the comparison shall be as specified in par. (i). If the difference is less than 500 ppmv, then the potential leak interface is determined to operate with no detectable organic emissions.

(i) For the seals around a rotating shaft that passes through a cover opening, the arithmetic difference between the maximum organic concentration indicated by the instrument and the background level shall be compared with the value of 10,000 ppmw. If the difference is less than 10,000 ppmw, then the potential leak interface is determined to operate with no detectable organic emissions.

NR 633.07 Tanks. This section applies to the control of air pollutant emissions from tanks for which s. NR 633.05 (1) references the use of this section for air emission control.

(1) The owner or operator shall control air pollutant emissions from each tank subject to this section in accordance with this subsection, as applicable.

(a) For a tank that manages hazardous waste that meets all of the conditions specified in subds. 1. to 3., the owner or operator shall control air pollutant emissions from the tank in accordance

with the Tank Level 1 controls specified in sub. (2) or the Tank Level 2 controls specified in sub. (3).

1. The hazardous waste in the tank has a maximum organic vapor pressure which is less than the maximum organic vapor pressure limit for the tank's design capacity category as follows:

a. For a tank design capacity equal to or greater than 151 m^3, the maximum organic vapor pressure limit for the tank is 5.2 kPa.

b. For a tank design capacity equal to or greater than 75 m^3 less than 151 m^3, the maximum organic vapor pressure limit for the tank is 27.6 kPa.

c. For a tank design capacity less than 75 m^3, the maximum organic vapor pressure limit for the tank is 76.6 kPa.

2. The hazardous waste in the tank is not heated by the owner or operator to a temperature that is greater than the temperature at which the maximum organic vapor pressure of the hazardous waste is determined for the purpose of complying with subd. 1.

3. The hazardous waste in the tank is not treated by the owner or operator using a waste stabilization process.

(b) For a tank that manages hazardous waste that does not meet all of the conditions specified in par. (a) 1. to 3., the owner or operator shall control air pollutant emissions from the tank by using Tank Level 2 controls in accordance with sub. (4).

Note: Examples of tanks required to use Tank Level 2 controls include: A tank used for a waste stabilization process; and a tank for which the hazardous waste in the tank has a maximum organic vapor pressure that is equal to or greater than the maximum organic vapor pressure limit for the tank's design capacity category as specified in par. (a) 1.

(2) Owners and operators controlling air pollutant emissions from a tank using Tank Level 1 controls shall meet all of the following requirements:

(a) The owner or operator shall determine the maximum organic vapor pressure for a hazardous waste to be managed in the tank using Tank Level 1 controls before the first time the hazardous waste is placed in the tank. The maximum organic vapor pressure shall be determined using the procedures specified in s. NR 633.06 (3). Thereafter, the owner or operator shall perform a new determination whenever changes to the hazardous waste managed in the tank could potentially cause the maximum organic vapor pressure to increase to a level that is equal to or greater than the maximum organic vapor pressure limit for the tank design capacity category specified in sub. (1) (a) 1., as applicable to the tank.

(b) The tank shall be equipped with a fixed roof designed to meet the following specifications:

1. The fixed roof and its closure devices shall be designed to form a continuous barrier over the entire surface area of the hazardous waste in the tank. The fixed roof may be a separate cover installed on the tank or may be an integral part of the tank structural design.

Note: An example of a separate cover installed on the tank is a removable cover mounted on an open–top tank. An example of a fixed roof which is an integral part of the tank structural design is a horizontal cylindrical tank equipped with a hatch.

2. The fixed roof shall be installed in a manner such that there are no visible cracks, holes, gaps or other open spaces between roof section joints or between the interface of the roof edge and the tank wall.

3. Each opening in the fixed roof shall be one of the following:

a. Equipped with a closure device designed to operate such that when the closure device is secured in the closed position there are no visible cracks, holes, gaps or other open spaces in the closure device or between the perimeter of the opening and the closure device.

b. Connected by a closed–vent system that is vented to a control device. The control device shall remove or destroy organic compounds in the vent stream, and it shall be operating whenever hazardous waste is managed in the tank.

4. The fixed roof and its closure devices shall be made of suitable materials that will minimize exposure of the hazardous waste to the atmosphere, to the extent practical, and will maintain the integrity of the fixed roof and closure devices throughout their intended service life.

Note: Factors to be considered when selecting the materials for and designing the fixed roof and closure devices shall include organic vapor permeability; the effects of any contact with the hazardous waste or its vapors managed in the tank; the effects of outdoor exposure to wind, moisture, and sunlight; and the operating practices used for the tank on which the fixed roof is installed.

(c) Whenever a hazardous waste is in the tank, the fixed roof shall be installed with each closure device secured in the closed position except as follows:

1. Opening of closure devices or removal of the fixed roof is allowed at the following times:

a. To provide access to the tank for performing routine inspection, maintenance or other activities needed for normal operations. Following completion of the activity, the owner or operator shall promptly secure the closure device in the closed position or reinstall the cover, as applicable, to the tank.

Note: Examples of routine inspection, maintenance, or other activities needed for normal operations include those times when a worker needs to open a port to sample the liquid in the tank, or when a worker needs to open a hatch to maintain or repair equipment.

b. To remove accumulated sludge or other residues from the bottom of tank.

2. Opening of a spring–loaded pressure–vacuum relief valve, conservation vent or similar type of pressure relief device which vents to the atmosphere is allowed during normal operations for the purpose of maintaining the tank internal pressure in accordance with the tank design specifications. The device shall be designed to operate with no detectable organic emissions when the device is secured in the closed position. The settings at which the device opens shall be established such that the device remains in the closed position whenever the tank internal pressure is within the internal pressure operating range determined by the owner or operator based on the tank manufacturer recommendations, applicable regulations, fire protection and prevention codes, standard engineering codes and practices, or other requirements for the safe handling of flammable, ignitable, explosive, reactive or hazardous materials.

Note: Examples of normal operating conditions that may require these devices to open are during those times when the tank internal pressure exceeds the internal pressure operating range for the tank as a result of loading operations or diurnal ambient temperature fluctuations.

3. Opening of a safety device is allowed at any time conditions require doing so to avoid an unsafe condition.

(d) The owner or operator shall inspect the air emission control equipment in accordance with the requirements in subds. 1. to 3.

1. The fixed roof and its closure devices shall be visually inspected by the owner or operator to check for defects that could result in air pollutant emissions.

Note: Defects include, but are not limited to, visible cracks, holes or gaps in the roof sections or between the roof and the tank wall; broken, cracked or otherwise damaged seals or gaskets on closure devices; and broken or missing hatches, access covers, caps or other closure devices.

2. The owner or operator shall perform an initial inspection of the fixed roof and its closure devices on or before the date that the tank becomes subject to this section. Thereafter, the owner or operator shall perform the inspections at least once every year except under the special conditions provided for in sub. (11).

3. In the event that a defect is detected, the owner or operator shall repair the defect in accordance with sub. (10).

4. The owner or operator shall maintain a record of the inspection in accordance with s. NR 633.12 (2).

(3) Owners and operators controlling air pollutant emissions from a tank using Tank Level 2 controls shall use one of the following tanks:

(a) A fixed–roof tank equipped with an internal floating roof in accordance with sub. (4).

(b) A tank equipped with an external floating roof in accordance with sub. (5).

(c) A tank vented through a closed–vent system to a control device in accordance with sub. (6).

(d) A pressure tank designed and operated in accordance with sub. (7).

(e) A tank located inside an enclosure that is vented through a closed–vent system to an enclosed combustion control device in accordance with sub. (8).

(4) The owner or operator who controls air pollutant emissions from a tank using a fixed–roof with an internal floating roof shall meet the requirements specified in pars. (a) to (c).

(a) The tank shall be equipped with a fixed roof and an internal floating roof in accordance with the following requirements:

1. The internal floating roof shall be designed to float on the liquid surface except when the floating roof must be supported by the leg supports.

2. The internal floating roof shall be equipped with a continuous seal between the wall of the tank and the floating roof edge that meets either of the following requirements:

a. A single continuous seal that is either a liquid–mounted seal or a metallic shoe seal.

b. Two continuous seals mounted one above the other. The lower seal may be a vapor–mounted seal.

3. The internal floating roof shall meet the following specifications:

a. Each opening in a noncontact internal floating roof except for automatic bleeder vents and the rim space vents shall provide a projection below the liquid surface.

Note: Automatic bleeder vents are also known as vacuum breaker vents.

b. Each opening in the internal floating roof shall be equipped with a gasketed cover or a gasketed lid except for leg sleeves, automatic bleeder vents, rim space vents, column wells, ladder wells, sample wells and stub drains.

c. Each penetration of the internal floating roof for the purpose of sampling shall have a slit fabric cover that covers at least 90% of the opening.

d. Each automatic bleeder vent and rim space vent shall be gasketed.

e. Each penetration of the internal floating roof that allows for passage of a ladder shall have a gasketed sliding cover.

f. Each penetration of the internal floating roof that allows for passage of a column supporting the fixed roof shall have a flexible fabric sleeve seal or a gasketed sliding cover.

(b) The owner or operator shall operate the tank in accordance with the following requirements:

1. When the floating roof is resting on the leg supports, the process of filling, emptying or refilling shall be continuous and shall be completed as soon as practical.

2. Automatic bleeder vents are to be set closed at all times when the roof is floating, except when the roof is being floated off or is being landed on the leg supports.

3. Prior to filling the tank, each cover, access hatch, gauge float well or lid on any opening in the internal floating roof shall be bolted or fastened closed. An internal floating roof which is fastened closed shall have no visible gaps. Rim space vents are to be set to open only when the internal floating roof is not floating or when the pressure beneath the rim exceeds the manufacturer's recommended setting.

(c) The owner or operator shall inspect the internal floating roof in accordance with the procedures specified as follows:

1. The floating roof and its closure devices shall be visually inspected by the owner or operator to check for defects that could result in air pollutant emissions.

Note: Defects include, but are not limited to: The internal floating roof is not floating on the surface of the liquid inside the tank; liquid has accumulated on top of the internal floating roof; any portion of the roof seals have detached from the roof rim; holes, tears or other openings are visible in the seal fabric; the gaskets no longer close off the hazardous waste surface from the atmosphere; or the slotted membrane has more than 10% open area.

2. The owner or operator shall inspect the internal floating roof components as follows except as provided in subd. 3.:

a. Visually inspect the internal floating roof components through openings on the fixed–roof at least once every 12 months after initial fill, and

Note: Openings on the fixed–roof include manholes and roof hatches.

b. Visually inspect the internal floating roof, primary seal, secondary seal, if one is in service, gaskets, slotted membranes and sleeve seals, if any, each time the tank is emptied and degassed and at least every 10 years.

