

TITLE 45
LEGISLATIVE RULE
~~DIVISION~~DEPARTMENT OF ENVIRONMENTAL PROTECTION
~~OFFICE OF~~ AIR QUALITY

SERIES 21
**REGULATION TO PREVENT AND CONTROL OF AIR POLLUTION
FROM THE EMISSION OF VOLATILE ORGANIC COMPOUNDS**

§45-21-1. General.

1.1. Scope. -- ~~It is the intent of the Director that all persons engaged in the manufacture, mixing, storage, use, or application of volatile organic compounds control the emission of volatile organic compounds through the application of reasonably available control technology. This regulation applies to sources located in Putnam County, Kanawha County, Cabell County, Wayne County, and Wood County. This rule establishes reasonably available control technology to control emissions of volatile organic compounds from sources that manufacture, mix, store, use, or apply materials containing volatile organic compounds that are located in Cabell, Kanawha, Putnam, Wayne and Wood Counties.~~

1.2. Authority. -- W. Va. Code §22-5-1 ~~et seq~~ §22-5-4.

1.3. Filing Date. -- ~~April 25, 1996~~.

1.4. Effective Date. -- ~~May 1, 1996~~.

1.5. ~~Incorporation by Reference. — Federal Counterpart Regulation Not Applicable Sunset provision.~~
-- Does not apply.

§45-21-2. Definitions.

~~— For the purpose of this regulation, the following definitions shall apply:~~

2.1. "Actual emissions" means the quantity of volatile organic compounds (VOCs) emitted from a source during a particular time period.

2.2. "Air pollution"; "statutory air pollution" ~~means and is limited to the discharge into the air by the act of man of substances (liquid, solid, gaseous, organic or inorganic) in a locality, manner and amount as to be injurious to human health or welfare, animal or plant life, or property, or which would interfere with the enjoyment of life or property shall have the meaning ascribed to it in W. Va. Code §22-5-2.~~

2.3. "Alternative Emission Limitation" means an emission limitation that applies to a source during some but not all periods of normal operation (e.g., applies only during a specifically defined mode of operation such as startup or shutdown). An alternative emission limitation is a component of a continuously applicable emission limitation, and it may take the form of a control measure such as a design, equipment, work practice or operational standard (whether or not numerical).

~~2.32.4.~~ "Ambient air" means that portion of the atmosphere, external to buildings, to which the general public has access.

~~2.42.5.~~ "As applied" means including dilution solvents added before application of the coating.

~~2.52.6.~~ "ASTM" means American Society for Testing And Materials.

~~2.62.7.~~ "Bulk gasoline plant" means a gasoline storage and distribution facility with an average daily throughput of 76,000 liters (L) (20,000 gallons [gal]) of gasoline or less on a 30-day rolling average.

~~2.72.8.~~ "Bulk gasoline terminal" means a gasoline storage facility that receives gasoline from

refineries, delivers gasoline to bulk gasoline plants or to commercial or retail accounts, and has a daily throughput of more than 76,000 liters (20,000 gallons) of gasoline on a 30-day rolling average.

~~2.82.9.~~ "Capture efficiency" means the weight per unit time of VOC entering a capture system and delivered to a control device divided by the weight per unit time of total VOC generated by a source of VOC, expressed as a percentage.

~~2.92.10.~~ "Capture system" means all equipment (including, but not limited to, hoods, ducts, fans, booths, ovens, dryers, etc.) that contains, collects, and transports an air pollutant to a control device.

~~2.102.11.~~ "Carbon adsorber" means an add-on control device which uses activated carbon to adsorb volatile organic compounds from a gas stream.

~~2.112.12.~~ "Carbon adsorption system" means a carbon adsorber with an inlet and outlet for exhaust gases and a system to regenerate the saturated adsorbent.

~~2.12.~~ [RESERVED]

2.13. "Coating" means a material applied onto or impregnated into a substrate for protective, decorative, or functional purposes. Such materials include, but are not limited to, paints, varnishes, sealants, adhesives, inks, maskants, and temporary protective coatings.

2.14. "Coating line" means a series of one or more coating applicators and any associated drying area and/or oven wherein a coating is applied, dried, and/or cured. A coating line ends at the point where the coating is dried or cured, or prior to any subsequent application of a different coating. It is not necessary to have an oven or a flashoff area in order to be included in this definition. This definition does not apply to web coating.

2.15. [RESERVED]

2.16. "Condensate" means volatile organic compound (VOC) liquid separated from natural gas, that condenses due to changes in the temperature and/or pressure and remains liquid at standard conditions.

