

Chapter NR 419

CONTROL OF ORGANIC COMPOUND EMISSIONS

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Note: Corrections made under s. 13.93 (2m) (b) 7., Stats., Register, December, 1996, No. 492.

NR 419.01 Applicability; purpose. (1) APPLICABILITY. This chapter applies to all air contaminant sources which emit organic compounds and to their owners and operators.

(2) PURPOSE. This chapter is adopted under ss. 285.11, 285.13 and 285.17, Stats., to categorize organic compound air contaminant sources and to establish emission limitations for these categories in order to protect air quality.

History: Cr. Register, September, 1986, No. 369, eff. 10-1-86; am. Register, February, 1990, No. 410, eff. 3-1-90.

NR 419.02 Definitions. Except when another definition is specifically made applicable, the definitions contained in ch. NR 400 apply to the terms used in this chapter. In addition, except when another definition is specifically made applicable, in this chapter and in chs. NR 420 to 425:

(1e) “Affected residual” means any liquid or solid material containing affected VOC that is removed from a wastewater stream by a waste management unit or treatment process that does not destroy organic compounds.

Note: Examples of materials which are affected residuals from non-destructive wastewater management units are the organic layer and bottom residue removed by a decanter or organic-water separator and the overheads from a steam stripper or air stripper. Examples of materials that are not affected residuals are silt; mud; leaves; bottoms from a steam stripper or air stripper; and sludge, ash, or other materials removed from wastewater being treated by destructive devices such as biological treatment units and incinerators.

(1m) “Affected VOC” means VOC with a Henry’s Law Constant greater than or equal to 1.8×10^{-6} atm m³/gmole fraction (0.1 y/x) at 25°C.

(1s) “Affected VOC wastewater stream” means a process wastewater stream from a process unit at an affected industrial category with either an annual average concentration of affected VOC greater than or equal to 10,000 parts per million by weight (ppmw) or an annual average concentration of affected VOC greater than or equal to 1,000 ppmw and an annual average flow rate greater than or equal to 10.0 liters per minute (2.64 gallons per minute), as determined in accordance with s. NR 419.045 (8) (b). The following are excluded from this definition:

- Maintenance wastewaters.
- Stormwater from segregated sewers.
- Water from fire-fighting and deluge systems, including testing of such systems.
- Spills.
- Water from safety showers.
- Samples necessary for the analytical method used.
- Equipment leaks.
- Wastewater drips from procedures such as disconnecting hoses after cleaning lines.
- Noncontact cooling water.

(2) “Automobile” means passenger cars, vans, motorcycles, trucks, or any equipment that is physically capable of being driven or drawn upon a highway including, but not limited to, the following types of equipment: construction vehicles such as mobile cranes, bulldozers or concrete mixers; farming equipment such as tractors, plows, or pesticide sprayers; hauling equipment such as truck trailers, utility bodies or camper shells; and miscellaneous equipment such as street cleaners or golf carts.

(3) “Beneficial use or reuse” has the meaning given in s. NR 500.03.

(3e) “Continuous seal” means a seal that forms a continuous closure that completely covers the space between the wall of a storage vessel and the edge of a floating roof.

(3m) “Continuously monitor and record” means to measure data values of a parameter at least once every 15 minutes and to record either each measured data value or block average values for a 15-minute or shorter time period. A block average value is the average of all measured data values during the time period; or if data values are measured more frequently than once per minute, the average of measured data values taken at least once per minute during the time period.

(3s) “Control device” means any combustion device, recovery device for vapor vents, or recapture device. Control device includes absorbers, carbon adsorbers, condensers, incinerators, flares, boilers, and process heaters. A steam stripper’s primary condenser is not a control device.

(4) “Core” means in foundry operations a separable part of a mold which is usually made of sand and is used to create openings and various cavities in the castings.

(5) “Core binder” means any substance used to bind sand together to form a core.

(6) “Core or mold coating” means a substance used to alter the surface of a core or mold through coating or cleaning after the core or mold has been manufactured.

(6m) “Cover” means a device or system which is placed on or over a waste management unit containing wastewater or residuals so that the entire surface area is enclosed to minimize emissions of affected VOC.

Note: Examples of covers include a fixed roof installed on a wastewater tank, a lid installed on a container, and an air-supported enclosure installed over a waste management unit.

(7) “Floating roof” means a storage tank cover consisting of a double deck or pontoon single deck, which rests upon and is supported by the petroleum liquid being contained, and is equipped with a closure seal or seals to seal the space between the roof edge and tank wall. The floating roof may be either a covered external floating roof in an open storage tank or an internal floating cover beneath a fixed roof.

(7m) “Fuel gas system” means the off-site and on-site piping and control system that gathers gaseous streams generated by on-site operations, which may be blended with other sources of gas,

and transports the gaseous stream for use as fuel gas in combustion devices or in in-process combustion equipment such as furnaces and gas turbines, either singly or in combination.

(8) “Hydrocarbon” means any organic compound containing carbon and hydrogen.

(8e) “Individual drain system” means the stationary system used to convey wastewater streams or residuals to a waste management unit or to discharge or disposal. “Individual drain system” includes hard-piping, all process drains and junction boxes, together with their associated sewer lines and other junction boxes, manholes, sumps, and lift stations conveying wastewater streams or residuals. A segregated storm water sewer system, which is a drain and collection system designed and operated for the sole purpose of collecting rainfall runoff at a facility, and which is segregated from all other individual drain systems, is excluded from this definition.

(8m) “Junction box” means any structure where sewer lines meet with one or more waste streams co-mingled.

(9) “Landfill” has the meaning given in s. NR 500.03.

(10) “Landspreading facility” has the meaning given in s. NR 500.03.

(10g) “Liquid-mounted seal” means a foam or liquid-filled seal mounted in contact with the liquid between the wall of the storage vessel or waste management unit and the floating roof with the seal mounted continuously around the circumference of the vessel or unit.

(10r) “Maintenance wastewater” means wastewater generated by the draining of process fluid from components in the process unit into an individual drain system prior to or during maintenance activities. Any generation of wastewater that is routine or is generated by designed manufacturing processes is not maintenance wastewater.

Note: Examples of activities that can generate maintenance wastewaters include descaling heat exchanger tubing bundles, cleaning distillation column traps, draining low legs and high point bleeds, draining pumps into an individual drain system and draining portions of the process unit for repair.

(11) “Maximum theoretical emissions” means the quantity of VOC emissions that theoretically could be emitted by a stationary source without consideration of control devices based on the design capacity or maximum production capacity of the source and 8,760 hours of operation per year. In determining the maximum theoretical emissions for a source, the design capacity or maximum production capacity shall include the use of necessary coatings and inks with the highest VOC content used in practice by the source. When appropriate, and upon request by the source owner or operator, maximum theoretical emissions may be limited by the imposition of conditions in a federally enforceable permit. Such conditions shall be used in place of design capacity or maximum production capacity in calculating the maximum theoretical emissions for the source and may include, among other things, the establishment of production limitations, capacity limitations, or limitations on the VOC content of coatings or inks, or the hours of operation of any emission source, or a combination of any such limitations. Production or capacity limitations shall be established on the basis of no longer than one month and may allow for averaging for up to 12 consecutive months.

(11m) “Mechanical shoe seal” means metal sheets that are held vertically against the wall of the storage vessel by springs, weighted levers, or other mechanisms and connected to a floating roof by braces or other means. A flexible coated fabric spans the annular space between the metal sheet and the floating roof.

(12) “Mold” means the matrix in which metal is cast and receives its form.

(12m) “Oil-water separator” or “organic-water separator” means a waste management unit, used to separate oil or organics from water. An oil-water or organic-water separator consists of not only the separation unit but also the forebay and other separator basins, skimmers, weirs, grit chambers, sludge hoppers, and bar screens that are located directly after the individual drain system and prior to additional treatment units such as an air flotation unit, clarifier, or biological treatment unit.

Note: Examples of an oil-water or organic-water separator include an American Petroleum Institute separator, parallel-plate interceptor, and corrugated-plate interceptor with the associated ancillary equipment.

(13) “Petroleum liquid” means crude petroleum, petroleum, condensate and any finished or intermediate products manufactured or extracted in a petroleum refinery or in a facility which produces oils from tar sands, shale, coal or coke.

(14) “Photochemically reactive organic compounds” means any of the following:

(a) Group A: Hydrocarbons, alcohols, aldehydes, esters, ethers or ketones, which have olefinic or cyclo-olefinic type unsaturation.

(b) Group B: Aromatic compounds with 8 or more carbon atoms to the molecule, except ethylbenzene.

(c) Group C: Ethylbenzene, toluene or ketones having branched hydrocarbon structures.

(d) Group D: A solvent or mixture of organic compounds in which any of the following conditions are met:

1. More than 20% of the total volume is composed of any combination of compounds listed in group A, B or C above.

2. More than 5% of the total volume is composed of any combination of the compounds listed in group A above.

3. More than 8% of the total volume is composed of any combination of the compounds listed in group B above.

(14b) “Pressure relief valve” means a valve used only to release an unplanned, non-routine discharge.

(14e) “Process unit” means the smallest set of process equipment that can operate independently and includes all operations necessary to achieve its process objective.