3. As an alternative to performing the inspections specified in subd. 2. for an internal floating roof equipped with 2 continuous seals mounted one above the other, the owner or operator may visually inspect the internal floating roof, primary and secondary seals, gaskets, slotted membranes and sleeve seals, if any, each time the tank is emptied and degassed and at least every 5 years.

4. Prior to each inspection required by subd. 2. or 3., the owner or operator shall notify the department in advance of each inspection to provide the department with the opportunity to have an observer present during the inspection. The owner or operator shall notify the department of the date and location of the inspection as follows:

a. Prior to each visual inspection of an internal floating roof in a tank that has been emptied and degassed, written notification shall be prepared and sent by the owner or operator so that it is received by the department at least 30 calendar days before refilling the tank except when an inspection is not planned as provided for in subd. 4. b.

b. When a visual inspection is not planned and the owner or operator could not have known about the inspection 30 calendar days before refilling the tank, the owner or operator shall notify the department as soon as possible, but no later than 7 calendar days before refilling of the tank. This notification may be made by telephone and immediately followed by a written explanation for why the inspection is unplanned. Alternatively, written notification, including the explanation for the unplanned inspection, may be sent so that it is received by the department at least 7 calendar days before refilling the tank.

5. In the event that a defect is detected, the owner or operator shall repair the defect in accordance with the requirements of sub. (10).

6. The owner or operator shall maintain a record of the inspection in accordance with s. NR 633.12 (2).

(5) An owner or operator who controls air pollutant emissions from a tank using an external floating roof shall meet the requirements specified in pars. (a) to (c).

(a) The owner or operator shall design the external floating roof in accordance with the following requirements:

1. The external floating roof shall be designed to float on the liquid surface except when the floating roof must be supported by the leg supports.

2. The floating roof shall be equipped with 2 continuous seals, one above the other, between the wall of the tank and the roof edge.

Note: The lower seal is referred to as the primary seal, and the upper seal is referred to as the secondary seal.

a. The primary seal shall be a liquid–mounted seal or a metallic shoe seal. The total area of the gaps between the tank wall and the primary seal may not exceed 212 square centimeters (cm^2) per meter of tank diameter, and the width of any portion of these gaps may not exceed 3.8 centimeters (cm). If a metallic shoe seal is used for the primary seal, the metallic shoe seal shall be designed so that one end extends into the liquid in the tank and the other end extends a vertical distance of at least 61 centimeters above the liquid surface.

b. The secondary seal shall be mounted above the primary seal and cover the annular space between the floating roof and the

wall of the tank. The total area of the gaps between the tank wall and the secondary seal may not exceed 21.2 square centimeters (cm^2) per meter of tank diameter, and the width of any portion of these gaps may not exceed 1.3 centimeters (cm).

3. The external floating roof shall meet the following specifications:

a. Except for automatic bleeder vents and rim space vents, each opening in a noncontact external floating roof shall provide a projection below the liquid surface.

Note: Automatic bleeder vents are also known as vacuum breaker vents.

b. Except for automatic bleeder vents, rim space vents, roof drains and leg sleeves, each opening in the roof shall be equipped with a gasketed cover, seal or lid.

c. Each access hatch and each gauge float well shall be equipped with a cover designed to be bolted or fastened when the cover is secured in the closed position.

d. Each automatic bleeder vent and each rim space vent shall be equipped with a gasket.

e. Each roof drain that empties into the liquid managed in the tank shall be equipped with a slotted membrane fabric cover that covers at least 90% of the area of the opening.

f. Each unslotted and slotted guide pole well shall be equipped with a gasketed sliding cover or a flexible fabric sleeve seal.

g. Each unslotted guide pole shall be equipped with a gasketed cap on the end of the pole.

h. Each slotted guide pole shall be equipped with a gasketed float or other device which closes off the liquid surface from the atmosphere.

i. Each gauge hatch and each sample well shall be equipped with a gasketed cover.

(b) The owner or operator shall operate the tank in accordance with the following requirements:

1. When the floating roof is resting on the leg supports, the process of filling, emptying or refilling shall be continuous and shall be completed as soon as practical.

2. Except for automatic bleeder vents, rim space vents, roof drains and leg sleeves, each opening in the roof shall be secured and maintained in a closed position at all times except when the closure device must be open for access.

3. Covers on each access hatch and each gauge float well shall be bolted or fastened when secured in the closed position.

4. Automatic bleeder vents shall be set closed at all times when the roof is floating, except when the roof is being floated off or is being landed on the leg supports.

5. Rim space vents shall be set to open only at those times that the roof is being floated off the roof leg supports or when the pressure beneath the rim seal exceeds the manufacturer's recommended setting.

6. The cap on the end of each unslotted guide pole shall be secured in the closed position at all times except when measuring the level or collecting samples of the liquid in the tank.

7. The cover on each gauge hatch or sample well shall be secured in the closed position at all times except when the hatch or well must be opened for access.

8. Both the primary seal and the secondary seal shall completely cover the annular space between the external floating roof and the wall of the tank in a continuous fashion except during inspections.

(c) The owner or operator shall inspect the external floating roof in accordance with the procedures specified as follows:

1. The owner or operator shall measure the external floating roof seal gaps in accordance with the following requirements:

a. The owner or operator shall perform measurements of gaps between the tank wall and the primary seal within 60 calendar days after initial operation of the tank following installation of the floating roof and, thereafter, at least once every 5 years.

b. The owner or operator shall perform measurements of gaps between the tank wall and the secondary seal within 60 calendar days after initial operation of the tank following installation of the floating roof and, thereafter, at least once every year.

c. If a tank ceases to hold hazardous waste for a period of 1 year or more, subsequent introduction of hazardous waste into the tank shall be considered an initial operation for the purposes of subd. 1.a. and b.

d. The owner or operator shall determine the total surface area of gaps in the primary seal and in the secondary seal individually using the following procedure. The seal gap measurements shall be performed at one or more floating roof levels when the roof is floating off the roof supports. Seal gaps, if any, shall be measured around the entire perimeter of the floating roof in each place where a 0.32–centimeter (cm) diameter uniform probe passes freely, without forcing or binding against the seal, between the seal and the wall of the tank and measure the circumferential distance of each such location. For a seal gap measured under this paragraph, the gap surface area shall be determined by using probes of various widths to measure accurately the actual distance from the tank wall to the seal and multiplying each such width by its respective circumferential distance. The total gap area shall be calculated by adding the gap surface areas determined for each identified gap location for the primary seal and the secondary seal individually, and then dividing the sum for each seal type by the nominal perimeter of the tank. These total gap areas for the primary seal and secondary seal are then compared to the respective standards for the seal type as specified in par. (a) 2.

e. In the event that the seal gap measurements do not conform to the specifications in par. (a) 2., the owner or operator shall repair the defect in accordance with the requirements of sub. (10).

f. The owner or operator shall maintain a record of the inspection in accordance with s. NR 633.12 (2).

2. The owner or operator shall visually inspect the external floating roof in accordance with the following requirements:

a. The floating roof and its closure devices shall be visually inspected by the owner or operator to check for defects that could result in air pollutant emissions.

Note: Defects include, but are not limited to: Holes, tears or other openings in the rim seal or seal fabric of the floating roof; a rim seal detached from the floating roof; all or a portion of the floating roof deck being submerged below the surface of the liquid in the tank; broken, cracked or otherwise damaged seals or gaskets on closure devices; and broken or missing hatches, access covers, caps or other closure devices.

b. The owner or operator shall perform an initial inspection of the external floating roof and its closure devices on or before the date that the tank becomes subject to this section. Thereafter, the owner or operator shall perform the inspections at least once every year except for the special conditions provided for in sub. (11).

c. In the event that a defect is detected, the owner or operator shall repair the defect in accordance with sub. (10).

d. The owner or operator shall maintain a record of the inspection in accordance with s. NR 633.12 (1).

3. Prior to each inspection required by subd. 1. or 2., the owner or operator shall notify the department in advance of each inspection to provide the department with the opportunity to have an observer present during the inspection. The owner or operator shall notify the department of the date and location of the inspection as follows:

a. Prior to each inspection to measure external floating roof seal gaps as required under subd. 1., written notification shall be prepared and sent by the owner or operator so that it is received by the department at least 30 calendar days before the date the measurements are scheduled to be performed.

b. Prior to each visual inspection of an external floating roof in a tank that has been emptied and degassed, written notification

shall be prepared and sent by the owner or operator so that it is received by the department at least 30 calendar days before refilling the tank except when an inspection is not planned as provided for in subd. 3.c.

c. When a visual inspection is not planned and the owner or operator could not have known about the inspection 30 calendar days before refilling the tank, the owner or operator shall notify the department as soon as possible, but no later than 7 calendar days before refilling of the tank. This notification may be made by telephone and immediately followed by a written explanation for why the inspection is unplanned. Alternatively, written notification, including the explanation for the unplanned inspection, may be sent so that it is received by the department at least 7 calendar days before refilling the tank.

(6) The owner or operator who controls air pollutant emissions from a tank by venting the tank to a control device shall meet the requirements specified in pars. (a) to (c).

(a) The tank shall be covered by a fixed roof and vented directly through a closed–vent system to a control device in accordance with the following requirements:

1. The fixed roof and its closure devices shall be designed to form a continuous barrier over the entire surface area of the liquid in the tank.

2. Each opening in the fixed roof not vented to the control device shall be equipped with a closure device. If the pressure in the vapor headspace underneath the fixed roof is less than atmospheric pressure when the control device is operating, the closure devices shall be designed to operate such that when the closure device is secured in the closed position there are no visible cracks, holes, gaps or other open spaces in the closure device or between the perimeter of the cover opening and the closure device. If the pressure in the vapor headspace underneath the fixed roof is equal to or greater than atmospheric pressure when the control device is operating, the closure device shall be designed to operate with no detectable organic emissions.

3. The fixed roof and its closure devices shall be made of suitable materials that will minimize exposure of the hazardous waste to the atmosphere, to the extent practical, and will maintain the integrity of the fixed roof and closure devices throughout their intended service life.

Note: Factors to be considered when selecting the materials for and designing the fixed roof and closure devices shall include: Organic vapor permeability, the effects of any contact with the liquid and its vapor managed in the tank; the effects of outdoor exposure to wind, moisture, and sunlight; and the operating practices used for the tank on which the fixed roof is installed.