2.17. "Condenser" means any heat transfer device used to liquify vapors by removing their latent heats of vaporization. Such devices include, but are not limited to, shell and tube, coil, surface, or contact condensers.

2.18. "Construction" means on-site fabrication, erection, or installation of a source, air pollution control or monitoring equipment, or a facility.

2.19. "Continuous vapor control system" means a vapor control system that treats vapors displaced from tanks during filling on a demand basis without intermediate accumulation.

2.20. "Control device" means equipment (such as an incinerator or carbon adsorber) used to reduce, by destruction or removal, the amount of air pollutant(s) in an air stream prior to discharge to the ambient air.

2.21. "Control system" means a combination of one or more capture system(s) and control device(s) working in concert to reduce discharges of pollutants to the ambient air.

2.22. "Crude oil" means a naturally occurring mixture that consists of hydrocarbons and/or sulfur, nitrogen, and/or oxygen derivatives of hydrocarbons and that is liquid at standard conditions.

2.23. "Day" means a period of 24 consecutive hours beginning at midnight local time, or beginning at a time consistent with a facility's operating schedule.

2.24. "Destruction or removal efficiency" means the amount of VOC destroyed or removed by a control device expressed as a percent of the total amount of VOC entering the device.

~~2.25. "Director" means the director of the Division of Environmental Protection or such other person to whom the Director has delegated authority or duties pursuant to W.Va. Code §§22-1-6 or 22-1-8.~~

~~— 2.26. "Division of Environmental Protection" means the Division of Environmental Protection as defined in the provisions of W.Va. Code §22-1-1, et seq.~~

~~— 2.27. "Double block-and-bleed system" means two block valves connected in series with a bleed valve or line that can vent the line between the two block valves.~~

~~2.282.26.~~ "Emission" means the release or discharge, whether directly or indirectly, of volatile organic compounds into the ambient air.

~~2.292.27.~~ "Excess emissions" means those emissions in excess of any requirement, standard, or numerical emission limit specified in this regulation.

~~2.302.28.~~ "External floating roof" means a cover over an open-top storage tank consisting of a double deck or pontoon single deck that rests upon and is supported by the volatile organic liquid being contained and is equipped with a closure seal or seals to close the space between the roof edge and tank shell.

~~2.312.29.~~ "Facility" means all of the pollutant-emitting activities that are located on one or more contiguous or adjacent properties, and are under the control of the same person (or person under common control).

~~2.322.30.~~ "First attempt at repair" means to take rapid action for the purpose of stopping or reducing leakage of volatile organic compounds to the atmosphere using best practices.

~~2.332.31.~~ "Flashoff area" means the space between the coating application area and the oven.

~~2.342.32.~~ "Gasoline" means any petroleum distillate or petroleum distillate/alcohol blend having a Reid vapor pressure of 27.6 kiloPascals (kPa) (8.15 inches of Mercury [in Hg]) or greater that is used as a fuel for internal combustion engines.

~~2.352.33.~~ "Gasoline dispensing facility" means any site where gasoline is transferred from a stationary storage tank to a motor vehicle gasoline tank used to provide fuel to the engine of that motor vehicle.

~~2.362.34.~~ "Gasoline tank truck" means any truck or trailer equipped with a storage tank that is used for the transport of gasoline or vapor from a source of supply to a stationary storage tank at a gasoline dispensing facility, bulk gasoline plant, or bulk gasoline terminal.

~~2.372.35.~~ "Incinerator" means a combustion apparatus in which solid, semisolid, liquid, or gaseous combustible wastes are ignited and burned and from which the solid and gaseous residues contain little or no combustible material.

~~2.382.36.~~ "Intermittent vapor control system" means a vapor control system that employs an intermediate vapor holder to accumulate vapors displaced from tanks during filling. The control device treats the accumulated vapors only during automatically controlled cycles.

~~2.392.37.~~ "Knife coating" means the application of a coating material to a substrate by means of drawing the substrate beneath a knife that spreads the coating evenly over the full width of the substrate.

~~2.402.38.~~ "Leak" means a VOC emission indicated by an instrument calibrated according to Method 21 of 40 CFR Part 60, Appendix A using zero air (less than 10 parts per million [ppm] of hydrocarbon in air) and a mixture of methane or n-hexane and air at a concentration of approximately, but less than, 10,000 ppm methane or n-hexane.