(14h) “Process wastewater” means wastewater which, during manufacturing or processing, comes into direct contact with, or results from, the production or use of any raw material, intermediate product, finished product, by-product, or waste product.

Note: Examples of process wastewater are product tank drawdown or feed tank drawdown; water formed during a chemical reaction or used as a reactant; water used to wash impurities from organic products or reactants; water used to cool or quench organic vapor streams through direct contact; and condensed steam from jet ejector systems pulling vacuum on vessels containing organics.

(14L) “Recapture device” means an individual unit of equipment capable of and used for the purpose of recovering chemicals for disposal, but not normally for recycling, reuse, or sale. For purposes of the monitoring, recordkeeping, and reporting requirements of this chapter, recapture devices are considered recovery devices.

Note: For example, a unit of equipment that would be considered a recapture device is one used for the recovery of chemicals for disposal. Recapture devices may include absorbers, carbon adsorbers, and condensers.

(14p) “Recovery device” means an individual unit of equipment capable of and normally used for the purpose of recovering chemicals for fuel value, use, reuse or for sale for fuel value, use, or reuse.

Note: Examples of equipment that may be recovery devices include absorbers, carbon adsorbers, condensers, oil-water separators or organic-water separators, or organic removal devices such as decanters, strippers, or thin-film evaporation units.

(14r) “Sewer line” means a lateral trunk line, branch line, ditch or other conduit used to convey wastewater.

(14u) “Single-seal system” means a floating roof having one continuous seal that completely covers the space between the wall of the storage vessel and the edge of the floating roof.

(14y) “Steam stripper” means a column, including associated stripper feed tanks, condensers, or heat exchangers, used to remove compounds from wastewater.

(15) “Submerged fill pipe” means any fill pipe with a discharge opening which is entirely submerged when the liquid level is 15.2 centimeters (6 inches) above the tank bottom.

(15d) “Surface impoundment” means a waste management unit which is a natural topographic depression, manmade excavation, or diked area formed primarily of earthen materials, but which may be lined with manmade materials, which is designed to hold an accumulation of liquid wastes or waste containing free liquids. A surface impoundment is used for the purpose of treating, storing, or disposing of process wastewater or affected residuals, and is not an injection well.

Note: Examples of surface impoundments are equalization, settling, and aeration pits, ponds, and lagoons.

(15h) “Tank drawdown” means any material or mixture of materials discharged from a product tank, feed tank, or intermediate tank for the purpose of removing water or other contaminants from the tank.

(15p) “Temperature monitoring device” means equipment used to monitor temperature and having a minimum accuracy of plus or minus one per cent of the temperature being monitored expressed in degrees Celsius or plus or minus 0.5 degrees Celsius, whichever has the highest absolute value.

(15t) “Treatment process” means a specific technique, usually conducted in a tank, that removes or destroys the VOC in a wastewater stream or affected residuals such as a steam stripping unit, thin-film evaporation unit, waste incinerator, biological treatment unit, or any other process applied to wastewater streams or affected residuals to comply with s. NR 419.045 (2) (f) or (3).

(16) “Urethane cold box binder” means a core binder which uses components such as phenol formaldehyde resins and isocyanates to form a bond after catalysis by an organic gas such as triethylamine or dimethylethylamine.

(16m) “Vapor-mounted seal” means a continuous seal that completely covers the annular space between the wall of the storage vessel or waste management unit and the edge of a floating roof and is mounted so that there is a vapor space between the stored liquid and the bottom of the seal.

(17) “Vent” means any port or opening which allows gases to be discharged to the atmosphere when leaving a reactor or other equipment.

(18) “Virgin petroleum liquid” means petroleum liquid which has not been contaminated by compounds not initially present through use or mixture with other liquids. Virgin petroleum liquids include gasoline, diesel fuel, kerosene, distillate fuel oils, residual fuel oils and other products produced through distillation of petroleum or through redistillation, cracking, extraction or reforming of unfinished petroleum derivatives.

(18e) “Waste management unit” means the equipment, structure, or device used to convey, store, treat, or dispose of wastewater streams or affected residuals. Equipment used for recovery is part of a process unit and is not a waste management unit.

Note: Examples of waste management units are wastewater tanks, surface impoundments, individual drain systems, and biological wastewater treatment units. Examples of equipment that may be considered waste management units are containers, air flotation units, oil-water separators and organic-water separators, and organic removal devices such as decanters, strippers, or thin-film evaporation units.

(18m) “Wastewater stream” means a stream that contains process wastewater.

(18s) “Wastewater tank” means a stationary waste management unit that is designed to contain an accumulation of process wastewater or affected residuals and is constructed primarily of non-earthen materials such as wood, concrete, steel, or plastic.

(22) “Water seal” means any seal pot, p-leg trap, or other type of trap filled with water that creates a barrier between the water level of the seal and the atmosphere. The water level of the seal must be maintained in the vertical leg of a drain in order to be considered a water seal.

(23) “Wet weather retention basin” means an impoundment or tank that is used to store rainfall runoff that would exceed the capacity of the wastewater treatment system until it can be returned to the wastewater treatment system or, if the water meets the applicable discharge limits, discharged without treatment.

History: Renum. from NR 154.01, cr. (intro.) and (7), Register, September, 1986, No. 369, eff. 10-1-86; renum. (1) and (2) to be (1m) and NR 400.02 (72), Register, February, 1990, No. 410, eff. 3-1-90; cr. (1s), (1t), (1u), (3m) and (6m), Register, June, 1994, No. 462, eff. 7-1-94; cr. (8), Register, September, 1994, No. 465, eff. 10-1-94; cr. (1p), (3c) and (3e), Register, August, 1995, No. 476, eff. 9-1-95; am. (intro.), renum. (1m), (1p), (1s), (1t), (1u), (2), (3), (3c) and (3e) to be (2) to (10), renum. (3m), (4), (6), (6m) and (7) to be (12) and (14) to (17), renum. (8) to be (18) and am., cr. (11), renum. (13) from 420.02 (28), Register, December, 1995, No. 480, eff. 1-1-96; am. (14) (intro.), Register, October, 1999, No. 526, eff. 11-1-99; am. (2), Register, January, 2001, No. 541, eff. 2-1-01; CR 08-104: cr. (6g), (6r), (8m), (10m), (14g), (14r), (15m), (19), (20), (21), (22) Register July 2009 No. 643, eff. 8-1-09; CR 11-005: r. (1), (6g), (6r), (10m), (14g), (15m), (19), (20), (21), cr. (1e), (1m), (1s), (3e), (3m), (3s), (6m), (7m), (8e), (10g), (10r), (11m), (12m), (14b), (14e), (14h), (14L), (14p), (14u), (14y), (15d), (15h), (15p), (15t), (16m), (18e), (18m), (18s), (23), am. (22) Register January 2012 No. 673, eff. 2-1-12; CR 20-088: am. (intro.) Register May 2022 No. 797, eff. 6-1-22.

NR 419.03 General limitations. (1) No person may cause, allow or permit organic compound emissions into the ambient air which substantially contribute to the exceeding of an air standard or cause air pollution.

(2) No person may cause, allow or permit organic compounds to be used or handled without using good operating practices and taking reasonable precautions to prevent the spillage, escape or emission of organic compounds, solvents or mixtures. Such precautions shall include, but are not limited to:

(a) Use of caution to prevent spillage or leakage when filling tanks, trucks or trailers.

(b) Use of caution when filling automobile tanks to prevent spillage.

History: Renum. from NR 154.13 (1) (a) and (b), Register, September, 1986, No. 369, eff. 10-1-86; am. (1) and (2) (intro.), Register, February, 1990, No. 410, eff. 3-1-90.

NR 419.04 Disposal of VOC wastes. (1) Effective August 1, 1979, no person may cause, allow or permit the disposal of more than 5.7 liters (1.5 gallons) of any liquid VOC waste, or of any liquid, semisolid or solid waste materials containing more than 5.7 liters (1.5 gallons) of any VOC, in any one day from a facility in a manner that would permit their evaporation into the ambient air during the ozone season, except as provided for in s. NR 419.07. This includes, but is not limited to, the disposal of VOC which must be removed from VOC control devices so as to maintain the control devices at their required operating efficiency.

(2) Disposal during the ozone season shall be by methods approved by the department, such as incineration, recovery for reuse, or transfer in closed containers to an acceptable disposal facility, such that the quantity of VOC which evaporates into the ambient air does not exceed 15% (by weight) or 5.7 liters (1.5 gallons) in any one day, whichever is larger.

History: Renum. from NR 154.13 (1) (c), Register, September, 1986, No. 369, eff. 10-1-86; am. (1), Register, February, 1990, No. 410, eff. 3-1-90; am. (1), Register, August, 1995, No. 476, eff. 9-1-95.

NR 419.045 Industrial wastewater operations. (1)

APPLICABILITY AND EXEMPTIONS. (a) *Applicability*. This section applies to any facility that generates process wastewater and that meets all of the following criteria:

1. Is located in Milwaukee, Waukesha, Washington, Ozaukee, Racine, Kenosha, or Sheboygan county.

2. Has combined total maximum theoretical emissions of VOC equal to or greater than 100 tons per calendar year from all of the following:

a. Industrial wastewater sources (waste management units).

b. Any emissions unit that is not subject to an emission limitation under ch. NR 420; ss. NR 421.03, 421.04, and 421.07; ss. NR 422.05 to 422.08, 422.09, 422.10 to 422.125, 422.13, 422.131, 422.14, 422.141, 422.143, 422.144, and 422.15 to 422.16; and ss. NR 423.03, 423.037, and 423.05, except if the emissions unit is regulated under 40 CFR part 60, subpart BBB, III, NNN, or RRR, or 40 CFR part 63, subpart T.