4. The closed–vent system and control device shall be designed and operated in accordance with s. NR 633.10.

(b) Whenever a hazardous waste is in the tank, the fixed roof shall be installed with each closure device secured in the closed position and the vapor headspace underneath the fixed roof vented to the control device except as follows:

1. Venting to the control device is not required, and opening of closure devices or removal of the fixed roof is allowed at the following times:

a. To provide access to the tank for performing routine inspection, maintenance or other activities needed for normal operations. Following completion of the activity, the owner or operator shall promptly secure the closure device in the closed position or reinstall the cover, as applicable, to the tank.

Note: Examples of routine inspection, maintenance or other activities needed for normal operations include those times when a worker needs to open a port to sample liquid in the tank, or when a worker needs to open a hatch to maintain or repair equipment.

b. To remove accumulated sludge or other residues from the bottom of a tank.

2. Opening of a safety device, is allowed at any time conditions require doing so to avoid an unsafe condition.

(c) The owner or operator shall inspect and monitor the air emission control equipment in accordance with the following procedures:

1. The fixed roof and its closure devices shall be visually inspected by the owner or operator to check for defects that could result in air pollutant emissions.

Note: Defects include, but are not limited to, visible cracks, holes or gaps in the roof sections or between the roof and the tank wall; broken, cracked or otherwise damaged seals or gaskets on closure devices; and broken or missing hatches, access covers, caps or other closure devices.

2. The closed–vent system and control device shall be inspected and monitored by the owner or operator in accordance with the procedures specified in s. NR 633.10.

3. The owner or operator shall perform an initial inspection of the air emission control equipment on or before the date that the tank becomes subject to this section. Thereafter, the owner or operator shall perform the inspections at least once every year except for the special conditions provided for in sub. (11).

4. In the event that a defect is detected, the owner or operator shall repair the defect in accordance with the requirements of sub. (10).

5. The owner or operator shall maintain a record of the inspection in accordance with s. NR 633.12.

(7) The owner or operator who controls air pollutant emissions by using a pressure tank shall meet the following requirements:

(a) The tank shall be designed not to vent to the atmosphere as a result of compression of the vapor headspace in the tank during filling of the tank to its design capacity.

(b) All tank openings shall be equipped with closure devices designed to operate with no detectable organic emissions as determined using the procedure specified in s. NR 633.06.

(c) Whenever a hazardous waste is in the tank, the tank shall be operated as a closed system that does not vent to the atmosphere except in the event that a safety device, is required to open to avoid an unsafe condition.

(8) The owner or operator who controls air pollutant emissions by using an enclosure vented through a closed–vent system to an enclosed combustion control device shall meet the requirements specified in pars. (a) to (d).

(a) The tank shall be located inside an enclosure. The enclosure shall be designed and operated in accordance with the criteria for a permanent total enclosure as specified in "Procedure T—Criteria for and Verification of a Permanent or Temporary Total Enclosure" under 40 CFR 52.741, Appendix B. The enclosure may have permanent or temporary openings to allow worker access; passage of material into or out of the enclosure by conveyor, vehicles or other mechanical means; entry of permanent mechanical or electrical equipment; or direct airflow into the enclosure. The owner or operator shall perform the verification procedure for the enclosure as specified in Section 5.0 to "Procedure T—Criteria for and Verification of a Permanent or Temporary Total Enclosure" initially when the enclosure is first installed and, thereafter, annually.

(b) The enclosure shall be vented through a closed–vent system to an enclosed combustion control device that is designed and operated in accordance with the standards for either a vapor incinerator, boiler or process heater specified in s. NR 633.10.

(c) Safety devices may be installed and operated as necessary on any enclosure, closed–vent system or control device used to comply with the requirements of pars. (a) and (b).

(d) The owner or operator shall inspect and monitor the closed–vent system and control device as specified in s. NR 633.10.

(9) The owner or operator shall transfer hazardous waste to a tank subject to this section in accordance with the following requirements:

(a) Transfer of hazardous waste, except as provided in par. (b), to the tank from another tank subject to this section or from a surface impoundment subject to s. NR 633.08 shall be conducted using continuous hard–piping or another closed system that does not allow exposure of the hazardous waste to the atmosphere. For the purpose of complying with this provision, an individual drain system is considered to be a closed system when it meets the requirements of 40 CFR part 63, subpart RR—National Emission Standards for Individual Drain Systems.

(b) The requirements of par. (a) do not apply when transferring a hazardous waste to the tank under any of the following conditions:

1. The hazardous waste meets the average VO concentration conditions specified in s. NR 633.05 at the point of waste origination.

2. The hazardous waste has been treated by an organic destruction or removal process to meet the requirements in s. NR 633.05 (2) (b).

(10) The owner or operator shall repair each defect detected during an inspection performed in accordance with sub. (2) (d), (4) (c), (5) (c) or (6) (c) as follows:

(a) The owner or operator shall make first efforts at repair of the defect no later than 5 calendar days after detection, and repair shall be completed as soon as possible but no later than 45 calendar days after detection except as provided in par. (b).

(b) Repair of a defect may be delayed beyond 45 calendar days if the owner or operator determines that repair of the defect requires emptying or temporary removal from service of the tank and no alternative tank capacity is available at the site to accept the hazardous waste normally managed in the tank. In this case, the owner or operator shall repair the defect the next time the process or unit that is generating the hazardous waste managed in the tank stops operation. Repair of the defect shall be completed before the process or unit resumes operation.

(11) Following the initial inspection and monitoring of the cover as required by this chapter, subsequent inspection and monitoring may be performed at intervals longer than one year under the following special conditions:

(a) In the case when inspecting or monitoring the cover would expose a worker to dangerous, hazardous or other unsafe conditions, then the owner or operator may designate a cover as an "unsafe to inspect and monitor cover" and comply with all of the following requirements:

1. Prepare a written explanation for the cover stating the reasons why the cover is unsafe to visually inspect or to monitor, if required.

2. Develop and implement a written plan and schedule to inspect and monitor the cover, using the procedures specified in the applicable section of this chapter, as frequently as practicable during those times when a worker can safely access the cover.

(b) In the case when a tank is buried partially or entirely underground, an owner or operator is required to inspect and monitor, as required by the applicable provisions of this section, only those portions of the tank cover and those connections to the tank, including fill ports, access hatches and gauge wells, that are located on or above the ground surface.

History: Cr. Register, May, 1998, No. 509, eff. 6–1–98.

NR 633.08 Surface impoundments. The provisions of this section apply to the control of air pollutant emissions from surface impoundments for which s. NR 633.05 (1) references the use of this section for air emission control.

(1) The owner or operator shall control air pollutant emissions from the surface impoundment by installing and operating either of the following:

(a) A floating membrane cover in accordance with the provisions specified in sub. (2).

(b) A cover that is vented through a closed–vent system to a control device in accordance with sub. (3).

(2) The owner or operator who controls air pollutant emissions from a surface impoundment using a floating membrane cover shall meet the requirements specified in pars. (a) to (c).

(a) The surface impoundment shall be equipped with a floating membrane cover designed to meet the following specifications:

1. The floating membrane cover shall be designed to float on the liquid surface during normal operations and form a continuous barrier over the entire surface area of the liquid.

2. The cover shall be fabricated from a synthetic membrane material that is either:

a. High density polyethylene (HDPE) with a thickness no less than 2.5 millimeters (mm); or

b. A material or a composite of different materials determined to have both organic permeability properties that are equivalent to those of the material listed in subd. 2.a. and chemical and physical properties that maintain the material integrity for the intended service life of the material.

3. The cover shall be installed in a manner such that there are no visible cracks, holes, gaps or other open spaces between cover section seams or between the interface of the cover edge and its foundation mountings.

4. Except as provided for in subd. 5., each opening in the floating membrane cover shall be equipped with a closure device designed to operate such that when the closure device is secured in the closed position there are no visible cracks, holes, gaps or other open spaces in the closure device or between the perimeter of the cover opening and the closure device.

5. The floating membrane cover may be equipped with one or more emergency cover drains for removal of stormwater. Each emergency cover drain shall be equipped with a slotted membrane fabric cover that covers at least 90% of the area of the opening or a flexible fabric sleeve seal.

6. The closure devices shall be made of suitable materials that will minimize exposure of the hazardous waste to the atmosphere, to the extent practical, and will maintain the integrity of the closure devices throughout their intended service life. Factors which shall be considered when selecting the materials of construction and designing the cover and closure devices shall be organic vapor permeability; the effects of any contact with the liquid and its vapor managed in the surface impoundment; the effects of outdoor exposure to wind, moisture and sunlight; and the operating practices used for the surface impoundment on which the floating membrane cover is installed.

(b) Whenever a hazardous waste is in the surface impoundment, the floating membrane cover shall float on the liquid and each closure device shall be secured in the closed position except as follows:

1. Opening of closure devices or removal of the cover is allowed at the following times:

a. To provide access to the surface impoundment for performing routine inspection, maintenance or other activities needed for normal operations. Following completion of the activity, the owner or operator shall promptly replace the cover and secure the closure device in the closed position, as applicable.

Note: Examples of routine inspection, maintenance or other activities needed for normal operations include those times when a worker needs to open a port to sample the liquid in the surface impoundment, or when a worker needs to open a hatch to maintain or repair equipment.

b. To remove accumulated sludge or other residues from the bottom of surface impoundment.

2. Opening of a safety device is allowed at any time conditions require doing so to avoid an unsafe condition.

(c) The owner or operator shall inspect the floating membrane cover in accordance with the following procedures:

1. The floating membrane cover and its closure devices shall be visually inspected by the owner or operator to check for defects that could result in air pollutant emissions.

Note: Defects include, but are not limited to, visible cracks, holes or gaps in the cover section seams or between the interface of the cover edge and its foundation mountings; broken, cracked or otherwise damaged seals or gaskets on closure devices; and broken or missing hatches, access covers, caps or other closure devices.

2. The owner or operator shall perform an initial inspection of the floating membrane cover and its closure devices on or before the date that the surface impoundment becomes subject to this section. Thereafter, the owner or operator shall perform the inspections at least once every year except for the special conditions provided for in sub. (6).

3. In the event that a defect is detected, the owner or operator shall repair the defect in accordance with sub. (5).

4. The owner or operator shall maintain a record of the inspection in accordance with the requirements specified in s. NR 633.12 (3).

(3) The owner or operator who controls air pollutant emissions from a surface impoundment using a cover vented to a control device shall meet the requirements specified in pars. (a) to (c).

(a) The surface impoundment shall be covered by a cover and vented directly through a closed–vent system to a control device in accordance with the following requirements:

1. The cover and its closure devices shall be designed to form a continuous barrier over the entire surface area of the liquid in the surface impoundment.