~~2.412.39.~~ "Lease custody transfer" means the transfer of produced crude oil or condensate, after processing and/or treating in the producing operations, from storage tanks or automatic transfer facilities to

pipelines or any other forms of transportation.

2.422.40. "Loading rack" means an aggregation or combination of gasoline loading equipment arranged so that all loading outlets in the combination can be connected to a tank truck or trailer parked in a specified loading space.

2.432.41. "Lower explosive limit" (also denoted as LEL) means the concentration of a compound in air below which a flame will not propagate if the mixture is ignited.

2.42. "Malfunction" means a sudden and unavoidable breakdown of process or control equipment.

2.442.43. "Maximum theoretical emissions" means the quantity of VOC that theoretically could be emitted by a source without control devices based on the design capacity or maximum production capacity of the source and 8,760 hours of operation per year. The design capacity or maximum production capacity includes use of coatings with the highest VOC content used in practice by the source for the two preceding years preceding May 31, 1993.

2.452.44. "Maximum true vapor pressure" means the equilibrium partial pressure exerted by a stored liquid at the temperature equal to: (1) for liquids stored above or below the ambient temperature, the highest calendar-month average of the liquid storage temperature, or (2) for liquids stored at the ambient temperature, the local maximum monthly average temperature as reported by the National Weather Service. This pressure shall be determined:

a 2.44.1. In accordance with methods described in American Petroleum Institute Bulletin 2517, "Evaporation Loss From External Floating Roof Tanks";

b 2.44.2. By using standard reference texts;

c 2.44.3. By ASTM D2879-83; or

d 2.44.4. By any other method approved by the U.S. EPA.

2.462.45. "Modification" or "Modified" means any physical change or change in a source which increases its potential to emit volatile organic compounds.

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

2.482.47. "Organic compound" means a chemical compound of carbon excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate.

2.492.48. "Oven" means a chamber within which heat is used to bake, cure, polymerize, and/or dry a coating.

2.502.49. "Overall emission reduction efficiency" means the weight per unit time of VOC removed or destroyed by a control device divided by the weight per unit time of VOC generated by a source, expressed as a percentage. The overall emission reduction efficiency is the product of the capture efficiency and the control device destruction or removal efficiency.

2.512.50. "Owner or operator" means any person who owns, leases, controls, operates, or supervises a facility, a source, or air pollution control or monitoring equipment.

2.522.51. "Person" means any and all persons, natural or artificial, including the state of West Virginia or any other state, The United States of America, any municipal, statutory, public or private corporation organized or existing under the laws of this or any other state or country, and any firm, partnership, ~~or~~ association or business entity of whatever nature.

~~2.532.52.~~ "Petroleum" means crude oil and the oils derived from tar sands, shale, and coal.

~~2.542.53.~~ "Petroleum liquid" means crude oil, condensate, and any finished or intermediate product manufactured or extracted at a petroleum refinery, but not including Nos. 2 through 6 fuel oils as specified in ASTM D396-78; gas turbine fuel oils Nos. 2-GT through 4-GT as specified in ASTM D2880-78; or diesel fuel oils Nos. 2-d and 4-D, as specified in ASTM D975-78.

~~2.552.54.~~ "Petroleum refinery" means any facility engaged in producing gasoline, kerosene, distillate fuel oils, residual fuel oils, lubricants, or other products through distillation of petroleum or through the redistillation, cracking, or reforming of unfinished petroleum derivatives.

~~2.562.55.~~ "Plastisol" means a coating made of a mixture of finely divided resin and a plasticizer. Plastisol is applied as a thick gel that solidifies when heated.

~~2.572.56.~~ "Pressure release" means the emission of materials resulting from system pressure being greater than set pressure of the pressure relief device.

~~2.582.57.~~ "Prime coat" means the first of two or more coatings applied to a surface.

~~2.592.58.~~ "Process unit shutdown" means a work practice or operational procedure that stops production from a process unit or part of a process unit. An unscheduled work practice or operational procedure that stops production from a process unit or part of a process unit for less than 24 hours is not a process unit shutdown. The use of spare equipment and technically feasible bypassing of equipment without stopping production are not process unit shutdowns.

~~2.602.59.~~ "Reasonably Available Control Technology" (also denoted as RACT) means the lowest emission limit that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility. It may require technology that has been applied to similar, but not necessarily identical, source categories.

~~2.612.60.~~ "Reid vapor pressure" means the absolute vapor pressure of volatile crude oil and volatile non-viscous petroleum liquids, except liquified petroleum gases, as determined by American Society for Testing and Materials, D323-72.