3. Has any of the following operations:

a. As described by the 4-digit industry codes 2821, 2823, 2824, 2865, or 2869 listed in the Standard Industrial Classification (SIC) Manual, 1987, incorporated by reference in s. NR 484.05 (1), for the organic chemicals, plastics, and synthetic fibers manufacturing industries.

b. As described by the 4-digit industry codes 2833, 2834, or 2836 listed in the SIC Manual, 1987, for the pharmaceuticals manufacturing industry.

c. Pesticide manufacturing.

d. Hazardous waste treatment, storage, or disposal.

(b) *Exemptions*. 1. Wet weather retention basins are exempt from this section.

2. Any facility with an annual affected VOC loading in wastewater, as determined in accordance with sub. (8) (e), less than or equal to 10 mega grams (11.03 tons) is exempt from the control requirements of sub. (2).

3. If compliance with the control requirements of sub. (2) would create a safety hazard in a waste management unit, the owner or operator may request the department exempt the waste management unit from the control requirements of sub. (2). The department, with written concurrence from EPA, may approve the request if it is justified by the likelihood and magnitude of the potential injury and if the department determines that reducing or eliminating the hazard is technologically or economically unreasonable.

(2) **EMISSION CONTROL REQUIREMENTS**. Except as provided in sub. (3), the owner or operator of a facility subject to this section shall comply with the control requirements of this subsection for any waste management unit that receives, manages, or treats an affected VOC wastewater stream or affected residual. The control requirements apply from the point where an affected VOC wastewater stream exits a process unit to the point the affected VOC wastewater stream, including any affected residual, is either returned to a process unit or treated in accordance with par. (f).

(a) *Drains*. For each individual drain system that receives or manages an affected VOC wastewater stream or an affected residual, the owner or operator shall either comply with subd. 1. or with subds. 2. to 6.

1. Operate and maintain a cover on each opening in the individual drain system, and if the cover is vented, route the vapors to a process or through a closed vent system to a control device and meet all of the following requirements:

a. Maintain the cover and all openings in a closed position at all times that an affected VOC wastewater stream or an affected

residual is in the drain system except when it is necessary to use the opening for sampling or removal, or for equipment inspection, maintenance, or repair.

b. Design and operate the control device to reduce the affected VOC vented to the device by at least 90% by weight.

c. Design and operate the individual drain system to segregate the vapors within the system from other drain systems and the atmosphere.

2. Equip each drain with a water seal or a tightly fitting cap or plug.

3. If a water seal is used on a drain receiving an affected VOC wastewater stream or an affected residual, extend the pipe discharging the wastewater below the liquid surface in the water seal of the receiving drain, or install a flexible shield, or other enclosure which restricts wind motion across the open area between the pipe and the drain, that encloses the space between the pipe discharging the wastewater to the drain receiving the wastewater. A water seal which is used on a hub receiving a wastewater stream that is not an affected VOC wastewater stream or an affected residual for the purpose of eliminating cross ventilation to drains carrying an affected VOC wastewater stream or an affected residual is not required to have an extended subsurface discharging pipe or a flexible shield.

4. Equip each junction box with a tightly fitting solid cover that has no visible gaps, cracks, or holes and which is kept in place at all times except during inspection and maintenance.

5. If the junction box is vented, vent the box to a process or through a closed vent system to a control device that is designed and operated to reduce the VOC vented to it by at least 90% by weight, except that if the junction box is filled and emptied by gravity flow or is operated with no more than slight fluctuations in the liquid level, the owner or operator may vent the junction box to the atmosphere provided both of the following conditions are met:

a. The junction box has a vent pipe of at least 90 centimeters in length and no greater than 10.2 centimeters in nominal inside diameter.

b. Water seals are installed and maintained at all wastewater entrances to, or exits from, the junction box restricting ventilation in the individual drain system and between components in the individual drain system.

6. Ensure that each sewer line is not open to the atmosphere by covering or enclosing the line so that no visible gaps or cracks in joints, seals, or other emission interfaces are visible.

(b) *Surface impoundments*. For each surface impoundment that receives, manages, or treats an affected VOC wastewater stream or an affected residual, the owner or operator shall comply with either subd. 1. or 2.

1. Equip the surface impoundment with a cover and a closed vent system which routes the VOC vapors vented from the surface impoundment to a control device and meet all of the following requirements:

a. Maintain each opening in a closed position whenever an affected VOC wastewater stream or an affected residual is in the surface impoundment except when it is necessary to use the opening for sampling, removal, or for equipment inspection, maintenance, or repair.

b. Use the cover whenever an affected VOC wastewater stream or an affected residual is in the surface impoundment except during removal of treatment residuals in accordance with 40 CFR 268.4 or closure of the surface impoundment in accordance with 40 CFR 264.228.

c. Design and operate the control device to reduce the affected VOC vented to it by at least 90% by weight.

2. Equip the surface impoundment with a floating flexible membrane cover and meet all of the following requirements:

a. Design the flexible membrane cover to float on the liquid surface during normal operations, and to form a continuous barrier over the entire surface area of the liquid.

b. Fabricate the flexible membrane cover from a synthetic membrane material that is either a high density polyethylene with a thickness no less than 2.5 millimeters (100 mils) or a material, or a composite of different materials, determined to have both organic permeability properties that are equivalent to those of the high density polyethylene material, and chemical and physical properties that maintain the material integrity for the intended service life of the material.

c. Install the flexible membrane cover so 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.

d. Equip each opening in the flexible membrane cover with a closure device that is designed to operate so 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. Notwithstanding the requirements of this subd. 2. d., the flexible 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.

e. Whenever an affected VOC wastewater stream or an affected residual is in the surface impoundment, the flexible membrane cover shall float on the liquid and each closure device shall be secured in the closed position. Closure devices may be opened or the flexible membrane cover may be removed to provide access to the surface impoundment for performing routine inspection, maintenance, or other activities needed for normal operations or to remove accumulated sludge or other residues from the bottom of the surface impoundment.

(c) *Oil-water separator.* For each oil-water separator that receives, manages, or treats an affected VOC wastewater stream or an affected residual, the owner or operator shall comply with either subd. 1. or 2.:

1. Equip the oil-water separator with a fixed roof and a closed vent system that route the vapors vented from the oil-water separator to a control device and meet all of the following requirements:

a. Maintain each opening in the fixed roof in a closed, sealed position at all times that the oil-water separator contains an affected VOC wastewater stream or an affected residual, except when it is necessary to use the opening for sampling or removal, or for equipment inspection, maintenance, or repair.

b. Design and operate the control device to reduce the VOC vented to it by at least 90% by weight.

2. Equip the oil-water separator with a floating roof that meets all of the following requirements:

a. Except as provided in this subd. 2. a., the floating roof shall have a closure device between the floating roof and the wall of the oil-water separator. For portions of the oil-water separator where it is infeasible to construct and operate a floating roof, such as over the weir mechanism, the owner or operator shall operate and maintain a fixed roof, closed vent system, and control device that meet the requirements specified in subd. 1.

b. The closure device shall consist of a primary seal and a secondary seal. The primary seal shall be a liquid-mounted seal or a mechanical shoe seal. The secondary seal shall be above the floating roof and cover the annular space between the floating roof and the wall of the separator.

c. The floating roof shall be floating on the liquid at all times and may not be resting on the roof supports, except during abnormal conditions such as low flow rate.

d. Each opening in the floating roof shall be equipped with a cover, seal or lid fitted with a gasket, which shall be maintained in the closed position at all times, except during inspection and maintenance. Notwithstanding the requirements of this subd. 2. d., the floating roof 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.

(d) *Portable containers.* For each portable container that receives, manages, or treats an affected VOC wastewater stream or an affected residual, the owner or operator shall operate and maintain a cover on the portable container according to all of the following requirements:

1. Maintain the cover in place and maintain all openings in a closed position at all times that an affected VOC wastewater stream or an affected residual is in the portable container, except when it is necessary to use the opening for filling, removal, inspection, sampling, or pressure relief events related to safety considerations to prevent physical damage or permanent deformation of the portable container or cover.

2. For portable containers with a capacity greater than or equal to 110 gallons, use a submerged fill pipe when a container is being filled by pumping with an affected VOC wastewater stream or an affected residual. The submerged fill pipe outlet shall extend to no more than six inches or within two fill pipe diameters of the bottom of the container while the container is being filled.

3. During treatment of an affected VOC wastewater stream or an affected residual, including aeration, thermal or other treatment, in a portable container, whenever it is necessary for the container to be open, place the container within an enclosure with a closed-vent system that routes the VOC vapors vented from the container to a control device. The control device shall be designed and operated to reduce the VOC vented to it by at least 90% by weight.