2. Each opening in the cover not vented to the control device shall be equipped with a closure device. If the pressure in the vapor headspace underneath the cover is less than atmospheric pressure when the control device is operating, the closure devices shall be designed to operate such that when the closure device is secured in the closed position there are no visible cracks, holes, gaps or other open spaces in the closure device or between the perimeter of the cover opening and the closure device. If the pressure in the vapor headspace underneath the cover is equal to or greater than atmospheric pressure when the control device is operating, the closure device shall be designed to operate with no detectable organic emissions using the procedure specified in s. NR 633.06 (4).

3. The cover and its closure devices shall be made of suitable materials that will minimize exposure of the hazardous waste to the atmosphere, to the extent practical, and will maintain the integrity of the cover and closure devices throughout their intended service life. Factors which shall be considered when selecting the materials for and designing the cover and closure devices shall be organic vapor permeability; the effects of any contact with the liquid or its vapors managed in the surface impoundment; the effects of outdoor exposure to wind, moisture and sunlight; and the operating practices used for the surface impoundment on which the cover is installed.

4. The closed–vent system and control device shall be designed and operated in accordance with s. NR 633.10.

(b) Whenever a hazardous waste is in the surface impoundment, the cover shall be installed with each closure device secured in the closed position and the vapor headspace underneath the cover vented to the control device except as follows:

1. Venting to the control device is not required, and opening of closure devices or removal of the cover is allowed at the following times:

a. To provide access to the surface impoundment for performing routine inspection, maintenance or other activities needed for normal operations. Following completion of the activity, the owner or operator shall promptly secure the closure device in the closed position or reinstall the cover, as applicable, to the surface impoundment.

Note: Examples of routine inspection, maintenance or other activities needed for normal operations include those times when a worker needs to open a port to sample liquid in the surface impoundment, or when a worker needs to open a hatch to maintain or repair equipment.

b. To remove accumulated sludge or other residues from the bottom of surface impoundment.

2. Opening of a safety device is allowed at any time conditions require doing so to avoid an unsafe condition.

(c) The owner or operator shall inspect and monitor the air emission control equipment in accordance with the following procedures:

1. The surface impoundment cover and its closure devices shall be visually inspected by the owner or operator to check for defects that could result in air pollutant emissions.

Note: Defects include, but are not limited to, visible cracks, holes or gaps in the cover section seams or between the interface of the cover edge and its foundation mountings; broken, cracked or otherwise damaged seals or gaskets on closure devices; and broken or missing hatches, access covers, caps or other closure devices.

2. The closed–vent system and control device shall be inspected and monitored by the owner or operator in accordance with the procedures specified in s. NR 633.10.

3. The owner or operator shall perform an initial inspection of the air emission control equipment on or before the date that the surface impoundment becomes subject to this section. Thereafter, the owner or operator shall perform the inspections at least once every year except for the special conditions provided for in sub. (6).

4. In the event that a defect is detected, the owner or operator shall repair the defect in accordance with the requirements of sub. (5).

5. The owner or operator shall maintain a record of the inspection in accordance with s. NR 633.12 (3).

(4) The owner or operator shall transfer hazardous waste to a surface impoundment subject to this section in accordance with the following requirements:

(a) Transfer of hazardous waste, except as provided in par. (b), to the surface impoundment from another surface impoundment subject to this section or from a tank subject to s. NR 633.07 shall be conducted using continuous hard–piping or another closed system that does not allow exposure of the waste to the atmosphere. For the purpose of complying with this provision, an individual drain system is considered to be a closed system when it meets the requirements of 40 CFR part 63, subpart RR—National Emission Standards for Individual Drain Systems.

(b) The requirements of par. (a) do not apply when transferring a hazardous waste to the surface impoundment under either of the following conditions:

1. The hazardous waste meets the average VO concentration conditions specified in s. NR 633.05 (2) (a) at the point of waste origination.

2. The hazardous waste has been treated by an organic destruction or removal process to meet the requirements in s. NR 633.05 (2) (b).

(5) The owner or operator shall repair each defect detected during an inspection performed in accordance with sub. (2) (c) or (3) (c) as follows:

(a) The owner or operator shall make first efforts at repair of the defect no later than 5 calendar days after detection, and repair shall be completed as soon as possible but no later than 45 calendar days after detection except as provided in par. (b).

(b) Repair of a defect may be delayed beyond 45 calendar days if the owner or operator determines that repair of the defect requires emptying or temporary removal from service of the surface impoundment and no alternative capacity is available at the site to accept the hazardous waste normally managed in the surface impoundment. In this case, the owner or operator shall repair the defect the next time the process or unit that is generating the hazardous waste managed in the tank stops operation. Repair of

the defect shall be completed before the process or unit resumes operation.

(6) Following the initial inspection and monitoring of the cover as required by the applicable provisions of this chapter, subsequent inspection and monitoring may be performed at intervals longer than one year in the case when inspecting or monitoring the cover would expose a worker to dangerous, hazardous or other unsafe conditions. In this case, the owner or operator may designate the cover as an "unsafe to inspect and monitor cover" and comply with all of the following requirements:

(a) Prepare a written explanation for the cover stating the reasons why the cover is unsafe to visually inspect or to monitor, if required.

(b) Develop and implement a written plan and schedule to inspect and monitor the cover using the procedures specified in the applicable section of this chapter as frequently as practicable during those times when a worker can safely access the cover.

History: Cr. Register, May, 1998, No. 509, eff. 6–1–98.

NR 633.09 Containers. This section applies to the control of air pollutant emissions from containers for which s. NR 633.05 (1) references the use of this section for air emission control.

(1) GENERAL REQUIREMENTS. (a) The owner or operator shall control air pollutant emissions from each container subject to this section in accordance with the following requirements, as applicable to the container, except when the special provisions for waste stabilization processes specified in par. (b) apply to the container.

1. For a container having a design capacity greater than 0.1 m^3 and less than or equal to 0.46 m^3, the owner or operator shall control air pollutant emissions from the container in accordance with the Container Level 1 standards specified in sub. (2).

2. For a container having a design capacity greater than 0.46 m^3 that is not in light material service, the owner or operator shall control air pollutant emissions from the container in accordance with the Container Level 1 standards specified in sub. (2).

3. For a container having a design capacity greater than 0.46 m^3 that is in light material service, the owner or operator shall control air pollutant emissions from the container in accordance with the Container Level 2 standards specified in sub. (3).

(b) When a container having a design capacity greater than 0.1 m^3 is used for treatment of a hazardous waste by a waste stabilization process, the owner or operator shall control air pollutant emissions from the container in accordance with the Container Level 3 standards specified in sub. (4) at those times during the waste stabilization process when the hazardous waste in the container is exposed to the atmosphere.

(2) CONTAINER LEVEL 1 STANDARDS. (a) A container using Container Level 1 controls is one of the following:

1. A container that meets the applicable U.S. department of transportation (DOT) regulations on packaging hazardous materials for transportation as specified in sub. (5).

2. A container equipped with a cover and closure devices that form a continuous barrier over the container openings such that when the cover and closure devices are secured in the closed position there are no visible holes, gaps or other open spaces into the interior of the container. The cover may be a separate cover installed on the container or may be an integral part of the container structural design.

Note: Examples of separate covers installed on the container are a lid on a drum or a suitably secured tarp on a roll–off box. Examples of covers which are an integral part of the container structural design are a "portable tank" or a bulk cargo container equipped with a screw–type cap.

3. An open–top container in which an organic–vapor suppressing barrier is placed on or over the hazardous waste in the container such that no hazardous waste is exposed to the atmosphere.

Note: One example of such a barrier is application of a suitable organic–vapor suppressing foam.

(b) A container used to meet the requirements of par. (a) 2. or 3. shall be equipped with covers and closure devices, as applicable to the container, that are composed of suitable materials to minimize exposure of the hazardous waste to the atmosphere and to maintain the equipment integrity for as long as it is in service. Factors which shall be considered in selecting the materials of construction and designing the cover and closure devices shall include organic vapor permeability, the effects of contact with the hazardous waste or its vapor managed in the container; the effects of outdoor exposure of the closure device or cover material to wind, moisture and sunlight; and the operating practices for which the container is intended to be used.

(c) Whenever a hazardous waste is in a container using Container Level 1 controls, the owner or operator shall install all covers and closure devices for the container, as applicable to the container, and secure and maintain each closure device in the closed position except as follows:

1. Opening of a closure device or cover is allowed for the purpose of adding hazardous waste or other material to the container as follows:

a. In the case when the container is filled to the intended final level in one continuous operation, the owner or operator shall promptly secure the closure devices in the closed position and install the covers, as applicable to the container, upon conclusion of the filling operation.

b. In the case when discrete quantities or batches of material intermittently are added to the container over a period of time, the owner or operator shall promptly secure the closure devices in the closed position and install covers, as applicable to the container, upon either the container being filled to the intended final level; the completion of a batch loading after which no additional material will be added to the container within 15 minutes; the person performing the loading operation leaving the immediate vicinity of the container; or the shutdown of the process generating the material being added to the container, whichever condition occurs first.

2. Opening of a closure device or cover is allowed for the purpose of removing hazardous waste from the container as follows:

a. For the purpose of meeting the requirements of this section, an empty container, as defined in s. NR 605.06, may be open to the atmosphere at any time.

Note: As used in this section, "open to the atmosphere at any time" means that covers and closure devices are not required to be secured in the closed position on an empty container.

b. In the case when discrete quantities or batches of material are removed from the container but the container does not meet the conditions to be an empty container as defined in s. NR 605.06, the owner or operator shall promptly secure the closure devices in the closed position and install covers, as applicable to the container, upon the completion of a batch removal after which no additional material will be removed from the container within 15 minutes or the person performing the unloading operation leaves the immediate vicinity of the container, whichever condition occurs first.

3. Opening of a closure device or cover is allowed when access inside the container is needed to perform routine activities other than transfer of hazardous waste. Following completion of the activity, the owner or operator shall promptly secure the closure device in the closed position or reinstall the cover, as applicable to the container.

Note: Examples of routine activities other than transfer of hazardous waste include those times when a worker needs to open a port to measure the depth of or sample the material in the container, or when a worker needs to open a manhole hatch to access equipment inside the container.

4. Opening of a spring–loaded, pressure–vacuum relief valve, conservation vent or similar type of pressure relief device which vents to the atmosphere is allowed during normal operations for the purpose of maintaining the container internal pressure in accordance with the design specifications of the container. The device shall be designed to operate with no detectable organic emissions when the device is secured in the closed position. The

settings at which the device opens shall be established such that the device remains in the closed position whenever the internal pressure of the container is within the internal pressure operating range determined by the owner or operator based on container manufacturer recommendations, applicable regulations, fire protection and prevention codes, standard engineering codes and practices or other requirements for the safe handling of flammable, ignitable, explosive, reactive or hazardous materials.