~~2.622.61.~~ "Repaired" means that equipment is adjusted, or otherwise altered, in order to eliminate a leak as indicated by one of the following: an instrument reading of 10,000 parts per million (ppm) or greater, indication of liquids dripping, or indication by a sensor that a seal or barrier fluid system has failed.

~~2.632.62.~~ "Roll coating" means the application of a coating material to a moving substrate by means of hard rubber, elastomeric, or metal rolls.

~~2.642.63.~~ "Rotogravure coating" means the application of a coating material to a substrate by means of a roll coating technique in which the pattern to be applied is recessed relative to the non-image area, and the coating material is picked up in these recessed areas and is transferred to the substrate.

2.64. "Secretary" means the Secretary of the Department of Environmental Protection or such other person to whom the Secretary has delegated authority or duties pursuant to W.Va. Code §§22-1-6 or 22-1-8.

2.65. "Shutdown" means the cessation of operation of a source subject to this rule for any reason, unless otherwise defined by a permit issued to create an alternative emission limitation.

2.66. "Solvent" means a substance that is liquid at standard conditions and is used to dissolve or dilute another substance; this term includes, but is not limited to, organic materials used as dissolvers, viscosity reducers, degreasing agents, or cleaning agents.

~~2.662.67.~~ "Source" means any building, structure, equipment, or installation that directly or indirectly releases or discharges, or has the potential to release or discharge, VOCs into the ambient air.

~~2.67~~2.68. "Standard conditions" means a temperature of 20EC (68EF) and pressure of 760 millimeters of Mercury (mm Hg) (29.92 in Hg).

~~2.68~~2.69. "Startup" means the setting in operation of a source or of its emission control or emission monitoring equipment for any reason, unless otherwise defined by a permit issued to create an alternative emission limitation.

~~2.69~~2.70. "Submerged fill" means the method of filling a gasoline tank truck or storage vessel where product enters within 150 millimeters (mm) (5.9 inches [in]) of the bottom of the tank truck or storage vessel. Bottom filling of tank trucks and storage vessels is included in this definition.

~~2.70~~2.71. "Substrate" means the surface onto which a coating is applied or into which a coating is impregnated.

~~2.71~~2.72. "Topcoat" means the final coating(s), as applied, in a multiple-coat operation.

~~2.72~~2.73. "True vapor pressure" means the equilibrium partial pressure exerted by a volatile organic liquid as determined in accordance with methods described in American Petroleum Institute Bulletin 2517, "Evaporation Loss From Floating Roof Tanks," second edition, February 1980.

~~2.73~~2.74. "U.S. EPA" means the United States Environmental Protection Agency.

~~2.74~~2.75. "Vapor balance system" means a closed system that allows the transfer or balancing of vapors, displaced during the loading or unloading of gasoline, from the tank being loaded to the tank being unloaded.

~~2.75~~2.76. "Vapor collection system" means all piping, seals, hoses, connections, pressure-vacuum vents, and other equipment between the gasoline tank truck and the vapor processing unit and/or the storage tanks and vapor holder.

~~2.76~~2.77. "Vapor control system" means a system that limits or prevents release to the atmosphere of organic compounds in the vapors displaced from a tank during the transfer of gasoline.

~~2.77~~2.78. "Vapor recovery system" means a vapor gathering system capable of collecting VOC vapors and gases emitted during the operation of any transfer, storage, or process equipment.

~~2.78~~2.79. "Vapor-tight" means equipment that allows no loss of vapors. Compliance with vapor-tight requirements can be determined by checking to ensure that the concentration at a potential leak source is not equal to or greater than 100 percent of the lower explosive limit (LEL) when measured with a combustible gas detector, calibrated with propane, at a distance of 2.54 centimeters (cm) (1 inch [in]) from the source.

~~2.79~~2.80. "Vapor-tight gasoline tank truck" means a gasoline tank truck that has demonstrated within the 12 preceding months that its product delivery tank will sustain a pressure change of not more than 75 mm (3.0 in) of water within 5 minutes (min) after it is pressurized to 450 mm (18 in) of water; or when evacuated to 150 mm (5.9 in) of water, the same tank will sustain a pressure change of not more than 75 mm (3.0 in) of water within 5 min. This capability is to be demonstrated using the test procedures specified in Method 27 of Appendix A of 40 CFR Part 60.

2.81. "[In] VOC service" means that the piece of equipment contains or contacts a process fluid that is at least 10 percent VOC by weight. Subdivision 5.9.2. specifies the VOC service determination methods.