(e) *Wastewater tanks.* For each wastewater tank that receives, manages, or treats an affected VOC wastewater stream or an affected residual, the owner or operator shall operate and maintain a fixed roof for the wastewater tank. However, if the wastewater tank is used for either heating wastewater or for treating by means of an exothermic reaction, or the contents of the tank is sparged, or the wastewater tank has a capacity equal to or greater than 40,000 gallons and the maximum vapor pressure of the stored material is equal to or greater than 1.5 pounds per square inch absolute, the owner or operator shall operate and maintain one of the emission control techniques described in subd. 1., 2., or 3.

1. A fixed roof and a closed-vent system that route the VOC vapors vented from the wastewater tank to a control device that complies with both of the following requirements:

a. Each opening in the fixed roof shall be maintained in a closed position at all times that the wastewater tank contains an affected VOC wastewater stream or an affected residual, except when it is necessary to use the opening for wastewater sampling, removal, or for equipment inspection, maintenance, or repair.

b. The control device shall be designed and operated to reduce the VOC vented to it by at least 90% by weight.

2. A fixed roof and an internal floating roof that meet all of the following requirements:

a. The internal floating roof shall be floating on the liquid surface at all times, except when the floating roof must be supported by the leg supports during initial fill, after the tank has been completely emptied and degassed, and when the tank is completely emptied before being subsequently refilled.

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

c. The internal floating roof shall be equipped with a closure device between the wall of the tank and the roof edge. The closure device shall consist of a liquid-mounted seal, or a metallic shoe seal, or two seals mounted one above the other so that each forms a continuous closure that completely covers the space between the wall of the storage vessel and the edge of the internal floating roof. The lower seal may be vapor-mounted, but both must be continuous seals.

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

e. Each opening in a noncontact internal floating roof, except for automatic bleeder vents (vacuum breaker vents) and rim space vents, is to provide a projection below the liquid surface.

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

g. Each penetration of the internal floating roof for the purposes of sampling shall be a sample well. Each sample well shall have a slit fabric cover that covers at least 90% of the opening.

h. Each automatic bleeder vent shall be fitted with a gasket.

i. Each rim space vent shall be fitted with a gasket.

j. Each penetration of the internal floating roof that allows for passage of a ladder shall have a sliding cover fitted with a gasket.

k. 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 sliding cover fitted with a gasket.

L. Each cover or lid on any opening in the internal floating roof shall be closed so that there are no visible gaps, except when the cover or lid must be open for access. Covers on each access hatch and each gauge float well shall be bolted or fastened to be air-tight when they are closed. 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 seal exceeds the manufacturer's recommended setting.

3. An external floating roof that meets all of the following requirements:

a. Each external floating roof shall be equipped with a closure device between the wall of the storage vessel and the roof edge. The closure device shall consist of two seals, one above the other. The lower seal (primary seal) shall be either a metallic shoe seal or a liquid-mounted seal. The upper seal (secondary seal) shall be a rim-mounted or shoe-mounted seal.

b. Except during inspections, both the primary seal and the secondary seal shall completely cover the annular space between the external floating roof and the wall of the storage vessel in a continuous fashion.

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

d. Except for automatic bleeder vents, rim space vents, roof drains, and leg sleeves, each opening in the roof shall be equipped with a cover, seal, or lid fitted with a gasket. The cover, seal, or lid shall be maintained in a closed position so there are no visible gaps at all times, except when the cover or lid must be open for access. Covers on each access hatch and each gauge float well shall be bolted or fastened to be air-tight when they are closed.

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

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

g. Automatic bleeder vents and rim space vents shall be fitted with a gasket.

h. Each roof drain that empties into the stored liquid shall be provided with a slotted membrane fabric cover that covers at least 90% of the area of the opening.

i. Each unslotted guide pole well shall have a sliding cover fitted with a gasket or a flexible fabric sleeve seal.

j. Each unslotted guide pole shall have a cap fitted with a gasket on the end of the pole, which is closed at all times except when gauging the liquid level or taking liquid samples.

k. Each slotted guide pole well shall have a sliding cover fitted with a gasket or a flexible fabric sleeve seal.

L. Each slotted guide pole shall have a float fitted with a gasket or other device that closes off the liquid surface from the atmosphere.

m. Each gauge hatch or sample well shall have a cover fitted with a gasket which is closed at all times except when the hatch or well must be open for access.

n. The external floating roof shall be floating on the liquid surface at all times except when the floating roof must be supported by the leg supports during any period of an initial fill, after the tank has been completely emptied and degassed, or when the tank is completely emptied before being subsequently refilled.

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

(f) *Treatment processes.* For each treatment process managing an affected VOC wastewater stream or an affected residual, the owner or operator shall comply with the requirements as specified in this paragraph. Once an affected VOC wastewater stream or an affected residual has been treated in accordance with the requirements of this paragraph, the affected VOC wastewater stream or the affected residual is no longer subject to the requirements of this subsection.

1. Each component of the treatment process shall meet the applicable requirements of pars. (a) to (e).

2. Gases vented from a treatment process shall be routed by means of a closed vent system to a control device which is designed and operated to reduce the VOC vented to it by at least 90% by weight. Vents from anaerobic biological treatment processes may be routed through hard-piping to a fuel gas system.

3. For each of the affected VOC wastewater streams that are treated in a nonbiological treatment process, or a combination of nonbiological treatment processes, the owner or operator shall, by removal or destruction, reduce the mass flow rate of affected VOC by 90% or more while reducing the affected VOC concen-

tration to less than 1,000 parts per million by weight. Dilution may not be used to achieve compliance with this subdivision. This requirement does not apply to affected wastewater or affected residuals that comply with the requirements for Resource Conservation and Recovery Act (RCRA) (42 USC 6921 to 6939e) treatment options specified in subd. 6.

4. The owner or operator using a closed biological treatment process for at least one affected VOC wastewater stream shall reduce the mass flow rate for all affected VOC from all wastewater streams entering the biological treatment process by at least 90%.

5. The owner or operator shall operate and maintain a steam stripper that meets all of the following requirements:

- a. Minimum active column height of five meters.
- b. Countercurrent flow configuration with a minimum of ten actual trays.
- c. Minimum steam flow rate of 0.04 kilograms of steam per liter of wastewater feed within the column.
- d. Minimum wastewater feed temperature to the steam stripper of 95°C, or minimum column operating temperature of 95°C.
- e. Maximum liquid loading of 67,100 liters per hour per square meter.
- f. Operate at nominal atmospheric pressure.

6. The owner or operator may elect to treat the affected VOC wastewater stream or affected residual in a unit identified in, and complying with any of the following RCRA treatment options:

a. The affected VOC wastewater stream or affected residual is discharged to a hazardous waste incinerator for which the owner or operator has been issued a final permit under 40 CFR part 270 and complies with the requirements of 40 CFR part 264, subpart O, or has certified compliance with the interim status requirements of 40 CFR part 265, subpart O.

b. The affected VOC wastewater stream or affected residual is discharged to a process heater or boiler burning hazardous waste for which the owner or operator has either been issued a final permit under 40 CFR part 270 and complies with the requirements of 40 CFR part 266, subpart H, or has certified compliance with the interim status requirements of 40 CFR part 266, subpart H.

c. The affected VOC wastewater stream or affected residual is discharged to an underground injection well for which the owner or operator has been issued a final permit under 40 CFR part 270 or 40 CFR part 144 and complies with the requirements of 40 CFR part 122. The owner or operator shall comply with all applicable requirements of this subsection prior to the point where the wastewater enters the underground portion of the injection well.

7. For each affected residual, the owner or operator shall control for air emissions by complying with pars. (a) to (e) and one of the following requirements:

a. Recycle the affected residual to a production process on-site or transfer the affected residual off-site for the purpose of recycling. Once an affected residual is returned to a production process, the affected residual is no longer subject to this subsection.

b. Return the affected residual to the treatment process.

c. Treat the affected residual to destroy the total combined mass flow rate of affected VOC by 99% or more in a nonbiological treatment process.

d. Comply with the requirements for treatment options specified in subd. 6.

(3) ALTERNATIVE METHODS OF CONTROL. The following alternate methods of demonstrating and documenting continuous compliance with the applicable control requirements or exemp-

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tion criteria in this section may be utilized if approved by the department with written concurrence from EPA:

(a) As an alternative to the control requirements of sub. (2), the owner or operator of waste management units may elect to ensure that the overall control of VOC emissions at the facility from wastewater from affected industrial categories is at least 90% less than the 2011 calendar year baseline emissions for VOC emissions to the ambient air from process wastewater, provided that adequate documentation is submitted to the department which supports the accuracy of the calendar year baseline emissions and the following requirements are met:

1. The owner or operator of a waste management unit shall submit a control plan to the department which demonstrates that the overall control of VOC emissions at the facility from wastewater from affected industrial categories will be at least 90% less than the calendar year baseline emissions. Any control plan submitted shall be approved by the department in writing before the owner or operator may use the control option available under this paragraph for compliance. At a minimum, the control plan shall include the applicable emissions units' identification; the facility identification number; the calendar year baseline emission rates of VOC from wastewater from affected industrial categories consistent with the calendar year baseline emissions; a plot plan showing the location, the emissions units' identification, and facility identification number associated with a waste management unit; the VOC emission rates for each emissions unit for the preceding calendar year; and an explanation of the recordkeeping procedure and calculations which will be used to demonstrate compliance. The VOC emission rates shall be calculated in a manner consistent with the calendar year baseline emissions.