Note: Examples of normal operating conditions that may require these devices to open are during those times when the internal pressure of the container exceeds the internal pressure operating range for the container as a result of loading operations or diurnal ambient temperature fluctuations.

5. Opening of a safety device is allowed at any time conditions require doing so to avoid an unsafe condition.

(d) The owner or operator of containers using Container Level 1 controls shall inspect the containers and their covers and closure devices as follows:

1. In the case when a hazardous waste already is in the container at the time the owner or operator first accepts possession of the container at the facility and the container is not emptied within 24 hours after the container is accepted at the facility, the owner or operator shall visually inspect the container and its cover and closure devices to check for visible cracks, holes, gaps or other open spaces into the interior of the container when the cover and closure devices are secured in the closed position. If a defect is detected, the owner or operator shall repair the defect in accordance with subd. 3.

Note: The phrase "the container is not emptied" means that the container does not meet the conditions for an empty container in s. NR 605.06.

2. In the case when a container used for managing hazardous waste remains at the facility for a period of one year or more, the owner or operator shall visually inspect the container and its cover and closure devices initially and thereafter, at least once every 12 months, to check for visible cracks, holes, gaps or other open spaces into the interior of the container when the cover and closure devices are secured in the closed position. If a defect is detected, the owner or operator shall repair the defect in accordance with subd. 3.

3. When a defect is detected for the container, cover or closure devices, the owner or operator shall make first efforts at repair of the defect no later than 24 hours after detection, and repair shall be completed as soon as possible but no later than 5 calendar days after detection. If repair of a defect cannot be completed within 5 calendar days, then the hazardous waste shall be removed from the container and the container may not be used to manage hazardous waste until the defect is repaired.

(e) The owner or operator shall maintain at the facility a copy of the procedure used to determine that containers with capacity of 0.46 m^3 or greater, which do not meet applicable DOT regulations as specified in sub. (5).

(3) CONTAINER LEVEL 2 STANDARDS. (a) A container using Container Level 2 controls is one of the following:

1. A container that meets the applicable U.S. department of transportation (DOT) regulations on packaging hazardous materials for transportation as specified in sub. (5).

2. A container that operates with no detectable organic emissions and determined in accordance with the procedure specified in sub. (6).

3. A container that has been demonstrated within the preceding 12 months to be vapor–tight by using 40 CFR part 60, appendix A, Method 27 in accordance with the procedure specified in sub. (7).

(b) Transfer of hazardous waste in or out of a container using Container Level 2 controls shall be conducted in such a manner as to minimize exposure of the hazardous waste to the atmosphere, to the extent practical, considering the physical properties of the hazardous waste and good engineering and safety practices for handling flammable, ignitable, explosive, reactive or other hazardous materials.

Note: Examples of container loading procedures that the EPA considers to meet the requirements of this paragraph include using any one of the following: a submerged–fill pipe or other submerged–fill method to load liquids into the container; a vapor–balancing system or a vapor–recovery system to collect and control the vapors displaced from the container during filling operations; or a fitted opening in the top of a container through which the hazardous waste is filled and subsequently purging the transfer line before removing it from the container opening.

(c) Whenever a hazardous waste is in a container using Container Level 2 controls, the owner or operator shall install all covers and closure devices for the container, and secure and maintain each closure device in the closed position except as follows:

1. Opening of a closure device or cover is allowed for the purpose of adding hazardous waste or other material to the container as follows:

a. In the case when the container is filled to the intended final level in one continuous operation, the owner or operator shall promptly secure the closure devices in the closed position and install the covers, as applicable to the container, upon conclusion of the filling operation.

b. In the case when discrete quantities or batches of material intermittently are added to the container over a period of time, the owner or operator shall promptly secure the closure devices in the closed position and install covers, as applicable to the container, upon either the container being filled to the intended final level; the completion of a batch loading after which no additional material will be added to the container within 15 minutes; the person performing the loading operation leaving the immediate vicinity of the container; or the shutdown of the process generating the material being added to the container, whichever condition occurs first.

2. Opening of a closure device or cover is allowed for the purpose of removing hazardous waste from the container as follows:

a. For the purpose of meeting the requirements of this section, an empty container, as defined in s. NR 605.06, may be open to the atmosphere at any time.

Note: As used in this section, "open to the atmosphere at any time" means that covers and closure devices are not required to be secured in the closed position on an empty container.

b. In the case when discrete quantities or batches of material are removed from the container but the container does not meet the conditions to be an empty container, as defined in s. NR 605.06, the owner or operator shall promptly secure the closure devices in the closed position and install covers, as applicable to the container, upon the completion of a batch removal after which no additional material will be removed from the container within 15 minutes or the person performing the unloading operation leaves the immediate vicinity of the container, whichever condition occurs first.

3. Opening of a closure device or cover is allowed when access inside the container is needed to perform routine activities other than transfer of hazardous waste. Following completion of the activity, the owner or operator shall promptly secure the closure device in the closed position or reinstall the cover, as applicable to the container.

Note: Examples of routine activities other than transfer of hazardous waste include those times when a worker needs to open a port to measure the depth of or sample the material in the container, or when a worker needs to open a manhole hatch to access equipment inside the container.

4. Opening of a spring–loaded, pressure–vacuum relief valve, conservation vent or similar type of pressure relief device which vents to the atmosphere is allowed during normal operations for the purpose of maintaining the internal pressure of the container in accordance with the container design specifications. The device shall be designed to operate with no detectable organic emission when the device is secured in the closed position. The settings at which the device opens shall be established such that the device remains in the closed position whenever the internal pressure of the container is within the internal pressure operating range determined by the owner or operator based on container manufacturer recommendations, applicable regulations, fire protection and prevention codes, standard engineering codes and practices or other

requirements for the safe handling of flammable, ignitable, explosive, reactive or hazardous materials.

Note: Examples of normal operating conditions that may require these devices to open are during those times when the internal pressure of the container exceeds the internal pressure operating range for the container as a result of loading operations or diurnal ambient temperature fluctuations.

5. Opening of a safety device is allowed at any time conditions require doing so to avoid an unsafe condition.

(d) The owner or operator of containers using Container Level 2 controls shall inspect the containers and their covers and closure devices as follows:

1. In the case when a hazardous waste already is in the container at the time the owner or operator first accepts possession of the container at the facility and the container is not emptied within 24 hours after the container arrives at the facility, the owner or operator shall visually inspect the container and its cover and closure devices to check for visible cracks, holes, gaps or other open spaces into the interior of the container when the cover and closure devices are secured in the closed position. If a defect is detected, the owner or operator shall repair the defect in accordance with the requirements of subd. 3.

Note: The phrase "the container is not emptied" means that the container does not meet the conditions for an empty container in s. NR 605.06.

2. In the case when a container used for managing hazardous waste remains at the facility for a period of one year or more, the owner or operator shall visually inspect the container and its cover and closure devices initially and thereafter, at least once every 12 months, to check for visible cracks, holes, gaps or other open spaces into the interior of the container when the cover and closure devices are secured in the closed position. If a defect is detected, the owner or operator shall repair the defect in accordance with the requirements of subd. 3.

3. When a defect is detected for the container, cover or closure devices, the owner or operator shall make first efforts at repair of the defect no later than 24 hours after detection, and repair shall be completed as soon as possible but no later than 5 calendar days after detection. If repair of a defect cannot be completed within 5 calendar days, then the hazardous waste shall be removed from the container and the container may not be used to manage hazardous waste until the defect is repaired.

(4) CONTAINER LEVEL 3 STANDARDS. (a) A container using Container Level 3 controls is one of the following:

1. A container that is vented directly through a closed–vent system to a control device in accordance with par. (b) 2.

2. A container that is vented inside an enclosure which is exhausted through a closed–vent system to a control device in accordance with par. (b) 1. and 2.

(b) The owner or operator shall meet the following requirements, as applicable to the type of air emission control equipment selected by the owner or operator:

1. The container enclosure shall be designed and operated in accordance with the criteria for a permanent total enclosure as specified in "Procedure T—Criteria for and Verification of a Permanent or Temporary Total Enclosure" under 40 CFR 52.741, appendix B. The enclosure may have permanent or temporary openings to allow worker access; passage of containers through the enclosure by conveyor or other mechanical means; entry of permanent mechanical or electrical equipment; or direct airflow into the enclosure. The owner or operator shall perform the verification procedure for the enclosure as specified in Section 5.0 to "Procedure T—Criteria for and Verification of a Permanent or Temporary Total Enclosure" initially when the enclosure is first installed and, thereafter, annually.

2. The closed–vent system and control device shall be designed and operated in accordance with the s. NR 633.10.

(c) Safety devices may be installed and operated as necessary on any container, enclosure, closed–vent system or control device used to comply with par. (b).

(d) Owners and operators using Container Level 3 controls in accordance with this chapter shall inspect and monitor the closed–vent systems and control devices as specified in s. NR 633.10.

(e) Owners and operators that use Container Level 3 controls in accordance with the provisions of this chapter shall prepare and maintain the records specified in s. NR 633.12 (4).

(5) U.S. DEPARTMENT OF TRANSPORTATION (DOT) REGULATIONS ON PACKAGING HAZARDOUS MATERIALS FOR TRANSPORTION. For the purpose of compliance with sub. (2) (a) 1. or (3) (a) 1., containers shall be used that meet the applicable U.S. department of transportation (DOT) regulations on packaging hazardous materials for transportation as follows:

(a) The container meets the applicable requirements specified in 49 CFR part 178 — Specifications for Packaging or 49 CFR part 179 — Specifications for Tank Cars.

(b) Hazardous waste is managed in the container in accordance with the applicable requirements specified in 49 CFR part 107, subpart B — Exemptions; 49 CFR part 172 — Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements; 49 CFR part 173 — Shippers — General Requirements for Shipments and Packages; and 49 CFR part 180 — Continuing Qualification and Maintenance of Packagings.

(c) For the purpose of complying with this chapter, no exceptions to the 49 CFR part 178 or part 179 regulations are allowed except as provided for in par. (d).

(d) For a lab pack that is managed in accordance with the requirements of 49 CFR part 178 for the purpose of complying with this chapter, an owner or operator may comply with the exceptions for combination packagings specified in 49 CFR 173.12 (b).