~~2.80~~2.82. "Volatile organic compound" (also denoted as VOC) means any organic compound that participates in atmospheric photochemical reactions. This includes any organic compound other than the following exempt compounds: methane, ethane, acetone, perchloroethylene, methyl chloroform (1,1,1-trichloroethane), CFC-113 (trichlorotrifluoroethane), methylene chloride, CFC-11

(trichlorofluoromethane), CFC-12 (dichlorodifluoromethane), CFC-22 (chlorodifluoromethane), FC-23 (trifluoromethane), CFC-114 (dichlorotetrafluoroethane), CFC-115 (chloropentafluoroethane), HCFC-123 (dichlorotrifluoroethane), HFC-134a (tetrafluoroethane), HCFC-141b (dichlorofluoroethane), HCFC-142b (chlorodifluoroethane), 2-chloro-1,1,1,2-tetrafluoroethane (HCFC-124), pentafluoroethane (HFC-125); 1,1,2,2-tetrafluoroethane (HFC-134); 1,1,1-trifluoroethane (HFC-143a); 1,1-difluoroethane (HFC-152a); and perfluorocarbon compounds which fall into these classes--

- a 2.82.1. Cyclic, branched, or linear, completely fluorinated alkanes;
 - b 2.82.2. Cyclic, branched, or linear, completely fluorinated ethers with no unsaturations;
 - c 2.82.3. Cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations;
- and
- d 2.82.4. Sulfur-containing perfluorocarbons with no unsaturations and with sulfur bonds only to carbon and fluorine.
 - e 2.82.5. Any organic compounds that the U.S. EPA lists in Federal Register notices as being photochemically nonreactive are also included as exempt compounds. For purposes of determining compliance with emission limits, VOC will be measured by the test methods approved by the U.S. EPA. Where such a method also inadvertently measures compounds with negligible photochemical reactivity, an owner or operator may exclude these negligibly reactive compounds when determining compliance with an emissions standard.

2.812.83. "Web coating line" means all of the coating applicator(s), drying area(s), or oven(s), located between an unwind station and a rewind station, that are used to apply coating onto a continuous strip of substrate (the web). A web coating line need not have a drying oven.

2.84. Other words and phrases used in this rule, unless otherwise indicated, shall have the meaning ascribed to them in W. Va. Code §22-5-1 et seq..

§45-21-3. Applicability.

- 3.1. All new and modified sources shall meet any applicable State or Federal rules for existing sources.
- 3.2. Nothing in this regulation shall be construed to exempt new and modified sources from meeting any other applicable State or Federal rules, including new source review requirements.
- 3.3. This regulation does not apply to any equipment at a facility used exclusively for chemical or physical analysis or determination of product quality and commercial acceptance provided the operation of the equipment is not an integral part of the production process and the total actual VOC emissions from all such equipment at the facility do not exceed 204 kilograms (kg) (450 pounds [lb]) in any calendar month.

3.4. Applicability thresholds.

a3.4.1. Any facility that becomes subject to the provisions of this regulation by exceeding an applicability threshold shall remain subject to these provisions, even if its throughput or emissions later fall below the applicability threshold, except as provided in subsection 3.7.

b3.4.2. Any facility that is currently subject to a State or Federal rule imposing control requirements for VOCs promulgated pursuant to the Clean Air Act Amendments of 1977 by exceeding an applicability threshold is and will remain subject to these provisions, even if its throughput or emissions have fallen or later fall below the applicability threshold, except as provided in subsection 3.7.

3.5. The owner or operator of any facility that claims exemption from the provisions of this regulation by reason of meeting the conditions in subsection 3.3 shall maintain the following records in a readily accessible location for at least 3 years and shall make those records available to the ~~Director~~ Secretary upon verbal or written request:

~~a~~3.5.1. Records to document the purpose of the equipment for which the exemption is claimed.

~~b~~3.5.2. Records to document the amount of each volatile organic compound (VOC)-containing material used in the equipment each calendar month and the VOC content of each material such that emissions can be determined.

3.6. The owner or operator of a facility or source subject to any control requirement of this regulation may comply with an alternative control plan that has been approved by the ~~Director~~ Secretary and the U.S. EPA.

3.7. The owner or operator of a facility subject to this regulation may petition the ~~Director~~ Secretary for exemption from the requirements of this regulation upon a showing that such facility no longer has the potential to emit volatile organic compounds. Any exemption granted shall be embodied in a consent order which shall contain terms and conditions necessary to ensure that no volatile organic compound may be emitted from the facility. For federal enforcement purposes, such exemption shall not be effective until approved by the U.S. EPA.