2. The owner or operator shall submit an annual report no later than March 31 of each calendar year to the department which demonstrates that the overall control of VOC emissions from wastewater from affected industrial categories during the preceding calendar year is at least 90% less than the baseline emissions. At a minimum, the report shall include the facility identification number; the emissions units' identification; the throughput of wastewater from affected industrial categories; a plot plan showing the location; the emissions units' identification; and the facility identification number associated with waste management units; and the VOC emission rates for the preceding calendar year. The emission rates for the preceding calendar year shall be calculated in a manner consistent with the calendar year baseline emissions.

3. All control plans and reports shall include documentation that the overall reduction of VOC emissions from wastewater from affected industrial categories continues to be at least 90% less than the calendar year baseline emissions. The emission rates shall be calculated in a manner consistent with the calendar year baseline emissions.

(b) The owner or operator of an affected industrial category which is subject to and complies with the provisions of 40 CFR part 63, subpart G, subpart JJJ, or subpart FFFF, or any other emission standard promulgated under 40 CFR part 63 that references the wastewater control requirements set forth in 40 CFR part 63, subpart G, shall be deemed to be in compliance with this section, provided that all of the following are met:

1. The term "affected VOC" is substituted each place that 40 CFR part 63, subpart G, subpart JJJ, and subpart FFFF, and any other 40 CFR part 63 emission standard references the term "organic hazardous air pollutant" or "organic HAP".

2. For affected VOC not specifically listed in table 9 of 40 CFR part 63, subpart G, the corresponding fraction removed value shall be based on one of the following:

a. The procedures in 40 CFR part 60, appendix J as proposed on December 9, 1998 in the Federal Register.

b. An assigned value of 0.99.

c. Use of WATER9, Version 2.0, a wastewater treatment model, incorporated by reference in s. NR 484.06 (4) (f).

3. Before implementing the option available under this paragraph, the owner or operator provides written notice of the intent to utilize this option to the department.

(4) INSPECTION AND MONITORING. The owner or operator of a waste management unit that is subject to requirements under sub. (2) or (3) shall comply with the following inspection and monitoring requirements, except that an owner and operator subject to and in compliance with a subpart in 40 CFR part 63 as provided in sub. (3) (b), may comply with the inspection, monitoring, and record keeping requirements of that subpart instead of the requirements of this subsection.

(a) All seals, covers, closed vent systems, and other equipment used to comply with sub. (2) or (3) shall be visually inspected for leaks and improper conditions semiannually and upon repair as specified in this paragraph. If any seal, cover, closed vent system, or other equipment is found to have a leak or be in improper condition, the equipment shall be repaired as soon as possible, but no later than 15 calendar days after detection, unless the repair or correction is technically infeasible without requiring a process unit shutdown, in which case the repair or correction shall be made during the next process unit shutdown.

1. For a wastewater tank equipped with a fixed roof and vapor control system, visually inspect the fixed roof, openings, and the closed vent system for leaks, except for a cover and closed vent system maintained under negative pressure, and take corrective action.

2. For a wastewater tank equipped with an internal or external floating roof, visually inspect for and correct the following improper conditions:

a. An access door or other opening is left open when not in use.

b. The floating roof is not resting on either the surface of the liquid or on the leg supports.

c. There is stored liquid on the floating roof.

d. A rim seal is detached from the floating roof.

e. There are holes, tears, cracks, or gaps in the rim seal or seal fabric of the floating roof.

f. There are visible gaps between the seal of an internal floating roof and the wall of the wastewater tank.

g. Where a metallic shoe seal is used on an external floating roof, one end of the metallic shoe does not extend into the stored liquid or one end of the metallic shoe does not extend a minimum vertical distance of 61 centimeters above the surface of the stored liquid.

h. A gasket, joint, lid, cover, or door has a crack or gap, or is broken.

3. For a surface impoundment, visually inspect the cover and all openings for leaks, except for a cover and closed vent system maintained under negative pressure, and take corrective action.

4. For a surface impoundment, visually inspect for and correct the following improper conditions:

a. An access hatch or other opening is left open when not in use.

b. A joint, lid, cover, or door has a crack or gap, or is broken.

5. For a portable container, visually inspect the cover and all openings for leaks and take corrective action.

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6. For a portable container that is located within an enclosure that is vented by means of a closed vent system to a control device, visually inspect the enclosure and closed vent system for leaks, except for an enclosure and closed vent system maintained under negative pressure, and take corrective action.

7. For a portable container, visually inspect for and correct the following improper conditions:

a. An access hatch or other opening is left open when not in use.

b. A cover or door has a gap or crack, or is broken.

8. For an individual drain system, visually inspect for and correct the following improper conditions:

a. A joint, lid, cover, or door has a gap, crack, or hole or is broken.

b. An access hatch or other opening is left open when not in use for sampling or removal, or for equipment inspection, maintenance, or repair.

c. Sufficient water is not present to properly maintain integrity of water seals.

d. Drains using tightly-fitted caps or plugs have caps and plugs that are not in place or not properly installed.

e. Junction boxes do not have covers in place or covers have visible gaps, cracks, or holes.

f. Unburied portion of sewer lines have cracks or gaps.

9. For a junction box vented to a process or through a closed vent system to a control device, visually inspect for and correct leaks in the closed vent system.

10. For oil-water separators, visually inspect fixed roof and all openings for leaks and take corrective action.

11. For oil-water separators, visually inspect for and correct the following improper conditions:

a. An access door or other opening is left open when not in use, or not equipping the door or opening with a gasket.

b. The floating roof is not resting on either the surface of the liquid or on the leg supports.

c. There is stored liquid on the floating roof.

d. A rim seal is detached from the floating roof.

e. There are holes, tears, or other open spaces in the rim seal or seal fabric of the floating roof.

f. A gasket, joint, lid, cover, or door has a gap or crack, or is broken.

(b) For a wastewater tank or oil-water separator equipped with an external floating roof having primary and secondary seals used to comply with sub. (2) or (3), the secondary seal shall be inspected for seal gaps and repaired as follows:

1. The secondary seal shall be measured for seal gaps annually and after repair as follows:

a. The width of any seal gap is the distance between the seal and the tank wall and shall be determined by using probes of various widths to accurately measure the actual distance from the seal to the tank wall.

b. The area of any seal gap shall be determined by multiplying the width of the seal gap, as determined in subd. 1. a., by the circumferential length of the gap.

c. The total seal gap area is the accumulated area of all gaps which are greater than 0.125 inch in width.

2. The accumulated area of gaps that exceed 0.125 inch in width between the secondary seal and tank wall may not exceed 1.0 square inch per foot (21 square centimeters per meter) of tank diameter.

3. If the seal gap requirement of subd. 2. is not being met, the secondary seal shall be repaired or replaced within 45 days after

detection of the improper seal gap unless the repair or correction is technically infeasible without requiring a process unit shutdown, in which case the repair or correction shall be made at the next process unit shutdown.

(c) The following records shall be maintained on leaks, improper conditions, and improper seal gaps:

1. The date on which a leak, improper condition, or improper seal gap is discovered.

2. The date on which a first attempt at repair was made to correct the leak or improper condition.

3. The date on which a leak, improper condition, or improper seal gap is repaired.

(d) 1. Monitors shall be installed and maintained to measure operational parameters of any emission control device or other device installed to comply with sub. (2) or (3). Monitoring parameters shall be sufficient to demonstrate proper functioning of the devices to design specifications. Except as provided in subd. 2., the following monitoring and data recording shall be performed as applicable:

a. For an enclosed non-catalytic combustion device, continuously monitor and record the temperature of the gas stream either in the combustion chamber or immediately downstream before any substantial heat exchange.

b. For a catalytic incinerator, continuously monitor and record the temperature of the gas stream immediately before and after the catalyst bed.

c. For a condenser, continuously monitor and record the temperature of the gas stream at the condenser exit.

d. For a carbon adsorber, continuously monitor and record the VOC concentration of exhaust gas stream to determine if breakthrough has occurred. If the carbon adsorber does not regenerate the carbon bed directly in the control device, that is, a carbon canister is used, the exhaust gas stream shall be monitored daily or at intervals no greater than 20% of the design replacement interval, whichever is greater. As an alternative to conducting daily monitoring, the carbon may be replaced with fresh carbon at a regular predetermined time interval that is less than the carbon replacement interval that is determined by the maximum design flow rate and the VOC concentration in the gas stream vented to the carbon adsorber.

e. For a flare, meet the requirements specified in 40 CFR 60.18 (b).

f. For a steam stripper, continuously monitor and record the steam flow rate, the wastewater feed mass flow rate, and either the wastewater feed temperature, or the column operating temperature as measured in the column top tray liquid phase at the downcomer.

g. For vapor control systems other than those specified in subds. 1. a. to f., continuously monitor and record the appropriate operating parameters.

2. In lieu of the monitoring in subd. 1., other monitoring may be approved or required by the department with written concurrence from EPA.

(e) For a closed-vent system that is used to comply with sub. (2) or (3), and that is designed to operate at a pressure below atmospheric pressure, the closed-vent system shall be equipped with at least one pressure gauge or other pressure measurement device that can be read from a readily accessible location to verify that negative pressure is being maintained in the closed-vent system when the control device is operating.