(6) PROCEDURES FOR DETERMINING THAT A CONTAINER OPERATES WITH NO DETECTABLE ORGANIC EMISSIONS. The owner or operator shall use the procedure specified in s. NR 633.06 (4) for determining a container operates with no detectable organic emissions for the purpose of complying with sub. (3) (a) 2.

(a) Each potential leak interface on the container, its cover and associated closure devices, as applicable to the container, shall be checked.

Note: A "potential leak interface" is a location where organic vapor leakage could occur. Potential leak interfaces that are associated with containers include, but are not limited to: the interface of the cover rim and the container wall; the periphery of any opening on the container or container cover and its associated closure device; and the sealing seat interface on a spring–loaded pressure–relief valve.

(b) The test shall be performed when the container is filled with a material having a volatile organic concentration representative of the range of volatile organic concentrations for the hazardous wastes expected to be managed in this type of container. During the test, the container cover and closure devices shall be secured in the closed position.

(7) PROCEDURE FOR DETERMINING A CONTAINER TO BE VAPOR–TIGHT USING METHOD 27 OF 40 CFR PART 60, APPENDIX A FOR THE PURPOSE OF COMPLYING WITH SUB. (3). (a) In conducting a test to determine whether or not a container is vapor–tight, an owner or operator shall perform the test in accordance with Method 27 of 40 CFR part 60, appendix A.

(b) A pressure measurement device shall be used that has a precision of ± 2.5 mm water and that is capable of measuring above the pressure at which the container is to be tested for vapor tightness.

(c) If the test results determined by Method 27 indicate that the container sustains a pressure change less than or equal to 750 Pascals within 5 minutes after it is pressurized to a minimum of 4,500 Pascals, then the container is determined to be vapor–tight.

History: Cr. Register, May, 1998, No. 509, eff. 6–1–98.

NR 633.10 Closed–vent systems and control devices. This section applies to each closed–vent system and

control device installed and operated by the owner or operator to control air emissions in accordance with standards of this chapter.

(1) The closed–vent system shall meet the following requirements:

(a) The closed–vent system shall route the gases, vapors and fumes emitted from the hazardous waste in the waste management unit to a control device that meets the requirements specified in sub. (3).

(b) The closed–vent system shall be designed and operated in accordance with the requirements specified in s. NR 631.06 (2).

(c) If the closed–vent system includes bypass devices that could be used to divert the gas or vapor stream to the atmosphere before entering the control device, each bypass device shall be equipped with either a flow indicator as specified in subd. 1. or a seal or locking device as specified in subd. 2.

Note: For the purpose of complying with this paragraph, low leg drains, high point bleeds, analyzer vents, open–ended valves or lines, spring–loaded pressure relief valves and other fittings used for safety purposes are not considered to be bypass devices.

1. If a flow indicator is used to comply with this paragraph, the indicator shall be installed at the inlet to the bypass line used to divert gases and vapors from the closed–vent system to the atmosphere at a point upstream of the control device inlet. For this paragraph, a flow indicator means a device which indicates the presence of either gas or vapor flow in the bypass line.

2. If a seal or locking device is used to comply with this paragraph, the device shall be placed on the valve handle, damper lever or other mechanism by which the bypass device position is controlled when the bypass device is in the closed position such that the bypass device cannot be opened without breaking the seal or removing the lock. The owner or operator shall visually inspect the seal or closure mechanism at least once every month to verify that the bypass mechanism is maintained in the closed position.

Note: Examples of a seal or locking device include, but are not limited to, a car–seal or a lock–and–key configuration valve.

(d) The closed–vent system shall be inspected and monitored by the owner or operator in accordance with the procedure specified in s. NR 631.06 (2) (k).

(2) The control device shall meet the following requirements:

(a) The control device shall be one of the following devices:

1. A control device designed and operated to reduce the total organic content of the inlet vapor stream vented to the control device by at least 95% by weight;

2. An enclosed combustion device designed and operated in accordance with the requirements of s. NR 631.06 (2) (c); or

3. A flare designed and operated in accordance with the requirements of s. NR 631.06 (2) (d).

(b) An owner or operator who elects to use a closed–vent system and control device to comply with the requirements of this section shall comply with the subds. 1. to 6.

1. Periods of planned routine maintenance of the control device, during which the control device does not meet the specifications of par. (a) 1., 2. or 3., as applicable, may not exceed 240 hours per year.

2. The specifications and requirements in par. (a) 1., 2. or 3. for control devices do not apply during periods of planned routine maintenance.

3. The specifications and requirements in par. (a) 1., 2. or 3. for control devices do not apply during a control device system malfunction.

4. The owner or operator shall demonstrate compliance with the requirements of par. (a) 1. by recording the information specified in s. NR 633.12 (5) (a) 5.

Note: For purposes of this subdivision, compliance with the requirements of par. (a) 1. means planned routine maintenance of a control device, during which the control device does not meet the specifications of par. (a) 1., 2. or 3., as applicable, may not exceed 240 hours per year.

5. The owner or operator shall correct control device system malfunctions as soon as practicable after their occurrence in order to minimize excess emissions of air pollutants.

6. The owner or operator shall operate the closed–vent system such that gases, vapors or fumes are not actively vented to the control device during periods of planned maintenance or control device system malfunction except in cases when it is necessary to vent the gases, vapors or fumes to avoid an unsafe condition or to implement malfunction corrective actions or planned maintenance actions.

Note: In this subdivision, "periods of planned maintenance or control device system malfunction" means periods when the control device is not operating or not operating normally.

(c) The owner or operator using a carbon adsorption system to comply with par. (a) shall operate and maintain the control device in accordance with the following requirements:

1. Following the initial startup of the control device, all activated carbon in the control device shall be replaced with fresh carbon on a regular basis in accordance with the requirements of s. NR 631.06 (2) (g) or (h).

2. All carbon removed from the control device shall be managed in accordance with the requirements of s. NR 631.06 (2) (m).

(d) An owner or operator using a control device other than a thermal vapor incinerator, flare, boiler, process heater, condenser or carbon adsorption system to comply with par. (a) shall operate and maintain the control device in accordance with the requirements of s. NR 631.06 (2) (j).

(e) The owner or operator shall demonstrate that a control device achieves the performance requirements of par. (a) as follows:

1. An owner or operator shall demonstrate using either a performance test as specified in subd. 3. or a design analysis as specified in subd. 4. the performance of each control device except for the following:

a. A flare;

b. A boiler or process heater with a design heat input capacity of 44 megawatts or greater;

c. A boiler or process heater into which the vent stream is introduced with the primary fuel;

d. A boiler or industrial furnace burning hazardous waste for which the owner or operator has been issued a final permit under 40 CFR part 270 and has designed and operates the unit in accordance with the requirements of 40 CFR part 266, subpart H; or

e. A boiler or industrial furnace burning hazardous waste for which the owner or operator has designed and operates in accordance with the interim status requirements of 40 CFR part 266, subpart H.

2. An owner or operator shall demonstrate the performance of each flare in accordance with the requirements specified in s. NR 631.06 (2) (e).

3. For a performance test conducted to meet the requirements of subd. 1., the owner or operator shall use the test methods and procedures specified in s. NR 631.07 (3).

4. For a design analysis conducted to meet the requirements of subd. 1., the design analysis shall meet the requirements specified in s. NR 631.08 (2) (d)3.

5. The owner or operator shall demonstrate that a carbon adsorption system achieves the performance requirements of par. (a) based on the total quantity of organic compounds vented to the atmosphere from all carbon adsorption system equipment that is used for organic adsorption, organic desorption or carbon regeneration, organic recovery and carbon disposal.

(f) If the owner or operator and the department do not agree on a demonstration of control device performance using a design analysis, then the disagreement shall be resolved using the results of a performance test performed by the owner or operator in accordance with the requirements of par. (e) 3. The department may

choose to have an authorized representative observe the performance test.

(g) The control device shall be inspected and monitored by the owner or operator in accordance with the procedures specified in s. NR 631.06 (2) (f) 2. and (k). The readings from each monitoring device required by s. NR 631.06 (2) (f) 2. shall be inspected at least once each operating day to check control device operation. Any necessary corrective measures shall be immediately implemented to ensure the control device is operated in compliance with the requirements of this section.

History: Cr. Register, May, 1998, No. 509, eff. 6-1-98.

NR 633.11 Inspection and monitoring requirements. (1) The owner or operator shall inspect and monitor air emission control equipment used to comply with this chapter in accordance with the applicable requirements specified in ss. NR 633.07 to 633.10.

(2) The owner or operator shall develop and implement a written plan and schedule to perform the inspections and monitoring required by sub. (1). The owner or operator shall incorporate this plan and schedule into the facility inspection plan required under s. NR 630.15.

History: Cr. Register, May, 1998, No. 509, eff. 6-1-98.

NR 633.12 Recordkeeping requirements. Each owner or operator of a facility subject to this chapter shall record and maintain the information specified in this section, as applicable to the facility. Except for air emission control equipment design documentation and information required by sub. (8), records required by this section shall be maintained in the operating record for a minimum of 3 years. Air emission control equipment design documentation shall be maintained in the operating record until the air emission control equipment is replaced or otherwise no longer in service. Information required by sub. (8) shall be maintained in the operating record for as long as the tank or container is not using air emission controls specified in ss. NR 633.07 to 633.10 in accordance with the conditions specified in s. NR 633.07 (3).

(1) The owner or operator of a tank using air emission controls in accordance with s. NR 633.07 shall prepare and maintain records for the tank that include the following information:

(a) For each tank using air emission controls in accordance with the requirements of s. NR 633.07, the owner or operator shall record:

1. A tank identification number or other unique identification description as selected by the owner or operator.

2. A record for each inspection required by s. NR 633.07 that includes the following information:

a. The date the inspection was conducted.

b. For each defect detected during the inspection, the location of the defect, a description of the defect and the date of detection and corrective action taken to repair the defect. In the event that repair of the defect is delayed in accordance with s. NR 633.07, the owner or operator shall also record the reason for the delay and the date that completion of repair of the defect is expected.

(b) In addition to the information required by par. (a), the owner or operator shall record the following information, as applicable to the tank:

1. The owner or operator using a fixed roof to comply with the Tank Level 1 control requirements specified in s. NR 633.07 (2) shall prepare and maintain records for each determination for the maximum organic vapor pressure of the hazardous waste in the tank performed in accordance with the requirements of s. NR 633.07 (2). The records shall include the date and time the samples were collected, the analysis method used, and the analysis results.

2. The owner or operator using an internal floating roof to comply with the Tank Level 2 control requirements specified in s. NR 633.07 (4) shall prepare and maintain documentation describing the floating roof design.