(5) APPROVED TEST METHODS. Compliance with the emission specifications, vapor control system efficiency, and certain

control requirements, inspection requirements, and exemption criteria of subs. (1) (b) and (2) to (4), relating to control requirements, alternate control requirements, inspection and monitoring requirements, and exemptions, shall be determined by applying one or more of the test methods and procedures, as appropriate, in this subsection. Minor modifications to test methods and procedures may be used, if approved by the department with written concurrence from EPA. Test methods other than those specified in this subsection may be used if validated by Method 301 in 40 CFR part 63, Appendix A, incorporated by reference in s. NR 484.04 (25). The test methods are:

(a) Methods 1, 2, 3 and 4, in 40 CFR part 60, Appendix A, incorporated by reference in s. NR 484.04 (13), for determining gas flow rates, as necessary.

(b) Methods 18, 25, 25A, or 25B in 40 CFR part 60, Appendix A, incorporated by reference in s. NR 484.04 (13), for determining organic compound emission concentrations or emission rates.

(c) 1. For control devices other than flares, the VOC control efficiency shall be determined in accordance with s. NR 439.07, where the flow rate and VOC concentration of the inlet and outlet gas streams of the control device are measured as specified under pars. (a) and (b).

2. For flares, the performance test requirements of 40 CFR 60.18 (b) shall apply. Compliance with the requirements of 40 CFR 60.18 (b) will be considered to represent 98% control of the VOC in the flare inlet.

(d) ASTM D323-08, D2879-10, D4953-06, D5190-07, or D5191-10b, adjusted for actual storage temperature in accordance with American Petroleum Institute publication 2517, incorporated by reference in s. NR 484.11 (5), for the measurement of vapor pressure. The ASTM methods are incorporated by reference in s. NR 484.10 (6), (39m), (55b), (55bg), and (55br), respectively.

(e) Method 21 in 40 CFR part 60, Appendix A, incorporated by reference in s. NR 484.04 (17), for monitoring a carbon canister in accordance with sub. (4) (d) 1. d.

(f) For determining the VOC concentration of wastewater samples, any of the methods in subds. 1. to 6., except that in the event of any conflicts, subd. 6. shall take precedence.

1. Method 5030B followed by Method 8015C with a DB-5 boiling point (or equivalent column), and flame ionization detector, with the detector calibrated with benzene as required by 40 CFR part 261. Methods 5030B and 8015C are published in EPA Publication SW-846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", incorporated by reference in s. NR 484.06 (4) (e).

2. Methods 5021A, 5030B followed by 8021B, 8260B, and 9060A as required by 40 CFR part 261, as published in EPA Publication SW-846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", incorporated by reference in s. NR 484.06 (4) (e).

3. Methods 602, 624, 625, 1624B, 1625B of 40 CFR part 136, Appendix A, incorporated by reference in s. NR 484.04 (27s)

4. Method 305 of 40 CFR part 63, Appendix A, incorporated by reference in s. NR 484.04 (25).

5. Method 5310(B) in Standard Methods for the Examination of Water and Wastewater, 20th Edition, 1998, incorporated by reference in s. NR 484.11 (12).

6. Method 25D in 40 CFR part 60, Appendix A, incorporated by reference in s. NR 484.04 (20e). In the event of any conflict, Method 25D takes precedence.

(g) The measurement of wastewater flow rate shall be determined with flow measurement devices. Flow rate measurements shall be taken at the same time as the concentration measurements.

(6) COMPLIANCE SCHEDULE. The owner or operator of any facility subject to this section shall do all of the following:

(a) Notify the department's bureau of air management in writing by April 1, 2012 that the facility is subject to the requirements of this section. The notification shall provide the name and location of the affected facility.

(b) Achieve final compliance with the requirements of this section no later than February 1, 2013.

(7) RECORDKEEPING. The owner or operator of a facility subject to this section shall do all of the following:

(a) Maintain complete and up-to-date records needed to demonstrate compliance with sub. (2) or (3) which are sufficient to demonstrate the characteristics of wastewater streams and the qualification for any exemptions claimed under sub. (1) (b).

(b) Maintain records of the results of any inspection or monitoring conducted in accordance with sub. (4). Records shall be sufficient to demonstrate proper functioning of applicable control equipment to design specifications to ensure compliance with sub. (2) or (3).

(c) Maintain records of the results of any testing conducted in accordance with sub. (5).

(d) Maintain all records at the facility for at least 5 years and make all records available upon request to EPA and the department.

(8) DETERMINATION OF WASTEWATER CHARACTERISTICS. The determination of the characteristics of a wastewater stream for purposes of this section shall be made as follows:

(a) The characteristics shall be determined at a location between the point where the process wastewater exits a process unit and before the process wastewater is exposed to the atmosphere, treated for VOC removal, or mixed with another wastewater stream. For wastewater streams at a facility meeting the applicability requirements under sub. (1) (a) 1. and 2. and which, prior to February 1, 2012, were either actually being mixed, or construction had commenced which would result in the wastewater streams being mixed, the mixing does not establish a limit on where the characteristics may be determined.

(b) The flow rate of a wastewater stream shall be determined on the basis of an annual average by one of the following methods:

1. The highest annual quantity of wastewater managed, based on historical records for the most recent 5 years of operation, or for the entire time the wastewater stream has existed if less than five years, but at least one year.

2. The maximum design capacity of the waste management unit.

3. The maximum design capacity to generate wastewater of the process unit generating the wastewater stream.

4. Measurements that are representative of the actual, normal wastewater generation rates.

(c) The VOC concentration of a wastewater stream shall be determined on the basis of a flow-weighted annual average by one of the methods in this paragraph, or by a combination of the methods. If the department determines, with written concurrence from EPA, that the VOC concentration cannot be adequately determined by the method in subd. 1. or 2., the VOC concentration shall be determined in accordance with subd. 3., or by a combination of the methods in subds. 1., 2., and 3. VOC with a Henry's Law Constant less than 1.8×10^{-6} atm-m³/mole (0.1 y/x)

at 25°C may not be included in the determination of VOC concentration.

1. Sufficient information to document the VOC concentration.

Note: Examples of sufficient information include material balances, records of chemical purchases, or previous test results.

2. Sufficient information to demonstrate that the bench-scale or pilot-scale test concentration data are representative of the actual VOC concentration.

3. Collect a minimum of three representative samples from the wastewater stream and determine the affected VOC concentration for each sample in accordance with sub. (5). The affected VOC concentration of the wastewater stream shall be the flow-weighted average of the individual samples.

(d) The annual affected VOC loading in wastewater for a wastewater stream shall be the annual average flow rate determined in par. (b) multiplied by the annual average affected VOC concentration determined in par. (c).

(e) The annual VOC loading in wastewater for a facility shall be the sum of the annual VOC loading in wastewater for each affected VOC wastewater stream.

(9) MAINTENANCE WASTEWATER REQUIREMENTS. Each owner or operator of a source subject to this section shall comply with the following requirements for maintenance wastewaters containing volatile organic compounds:

(a) The owner or operator shall prepare a description of maintenance procedures for management of wastewaters generated from the emptying and purging of equipment in the process during temporary shutdowns for inspections, maintenance, and repair and during periods which are not shutdowns. The descriptions shall specify all of the following:

1. The process equipment or maintenance tasks that are anticipated to create wastewater during maintenance activities.

2. The procedures that will be followed to properly manage the wastewater and control VOC emissions to the atmosphere.

3. The procedures to be followed when clearing materials from the process equipment.

(b) The owner or operator shall modify and update the information required by par. (a) as needed following each maintenance procedure based on the actions taken and the wastewaters generated in the preceding maintenance procedure.

(c) The owner or operator shall maintain a record of the information required under this subsection.

History: CR 08-104: cr. Register July 2009 No. 643, eff. 8-1-09; CR 11-005: r. and recr. Register January 2012 No. 673, eff. 2-1-12; correction in numbering in (1) (a) 3. d. under s. 13.93 (4) (b) 1. Register January 2012 No. 673.

NR 419.05 Storage of any organic compound. (1)

APPLICABILITY. (a) This section applies to all storage tanks for organic compounds having capacities greater than 151,412 liters (40,000 gallons) in the Southeastern Wisconsin Intrastate AQCR, and to all such storage tanks throughout the state on which construction or modification commenced after April 1, 1972, with the following exceptions:

1. Tanks storing organic compounds that are not photochemically reactive on which construction or modification commenced before August 1, 1979.

2. Tanks used exclusively for storing organic compounds exempted under s. NR 425.04 (1) (a).

(b) Where a provision of s. NR 420.03 also applies, the more stringent requirement shall be met.

(2) STORAGE REQUIREMENTS. When storing organic compounds, solvents, or mixtures having a vapor pressure equal to or greater than 10.5 kPa (1.52 psia) at 21°C (70°F), floating roofs,

vapor condensation systems, vapor holding tanks, or equally effective alternative control methods approved by the department shall be used. Any alternative control method approved by the department under this subsection shall be submitted to, and will not become effective for federal purposes until approved by, the administrator or designee as a source-specific revision to the department's state implementation plan for ozone.