3. Owners and operators using an external floating roof to comply with the Tank Level 2 control requirements specified in s. NR 633.07 (5) shall prepare and maintain the following records:

a. Documentation describing the floating roof design and the dimensions of the tank.

b. Records for each seal gap inspection required by s. NR 633.07 (5) (c) describing the results of the seal gap measurements. The records shall include the date that the measurements were performed, the raw data obtained for the measurements and the calculations of the total gap surface area. In the event that the seal gap measurements do not conform to the specifications in s. NR 633.07 (5) (a), the records shall include a description of the repairs that were made, the date the repairs were made and the date the tank was emptied, if necessary.

4. Each owner or operator using an enclosure to comply with the Tank Level 2 control requirements specified in s. NR 633.07 (8) shall prepare and maintain the following records:

a. Records for the most recent set of calculations and measurements performed by the owner or operator to verify that the enclosure meets the criteria of a permanent total enclosure as specified in "Procedure T—Criteria for and Verification of a Permanent or Temporary Total Enclosure" under 40 CFR 52.741, appendix B.

b. Records required for the closed–vent system and control device in accordance with sub. (4).

(2) The owner or operator of a surface impoundment using air emission controls in accordance with s. NR 633.08 shall prepare and maintain records for the surface impoundment that include the following information:

(a) A surface impoundment identification number or other unique identification description as selected by the owner or operator.

(b) Documentation describing the floating membrane cover or cover design, as applicable to the surface impoundment, that includes information prepared by the owner or operator or provided by the cover manufacturer or vendor describing the cover design, and certification by the owner or operator that the cover meets the specifications listed in s. NR 633.08 (2).

(c) A record for each inspection required by s. NR 633.08 that includes the following information:

1. Date inspection was conducted.

2. For each defect detected during the inspection, the location of the defect, a description of the defect and the date of detection and corrective action taken to repair the defect. In the event that repair of the defect is delayed in accordance with s. NR 633.08 (5), the owner or operator shall also record the reason for the delay and the date that completion of repair of the defect is expected.

(d) For a surface impoundment equipped with a cover and vented through a closed–vent system to a control device, the owner or operator shall prepare and maintain the records specified in sub. (4).

(3) The owner or operator of containers using Container Level 3 air emission controls in accordance with s. NR 633.09 shall prepare and maintain records that include the following information:

(a) Records for the most recent set of calculations and measurements performed by the owner or operator to verify that the enclosure meets the criteria of a permanent total enclosure as specified in "Procedure T—Criteria for and Verification of a Permanent or Temporary Total Enclosure" under 40 CFR 52.741, appendix B.

(b) Records required for the closed–vent system and control device in accordance with the requirements of sub. (4).

(4) The owner or operator using a closed–vent system and control device in accordance with s. NR 633.10 shall prepare and maintain records that include documentation for the closed–vent system and control device that includes:

(a) Certification that is signed and dated by the owner or operator stating that the control device is designed to operate at the performance level documented by a design analysis as specified in par. (b) or by performance tests as specified in par. (c) when the tank, surface impoundment or container is or would be operating at capacity or the highest level reasonably expected to occur.

(b) If a design analysis is used, then design documentation as specified in s. NR 631.08 (2) (d). The documentation shall include information prepared by the owner or operator or provided by the control device manufacturer or vendor that describes the control device design in accordance with s. NR 631.08 (2) (d)3. and certification by the owner or operator that the control equipment meets the applicable specifications.

(c) If performance tests are used, then a performance test plan as specified in s. NR 631.08 (2) (c) and all test results.

(d) Information as required by s. NR 631.08 (3) (a) and (b), as applicable.

(e) An owner or operator shall record, on a semiannual basis, the information specified in subds. 1. and 2. for those planned routine maintenance operations that would require the control device not to meet the requirements of s. NR 633.10 (2) (a) 1., 2. or 3., as applicable.

1. A description of the planned routine maintenance that is anticipated to be performed for the control device during the next 6–month period. This description shall include the type of maintenance necessary, planned frequency of maintenance and lengths of maintenance periods.

2. A description of the planned routine maintenance that was performed for the control device during the previous 6–month period. This description shall include the type of maintenance performed and the total number of hours during those 6 months that the control device did not meet the requirements of s. NR 633.10 (2) (a) 1., 2. or 3., as applicable, due to planned routine maintenance.

(f) An owner or operator shall record the information specified in subds. 1. to 3. for those unexpected control device system malfunctions that would require the control device not to meet the requirements of s. NR 633.10 (2) (a) 1., 2. or 3., as applicable.

1. The occurrence and duration of each malfunction of the control device system.

2. The duration of each period during a malfunction when gases, vapors or fumes are vented from the waste management unit through the closed–vent system to the control device while the control device is not properly functioning.

3. Actions taken during periods of malfunction to restore a malfunctioning control device to its normal or usual manner of operation.

(g) Records of the management of carbon removed from a carbon adsorption system conducted in accordance with s. NR 633.10 (2) (c) 2.

(5) The owner or operator of a tank, surface impoundment or container exempted from standards in accordance with the s. NR 633.05 (2) shall prepare and maintain the following records, as applicable:

(a) For tanks, surface impoundments or containers exempted under the hazardous waste organic concentration conditions specified in s. NR 633.05 (2) (a) or (b), the owner or operator shall record the information used for each waste determination, including test results, measurements, calculations and other documentation, in the facility operating log. If analysis results for waste samples are used for the waste determination, then the owner or operator shall record the date, time and location that each waste sample is collected in accordance with s. NR 633.06.

(b) For tanks, surface impoundments or containers exempted under the provisions of s. NR 633.05 (2) (b) 7. or 8., the owner or operator shall record the identification number for the incinerator, boiler or industrial furnace in which the hazardous waste is treated.

(6) An owner or operator designating a cover as "unsafe to inspect and monitor" pursuant to s. NR 633.07 (11) or 633.08 (6) shall record in a log that is kept in the facility operating record the following information:

(a) The identification numbers for waste management units with covers that are designated as "unsafe to inspect and monitor,"

(b) The explanation for each cover stating why the cover is unsafe to inspect and monitor, and

(c) The plan and schedule for inspecting and monitoring each cover.

(7) The owner or operator of a facility that is subject to this chapter and to the control device standards in 40 CFR part 60, subpart VV, or 40 CFR part 61, subpart V, may elect to demonstrate compliance with the applicable sections of this chapter by documentation either pursuant to this chapter, or pursuant to the provisions of 40 CFR part 60, subpart VV or 40 CFR part 61, subpart V, to the extent that the documentation required by 40 CFR parts 60 or 61 duplicates the documentation required by this chapter.

(8) For each tank or container not using air emission controls specified in ss. NR 633.07 to 633.10 in accordance with the conditions specified in s. NR 633.02 (4), the owner or operator shall record and maintain the following information:

(a) A list of the individual organic peroxide compounds manufactured at the facility that meet the conditions specified in s. NR 633.02 (4) (a).

(b) A description of how the hazardous waste containing the organic peroxide compounds identified in par. (a) are managed at the facility in tanks and containers. This description shall include the following information:

1. For the tanks used at the facility to manage this hazardous waste, sufficient information shall be provided to describe for each tank:

a. A facility identification number for the tank;

b. The purpose and placement of this tank in the management train of this hazardous waste; and

c. The procedures used to ultimately dispose of the hazardous waste managed in the tanks.

2. For containers used at the facility to manage these hazardous wastes, sufficient information shall be provided to describe:

a. A facility identification number for the container or group of containers;

b. The purpose and placement of this container, or group of containers, in the management train of this hazardous waste; and

c. The procedures used to ultimately dispose of the hazardous waste handled in the containers.

(c) An explanation of why managing the hazardous waste containing the organic peroxide compounds identified in par. (a) in the tanks and containers as described in par. (b) would create an undue safety hazard if the air emission controls, as required under ss. NR 633.07 to 633.10, are installed and operated on these waste management units. This explanation shall include the following information:

1. For tanks used at the facility to manage these hazardous wastes, sufficient information shall be provided to explain:

a. How use of the required air emission controls on the tanks would affect the tank design features and facility operating procedures currently used to prevent an undue safety hazard during the management of this hazardous waste in the tanks; and

b. Why installation of safety devices on the required air emission controls, as allowed under this chapter, will not address those situations in which evacuation of tanks equipped with these air emission controls is necessary and consistent with good engineering and safety practices for handling organic peroxides.

2. For containers used at the facility to manage these hazardous wastes, sufficient information shall be provided to explain:

a. How use of the required air emission controls on the containers would affect the container design features and handling procedures currently used to prevent an undue safety hazard during the management of this hazardous waste in the containers; and

b. Why installation of safety devices on the required air emission controls, as allowed under this chapter, will not address those situations in which evacuation of containers equipped with these air emission controls is necessary and consistent with good engineering and safety practices for handling organic peroxides.

History: Cr. Register, May, 1998, No. 509, eff. 6–1–98.

NR 633.13 Reporting requirements. (1) Each owner or operator managing hazardous waste in a tank, surface impoundment or container exempted from using air emission controls under the provisions of s. NR 633.05 (2) shall report to the department each occurrence when hazardous waste is placed in the waste management unit in noncompliance with the conditions specified in s. NR 633.05 (2) (a) or (b), as applicable. The owner or operator shall submit a written report within 15 calendar days of the time that the owner or operator becomes aware of the occurrence. The written report shall contain the EPA identification number, facility name and address, a description of the noncompliance event and the cause, the dates of the noncompliance and the actions taken to correct the noncompliance and prevent recurrence of the noncompliance. The report shall be signed and dated by an authorized representative of the owner or operator.

Note: Examples of such occurrences include placing in the waste management unit a hazardous waste having an average VO concentration equal to or greater than 500 ppmw at the point of waste origination; or placing in the waste management unit a treated hazardous waste of which the organic content has been reduced by an organic destruction or removal process that fails to achieve the applicable conditions specified in s. NR 633.05 (2) (b)1. to 6.

(2) Each owner or operator using air emission controls on a tank in accordance with s. NR 633.07 (2) shall report to the department each occurrence when hazardous waste is managed in the tank in noncompliance with the conditions specified in s. NR 633.07 (1). The owner or operator shall submit a written report within 15 calendar days of the time that the owner or operator becomes aware of the occurrence. The written report shall contain the EPA identification number, facility name and address, a description of the noncompliance event and the cause, the dates of the noncompliance, and the actions taken to correct the noncompliance and prevent recurrence of the noncompliance. The report shall be signed and dated by an authorized representative of the owner or operator.