History: Renum. from NR 154.13 (2) (c) and am. Register, September, 1986, No. 369, eff. 10-1-86; am. (1) (a) 2., Register, February, 1990, No. 410, eff. 3-1-90; am. (2), Register, December, 1993, No. 456, eff. 1-1-94; am. (2), Register, December, 1996, No. 492, eff. 1-1-97.

NR 419.06 Transfer of any organic compound. (1) APPLICABILITY. (a) This section applies to transfer operations in the Southeastern Wisconsin Intrastate AQCR involving organic compounds, solvents or mixtures having a vapor pressure greater than 10.5 kPa (1.52 psia) at 21°C (70°F), and to such transfer operations throughout the state at facilities on which construction or modification was commenced after April 1, 1972, with the following exceptions:

1. Transfer operations involving organic compounds which are not photochemically reactive at facilities on which construction or modification was commenced before August 1, 1979.

2. Transfer operations involving, exclusively, organic compounds exempted under s. NR 425.04 (1) (a).

(b) Where a provision elsewhere in ss. NR 420.04 and 421.03 (2) also applies, the more stringent requirement shall be met.

(2) TANK LOADING. For transfers to storage tanks having greater than 3,785 liter (1,000 gallon) capacity, a permanent submerged fill pipe shall be used, provided such a tank does not have controls mentioned in s. NR 419.05 (2).

(3) TANK LOAD OUT FOR HIGH THROUGHPUT FACILITIES. At facilities with over 151,412 liters (40,000 gallons) per day throughput, a vapor collection and disposal system, vapor collection adaptors and vapor-tight seal, or an underfill method with the top hatches partially closed or a means of creating a slight back pressure when loading delivery vessels shall be used.

(4) TANK LOAD OUT FOR LOW THROUGHPUT FACILITIES. At facilities with 151,412 liters (40,000 gallons) or less per day throughput, the underfill method or a submerged fill pipe extending to within 6 inches of the tank bottom shall be employed when loading tank trucks or trailers.

History: Renum. from NR 154.13 (3) (f) and am. Register, September, 1986, No. 369, eff. 10-1-86; am. (1) (a) 2., Register, February, 1990, No. 410, eff. 3-1-90; am. (3), Register, October, 1999, No. 526, eff. 11-1-99.

NR 419.07 Remediation of contaminated soil or water. (1) APPLICABILITY. This section applies to all facilities and procedures used to remediate or dispose of soil or water contaminated with organic compounds which are direct air contaminant sources and to their owners and operators.

Note: Certain contaminated soils and water are hazardous wastes. Due to the "mixture", "derived from", and "contained in" rules found in ch. NR 661, soils and water contaminated by listed hazardous waste under ss. NR 661.31 (1) and 661.32, are also hazardous wastes. In addition, any residue or contaminated soil, water or other debris resulting from the cleanup of a spill of any material listed in s. NR 661.33 is a listed hazardous waste. Soils, water or other debris may also be considered hazardous waste when they exhibit a hazardous characteristic under one of the test procedures of ss. NR 661.20 to 661.24, including the toxicity characteristic leaching procedure test. Contaminated soils and water must be evaluated for the applicability of hazardous waste management rules (chs. NR 660 to 679). The requirements in chs. NR 660 to 679 for the treatment, storage or disposal of hazardous waste must be followed if the contaminated soil or water is hazardous waste. Requirements in chs. NR 700 to 750 may also apply.

(2) GENERAL REQUIREMENTS. Except as provided in sub. (3), no person may use any procedure to remediate or dispose of soil or water contaminated with organic compounds unless the remediation project meets all of the following conditions:

(a) The project meets the emission limits in sub. (4) and the requirements of sub. (5).

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(b) The project will not cause emissions in such quantity, concentration, or duration as to be injurious to human health.

(c) The project will not cause emissions in quantities which will substantially contribute to the exceedance of an ambient air quality standard or ambient air increment or cause air pollution.

(3) EXEMPTIONS. Any procedure or activity listed in this subsection is exempt from the emission limits specified in sub. (4), except those contained in ch. NR 445:

(a) Installation and use of devices which remove organic compounds from a private or municipal potable water supply.

(b) Installation and use of crop irrigation systems or dewatering wells to remediate contaminated water.

(c) Agricultural landspreading of soil contaminated with pesticide or fertilizer.

(d) Pilot testing of a negative pressure venting system provided the testing is limited to a total withdrawal of not more than 150,000 standard cubic feet (scf) of air.

Note: The total withdrawal may be determined by the equation: Total withdrawal (scf) = hours of operation of pilot test (hr) × average flow rate in cubic feet per minute at standard conditions (scfm) × 60 min/hr. An example is: 10 hours of operation × 250 scfm × 60 min/hr = 150,000 scf. When testing at multiple flow rates, determine the withdrawal for each flow rate and sum the withdrawals for a total withdrawal.

(e) Discharge to a wastewater treatment plant that is operated in accordance with ch. 283, Stats.

Note: Wastewater treatment plants are not exempt from air permit requirements.

(f) A project exempt from notification under s. NR 706.07.

(4) EMISSION LIMITATIONS. (a) An owner or operator of a soil or water remediation project shall treat or dispose of soil or water contaminated with organic compounds in a manner which minimizes the emission of volatile organic compounds and hazardous air contaminants, including emissions during the handling, transportation and storage of the contaminated soil or water.

(b) The emissions from the remediation or disposal of contaminated soil or water may not exceed:

1. 137 pounds of volatile organic compounds per day in Kenosha, Kewaunee, Manitowoc, Milwaukee, Ozaukee, Racine, Sheboygan, Walworth, Washington or Waukesha county, except as specified in pars. (d) and (e).

2. 216 pounds of volatile organic compounds per day in counties not listed in subd. 1., except as specified in pars. (d) and (e).

3. The maximum emission limit for any hazardous air contaminant listed in Tables A to C of s. NR 445.07.

(c) When remediating soil or water, thermal evaporation units shall meet the following volatile organic compound emission limits:

1. 137 pounds per day in Kenosha, Kewaunee, Manitowoc, Milwaukee, Ozaukee, Racine, Sheboygan, Walworth, Washington or Waukesha county.

2. 216 pounds per day in counties not listed in subd. 1.

(d) When receiving contaminated soil for disposal or beneficial use or reuse, landfills shall comply with the following limitations:

1. In Kenosha, Kewaunee, Manitowoc, Milwaukee, Ozaukee, Racine, Sheboygan, Walworth, Washington or Waukesha county, the total volatile organic compound content of soils received may not exceed 137 pounds per day.

2. In all counties not listed in subd. 1., the total volatile organic compound content of soils received may not exceed 216 pounds per day.

Note: In calculating the total VOC content of soil received for disposal or beneficial use or reuse, landfills should not include in that figure the VOCs in soils accepted for treatment at a treatment facility at the landfill.

Note: Section NR 722.09 (4) has further limitations on the amount of contaminated soil that may be disposed of in landfills.

(e) When remediating contaminated soil at a landspreading facility, the total volatile organic compound contaminants in the soil treated at a source may not exceed 6,000 pounds per year.

(f) Except as provided for in sub. (6), the volatile organic compound emissions for pars. (b) and (c) and the volatile organic compound quantity for pars. (d) and (e) are determined by averaging the contaminant concentrations in all samples of the contaminated soil or water analyzed and multiplying that average by the total amount of soil or water to be remediated. If in any sample there is no contamination detected, the detection level of the test method is used for the contaminant concentration in that sample.

(g) The volatile organic compound emissions determined for pars. (b) and (c), and the organic compound quantities determined for pars. (d) and (e), may be reduced by any method approved by the bureau of air management.

Note: Methods may include but are not limited to approved destruction efficiency, afterburners, carbon absorption units, etc.

(5) OTHER REQUIREMENTS. In addition to the other requirements of this section, a source shall meet the following requirements:

Note: Material which is hazardous waste shall comply with the requirements in chs. NR 660 to 679.

(b) *Treatment of chlorinated organic compounds.* 1. Except as provided in subd. 2., a thermal evaporation unit may not be used to remediate soil or water contaminated with chlorinated organic compounds unless an air pollution control permit has been issued to the source authorizing it to remediate soil or water contaminated with chlorinated organic compounds.

2. A thermal evaporation unit may remediate soil or water contaminated with gasoline which contains small amounts of chlorinated organic additives to the gasoline, even though the unit does not have a permit authorizing it to remediate soil or water contaminated with chlorinated organic compounds.

(c) *Fuel requirements.* A thermal evaporation unit may not be used to remediate soil or water contaminated with organic compounds containing aromatic hydrocarbons while using a fuel which is contaminated with chlorinated organic compounds unless an air pollution control permit has been issued to the source allowing it to use the fuel contaminated with chlorinated organic compounds while remediating soil or water contaminated with aromatic hydrocarbons.

(d) *Requirements for asphalt plants to remediate soil.* In addition to the other requirements of this section, the following requirements shall apply to all asphalt plants which remediate soil or water contaminated with organic compounds:

1. The asphalt plant shall have had a compliance stack test for particulate matter within the last 5 calendar years which determined that the particulate matter emission rate during the test did not exceed 90 mg/dscm (0.039 gr/dscf), not including backhalf condensable particulate matter.

2. If an asphalt plant has had more than one compliance test during the last 5 calendar years, the results of the most recent test shall be used for purposes of demonstrating compliance with this section.