History: Cr. Register, May, 1998, No. 509, eff. 6–1–98.

APPENDIX I TO CH. NR 633 – COMPOUNDS WITH HENRY'S LAW CONSTANT LESS THAN 0.1 Y/X

[At 25° C]

Compound name	CAS No.
TRICHLORO(1,1,2)TRIFLUORO	
FORMALDEHYDE	50–00–0
HYDROCYANIC ACID	74–90–8
FORMAMIDE	
QUINONE	
DIMETHYL HYDRAZINE(1,1)	57–14–7
METHYL ACRYLATE	96–33–3
ACETAMIDE	60–35–5
METHYL HYDRAZINE	60–34–4
DIETHYLHYDRAZINE N,N	
FORMIC ACID	64–18–6
DIMETHYL DISULFIDE	624–92–0
PHORATE	298–02–2
HYDRAZINE	302–01–2
LEAD SUBACETATE	1335–32
LEAD ACETATE	301–04–2
NAPHTHOL,beta–	135–19–3
DIETHYLENE GLYCOL MONOMETHYL ETHER	
NITROSODIMETHYLAMINE N	62–75–9
DIETHYLENE GLYCOL MONOBUTYL ETHER	
ACETYL–2–THIOUREA, 1–	591–08–2
ACRYLIC ACID	79–10–7
ETHYLENE GLYCOL MONOPHENYL ETHER	
ETHYLENE GLYCOL MONOMETHYL ETHER	
DIMETHYL FORMAMIDE	68–12–2
DIETHYLENE GLYCOL DIMETHYL ETHER	
PROPIOLACTONE b	57–57–8
ETHYLENE GLYCOL MONOPROPYL ETHER	
METHYL SULFURIC ACID	
METHYL THIOPHENOL 4	106–45–6
ETHYLENE GLYCOL MONOETHYL ETHER Cellosol	
DIMETHYL CARBAMOYL CHLORIDE	
ETHYLENE GLYCOL MONOETHYL ETHER ACETATE	
BUTYL CELLOSOLVE	111–76–2
TOLUENE DIAMINE(2,4)	95–80–7
DIMETHYLSULFOXIDE	
ANILINE	62–53–3
DIETHYLENE GLYCOL	111–46–6
ETHYLPHENOL, 3–	620–17–7
GYLCIDOL	556–52–5
BUTYRIC ACID	107–92–6
NITROSO–N–METHYLUREA N	684–93–5
MONOMETHYL FORMANIDE	
ETHYL CARBAMATE	
ETHYL MORPHOLINE, ethyl diethylene oxime	
ETHANOLAMINE(mono–)	141–43–5
ETHYLENE THIOUREA	
PHENOL	108–95–2
ETHYLENE GLYCOL MONOBUTYL ETHER	
CRESOL	1319–77
PROPYLENE GLYCOL	57–55–6
TRIETHYLENE GLYCOL DIMETHYL ETHER	
CRESOL(–o)	95–48–7

TOLUIDINE(m)	
CHLOROPHENOL-4	106-48-9
BENZYL ALCOHOL	100-51-6
ACETALDOL	
CHLOROACETIC ACID	79-11-8
GLYPHOSATE	
ETHYLENE GLYCOL	107-21-1
ADENINE	73-24-5
HEXAMETHYLPHOSPHORAMIDE	
DIETHYLENE GLYCOL MONOETHYL ETHER ACETAT	
DICHLOROPHENOL 2,5	
CRESOL(-p)	106-44-5
NITROSOMORPHOLINE	
QUINOLINE	91-22-5
DIMETHYLSULFONE	
CRESOL(-m)	108-39-4
TOLUENE DIISOCYANATE(2,4)	584-84-9
HYDROXY-(2)-PROPIONITRILE	109-78-4
HEXANOIC ACID	142-62-1
FUMARIC ACID	110-17-8
METHANE SULFONIC ACID	75-75-2
MESITYL OXIDE	141-79-7
CHLORO-2,5-DIKETOPYRROLIDINE 3	
PYRIDINIUM BROMIDE	
METHYLIMINOACETIC ACID	
DIMETHOATE	60-51-5
GUANIDINE, NITROSO	674-81-7
PHENYLACETIC ACID	103-82-2
BENZENE SULFONIC ACID	
ACETYL-5-HYDROXYPIPERIDINE 3	
LEUCINE	61-90-5
alpha-PICOLINE	1333-41
METHYL-2-METHOXYAZIRIDINE 1	
BROMOCHLOROMETHYL ACETATE	
DICHLOROTETRAHYDROFURAN 3,4	3511-19
ACETYLPIPERIDINE 3	618-42-8
CHLORO-1,2-ETHANEDIOL	
CYANIDE	57-12-5
NIACINAMIDE	98-92-0
METHOXYPHENOL P	150-76-5
METHYLFURFURAL 5	620-02-0
GLYCINAMIDE	598-41-4
SUCCINIMIDE	123-56-8
SULFANILIC ACID	121-47-1

MALEIC ACID	110-16-7
AMETRYN	
DIMETHYLPHENOL(3,4)	
ANISIDINE,o-	90-04-0
TETRAETHYLENE PENTAMINE	
DIETHYLENE GLYCOL MONOETHYL ETHER	
CHLORACETOPHENONE,2-	93-76-5
DIPROPYLENE GLYCOL	
HEXAMETHYLENE 1,6 DIISOCYANATE	
NEOPENTYL GLYCOL	126-30-7
BHC,gamma-	58-89-9
PHENYLENE DIAMINE(-m)	108-45-2
CHLOROHYDRIN, a 3 CHLORO 1,2 PROPANEDIOL	
XYLENOL(3,4)	95-65-8
DINITRO-o-CRESOL(4,6)	534-52-1
PROPORUR (Baygon)	
DIBROMO-4-HYDROXYBENZONITRILE(3,5)	
CATECHOL	120-80-9
CHLOROANILINE,p-	106-47-8
DICHLORVOS	
ACRYLAMIDE	79-06-1
THIOSEMICARBAZIDE	79-19-6
TRIETHANOLAMINE	102-71-6
PENTAERYTHRITOL	115-77-5
PHENYLENE DIAMINE(-o)	95-54-5
CAPROLACTAM	
BENZOIC ACID	65-85-0
TOLUENEDIAMINE(3,4)	496-72-0
TRIPROPYLENE GLYCOL	
PHENYLENE DIAMINE(-p)	106-50-3
TEREPHTHALIC ACID	
NITROGLYCERIN	55-63-0
CHLORO(-p)CRESOL(-m)	59-50-7
DICHLOROANILINE 2,3-	
NITROANILINE(-o)	88-74-4
DIETHYL (N,N) ANILINE	91-66-7
NAPHTHOL,alpha-	90-15-3
AMINOPYRIDINE,4-	504-24-5
ADIPONITRILE	
BROMOXYNIL	
PHTHALIC ANHYDRIDE	85-44-9
MALEIC ANHYDRIDE	108-31-6
NITROPHENOL,2-	88-75-5
ACETYLAMINOFLUORENE,2	53-96-3

PROPANE SULTONE,1,3–	1120–71
CITRIC ACID	77–92–9
EPINEPHRINE	51–43–4
CHLOROPHENOL POLYMERS	
CREOSOTE	8001–58
FLUOROACETIC ACID, SODIUM SALT	62–74–8
SODIUM ACETATE	
SUCCINIC ACID	110–15–6
SODIUM FORMATE	141–53–7
PHENACETIN	62–44–2
HYDROQUINONE	123–31–9
DIMETHYLAMINOAZOBENZENE,4–	60–11–7
METHYLENE DIPHENYL DIISOCYANATE	
OXALIC ACID	144–62–7
BENZO(A)PYRENE	50–32–8
DICHLOROBENZONITRILE,2,6–	1194–65–6
AMINOBIPHENYL,4–	92–67–1
NAPHTHYLAMINE,alpha–	134–32–7
DIETHANOLAMINE	
METHYLENEDIANILINE 4,4	
NAPHTHYLAMINE,beta–	91–59–8
METHYLENE DIPHENYLAMINE (MDA)	
GLUTARIC ACID	110–94–1
RESORCINOL	108–46–3
TOLUIC ACID(para–)	99–94–5
GUTHION	
DIMETHYL PHTHALATE	131–11–3
GLYCERIN (GLYCEROL)	56–81–5
THIOFANOX	39196–18
DIBUTYLPHTHALATE	84–74–2
ALDICARB	116–06–3
NITROPHENOL,4–	100–02–7
METHYLENE–BIS (2–CHLOROANILINE),4,4'–	101–14–4
DIPHENYLHYDRAZINE(1,2)	122–66–7
METHOMYL	16752–77
MALATHION	121–75–5
PARATHION	56–38–2
ADIPICACID	124–04–9

ALACHLOR	15972–60
STRYCHNIDIN–10–ONE,2,3–DIMETHOXY–	357–57–3
TOLUENEDIAMINE(2,6)	823–40–5
CUMYLPHENOL–4	27576–86
DIAZINON	
BENZENE ARSONIC ACID	98–05–5
WARFARIN	81–81–2
METHYL PARATHION	298–00–0
DIETHYLTHIOPHOSPHATEBENZO M ETHYL PETHER	
PHENYL MERCURIC ACETATE	62–38–4
DIETHYL PROPIONAMIDE,2aN	15299–99
CHLOROBENZOPHENONE (PARA)	134–85–0
THIOUREA,1–(o–CHLOROPHENYL)–	5344–82
DIMETHYLBENZIDINE3,3	
DICHLORO–(2,6)–NITROANILINE(4)	99–30–9
CELLULOSE	9000–11
CELL WALL	
BENZIDINE	92–87–5
TETRAETHYLDITHIOPYROPHOSPHATE	3689–24
NABAM	
ATRAZINE	1912–24
ENDRIN	72–20–8
BIS(2–ETHYLHEXYL) PHTHALATE	117–81–7
BENZO(A)ANTHRACENE	56–55–3
CYANOMETHYL BENZOATE 4	
ANTHRAQUINONE	84–65–1
STRYCHNINE	57–24–9
SIMAZINE	122–34–9
PYRENE	129–00–0
CHLOROBENZYLATE	510–15–6
DIMETHYLBENZ(A) ANTHRACENE(7,12)	57–97–6
INDENO(1,2,3–cd)–PYRENE	193–39–5
CHRYSENE	218–01–9
BENZO(ghi)PERYLENE	191–24–2
BENZO(k) FLUORANTHENE	207–08–9
DIBENZO(a,h)ANTHRACENE	53–70–3
DIETHYL PHOSPHOROTHIOATE	126–75–0