3. The stack height shall be equal to or greater than 25 feet above grade.

4. If the asphalt plant is using a wet scrubber to control particulate matter emissions, the scrubber pond shall meet the requirements of ch. NR 213.

5. The asphalt plant shall have an air pollution control permit to operate which allows it to remediate soil or water containing organic compounds.

6. The asphalt plant shall be operating in compliance with its permit.

(e) *Objectionable odors.* If objectionable odors, as determined under s. NR 429.03, are determined to result from the remediation, the source shall take preventive measures satisfactory to the department to abate or control such emissions.

(f) *Relocation.* Any portable source relocating shall file notification with the department's air management program, as specified in s. 285.60 (5) (a), Stats., and s. NR 406.15. The signed notification shall be accompanied by a plot plan showing the layout of the site including the location and heights of any buildings, factories, schools, residences or public places in the vicinity of the proposed remediation site.

(6) TESTING REQUIREMENTS. (a) Testing of emissions from facilities or procedures used to remediate or dispose of soil or water contaminated with organic compounds shall be conducted using test methods approved in advance by the department's bureau of air management. Testing shall be scheduled and reported as follows:

1. Emissions from negative pressure venting of contaminated soil shall be conducted according to the following schedules:

a. Total organic compound emissions shall be tested once each day for the first 3 days of operation; weekly for the next 3 weeks; and monthly thereafter.

b. When a substance listed with a control requirement in Table A, B or C of s. NR 445.07 is present in the contaminated soil, testing for the listed substance shall be done once during the first 3 days of operation, once during the third week of operation, and once every 6 months thereafter. For soil contaminated with more than one air contaminant with a control requirement in Table A, B or C of s. NR 445.07, the department's bureau of air management may approve the testing of certain substances that act as indicators for other substances with control requirements in Table A, B or C of s. NR 445.07 present in the soil.

2. Any landfill subject to sub. (4) (d) 2. shall test at a minimum of once per month during the ozone season on a schedule approved in advance in writing by the department.

3. Any facility or procedure used to remediate soil or water contaminated with organic compounds, except for negative pressure venting and landfills, may be required to test the emissions from the remediation according to a schedule determined by the department's bureau of air management.

4. Additional testing may be required by the department.

5. The first quarter results of any testing shall be submitted to the department's bureau of air management within 60 days following the end of the first quarter.

6. The testing required under this paragraph may only be modified or discontinued with written approval from the department's bureau of air management.

Note: Continued testing may be required by other bureaus in the department.

(b) Testing of contaminated soil or water required by the department shall be conducted by the responsible party as defined in s. NR 700.03 (51).

(7) RECORDKEEPING REQUIREMENTS. An owner or operator of a facility or procedure used to remediate contaminated soil or water shall:

(a) Meet the recordkeeping requirements listed in s. NR 439.04 (1) and (2).

(b) Maintain records for 3 years quantifying the year-to-date weight of substances with control requirements in Table A, B or C of s. NR 445.07 contained in soil or water remediated for which testing was required under sub. (6).

(c) Maintain records of calculations and amounts of soil or water remediated for 3 years.

(d) Meet permit recordkeeping conditions specified in air pollution control permits.

(e) Meet the requirements of ss. NR 438.03 and 439.03.

(8) WAIVER. The department may waive compliance with any requirement of this section to the extent necessary to prevent an emergency condition which threatens public health, safety, welfare or the environment.

History: Cr. Register, August, 1991, No. 428, eff. 9-1-91; am. (2) (a) (intro.), (b), (c) 2., 3., (4) (a), (b), (5) (c), cr. (2) (a) 1., 2., (note), (4) (c) to (e), (5) (d) 2., (7), r. (3) (b) (intro.), (5) (a), r. and recr. (2) (c) (intro.), (6), renum. (3) (a) (intro.) 1. to 5., (b) 1. and 2., (5) (d) 2. to 5., (7), to be (3) (intro.), (a) to (c), (f) and (g), (d) and (e), (5) (d) 3. to 6. and (8) and am. (3) (intro.), (c) to (f), Register, September, 1994, No. 465, eff. 10-1-94; am. (1) (intro.), (2) (a) (intro.), (b), (4) (a), (b), (c) (intro.), (5) (d) 1., 2., (6) (a) (intro.), (b) and (8), renum. (3) (e) to (g), (4) (d), (e), (6) (a) 2. to 5. and (7) (a) to be (3) (c) to (e), (4) (f), (g), (6) (a) 3. to 6. and (7) and am. (3) (c), (4) (f), (g) and (6) (a) 3., r. (3) (c) and (d), cr. (4) (b) 1. to 3., (d), (e), (5) (f), (6) (a) 2. and (7) (e), r. and recr. (4) (c) 1. and 2., Register, August, 1995, No. 476, eff. 9-1-95; am. (2) (c) (intro.), 1. to 3., r. (4) (e) 3., Register, December, 1996, No. 492, eff. 1-1-97; am. (4) (b) to (f), Register, November, 1998, No. 515, eff. 12-1-98; CR 02-146: am. (3) (intro.) and (e), cr. (3) (f) Register October 2003 No. 574, eff. 11-1-03; CR 02-097: am. (4) (b) 3., (6) (a) 1. b., and (7) (b) Register June 2004 No. 582, eff. 7-1-04; CR 09-020: r and recr. (2), am. (3) (intro.) Register January 2010 No. 649, eff. 2-1-10.

NR 419.08 Core and mold manufacturing for iron or steel foundries. **(1) APPLICABILITY.** (a) This section applies to the manufacture of cores or molds for use at iron or steel foundries at any facility which is located in the county of Kenosha, Kewaunee, Manitowoc, Milwaukee, Ozaukee, Racine, Sheboygan, Washington or Waukesha.

(b) The emission limits of sub. (2) do not apply to:

1. Iron or steel foundries or core manufacturing facilities which are located in the county of Kenosha, Milwaukee, Ozaukee, Racine, Washington or Waukesha which have maximum theoretical emissions of VOC from core and mold manufacturing of less than 25 tons per year.

2. Iron or steel foundries or core manufacturing facilities which are located in the county of Kewaunee, Manitowoc or Sheboygan which have maximum theoretical emissions of VOC from core and mold manufacturing of less than 100 tons per year.

(c) Any owner or operator of an iron or steel foundry or core manufacturing facility having annual emissions less than the applicability thresholds in par. (b) shall comply with the recordkeeping requirements of sub. (6) for that facility.

(2) EMISSION AND OPERATIONAL LIMITATIONS. No owner or operator of a core or mold manufacturing system which produces cores or molds for use at iron or steel foundries may cause, allow or permit the operation of the system unless all of the following requirements are met:

(a) The as applied VOC content of each core or mold coating, when measured using the methods contained in s. NR 439.06 (3) (b), does not exceed any of the following limits:

1. 30%, by weight, including water, for core or mold coatings which have an as purchased density of 15.0 pounds per gallon or greater.

2. 70%, by weight, including water, for core or mold coatings which have an as purchased density of less than 15.0 pounds per gallon.

(b) All core and mold coating storage vessels and containers remain covered whenever product is not being moved into or out of the vessel or container.

(c) Emissions of the organic gases used in the catalysis step in the formation of urethane cold box binders are controlled with an overall efficiency of at least 90%.

(3) COMPLIANCE AND CERTIFICATION DEADLINES. (a) Final compliance with the requirements of sub. (2) shall be achieved by May 31, 1995 or upon startup, whichever is later.

(b) The owner or operator shall submit certification to the department, by July 1, 1995 or within 90 days after startup, whichever is later, that the facility is in compliance with the requirements of sub. (2), as demonstrated by the applicable testing methods of s. NR 439.06 (3).

(4) EMISSION TESTING. The owner or operator of a facility which employs a urethane cold box binder shall demonstrate compliance with the emission rate in sub. (2) (c) using one of the test methods in s. NR 439.06 (3) (a) prior to the final compliance date in sub. (3) (a), and at least every 2 years thereafter within 60 days of the anniversary of the initial compliance test.

(5) EMISSION CONTROL SYSTEM MONITORING. The owner or operator of any facility which uses a wet scrubber to control organic gas emissions from the catalysis of urethane cold box binders shall continuously measure and record the pH of the scrubber liquid in addition to meeting the monitoring requirements of s. NR 439.055 (1) (e).

(6) RECORDKEEPING. Owners or operators of a facility subject to this section, including those exempt from the requirements of sub. (2) under sub. (1) (b), shall maintain the following records in accordance with s. NR 439.04 (1) to (3):

(a) The quantity, in pounds, of each type of core binder used on an annual basis.

(b) Records of operation variables which are required to be measured under sub. (5) and s. NR 439.055 (1) (e).

(c) The total quantity, in pounds, of organic gas used to catalyze the formation of urethane cold box binders on an annual basis.

(d) The as purchased density and percent VOC, by weight, of each core or mold coating used at the facility.

(e) The total quantity, in pounds or gallons, of each core or mold coating used on a monthly basis.

(f) The total quantity of solvent, in pounds, added to each core or mold coating on a monthly basis.

History: Cr. Register, June, 1994, No. 462, eff. 7-1-94; am. (1) (c), (2) (intro.), (b), (c), (3), (5) and (6) (intro.) and r. (7), Register, October, 1999, No. 526, eff. 11-1-99.