3.8. Any owner or operator that cannot comply with the emission limitations required by 45CSR21 during periods of startup or shutdown shall request an alternative emission limitation pursuant to 45CSR1.

§45-21-4. Compliance Certification, Recordkeeping, and Reporting Procedures for Coating Sources.

4.1. To establish the records required under this section 4., the volatile organic compound (VOC) content of each coating, as applied, and the efficiency of each capture system and control device shall be determined by the applicable test methods and procedures specified in subsections 42. and 44.

4.2. Requirements for coating sources exempt from emission limitations. -- Any owner or operator of a coating line or operation that is exempt from the emission limitations of sections 11. through 19. because combined VOC emissions from all coating lines and operations at the facility are below the applicability threshold specified in the individual sections of this regulation, before the application of capture systems and control devices, shall comply with the following for each of sections 11. through 19. from which the owner or operator claims an exemption:

~~a~~4.2.1. Certification. -- ~~By one year from May 31, 1993, t~~ The owner or operator of a facility referenced in subsection 4.2. shall certify to the ~~Director~~ Secretary that the facility is exempt by providing the following:

~~1~~4.2.1.a. Name and location of the facility;

~~2~~4.2.1.b. Address and telephone number of the person responsible for the facility;

~~3~~4.2.1.c. A declaration that the facility is exempt from the emission limitations of sections 11. through 19. because combined VOC emissions from all coating lines and operations at the facility are below the applicability threshold before the application of capture systems and control devices; and

4.2.1.d. Calculations of the daily-weighted average that demonstrate that the combined VOC emissions from all coating lines and operations at the facility for a day representative of current maximum production levels are 6.8 kilograms (kg) (15 pounds [lb]) or less before the application of capture systems and control devices. The following equation shall be used to calculate total VOC emissions for that day:

$$T = \sum_{i=1}^n A_i B_i$$

~~ww~~Where:

T = Total VOC emissions from coating lines and operations at the facility before the application of capture systems and control devices in units of kg/day (lb/day);

n = Number of different coatings applied on each coating line or each operation at the facility;

i = Subscript denoting an individual coating;

A_i = Mass of VOC per volume of coating (i) (minus water and exempt compounds), as applied, used at the facility in units of kilograms VOC per liter (kg VOC/L) (pounds VOC per gallon [lb VOC/gal]); and

B_i = Volume of coating (i) (minus water and exempt compounds), as applied, used at the facility in units of liters per day (L/day) (gallons per day [gal/day]). The instrument or method by which the owner or operator accurately measured or calculated the volume of each coating, as applied, used shall be described in the certification to the ~~Director~~ Secretary.

~~b4.2.2.~~ Recordkeeping. -- ~~On and after one year from May 31, 1993, t~~ The owner or operator of a facility referenced in subsection 4.2. shall collect and record all of the following information each day and maintain the information at the facility for a period of 3 years:

~~14.2.2.a.~~ 4.2.2.a. The name and identification number of each coating, as applied;

~~24.2.2.b.~~ 4.2.2.b. The mass of VOC per volume (minus water and exempt compounds) and the volume of coating (i) (minus water and exempt compounds), as applied, used each day; and

~~34.2.2.c.~~ 4.2.2.c. The total VOC emissions at the facility, as calculated using the equation in ~~section 4.2.a.4~~ paragraph 4.2.1.d.

~~e4.2.3.~~ Reporting. -- ~~On and after one year from May 31, 1993, t~~ The owner or operator of a facility referenced in subsection 4.2. shall notify the ~~Director~~ Secretary of any record showing that combined VOC emissions from all coating lines and operations at the coating facility exceed 6.8 kg (15 lb) on any day, before the application of capture systems and control devices. A copy of such record shall be sent to the ~~Director~~ Secretary within 30 days after the exceedance occurs.

4.3. Requirements for coating sources using complying coatings. -- Any owner or operator of a coating line or operation subject to the limitations of sections 11., 12., 13., 14., 15., 16., 17., 18., or 19. and complying by means of the use of complying coatings shall comply with the following:

~~a4.3.1.~~ Certification. -- ~~By one year from May 31, 1993, or u~~ Upon startup of a new coating line or operation, or upon changing the method of compliance for an existing subject coating line or operation from daily-weighted averaging or control devices to the use of complying coatings, the owner or operator of a coating line or operation referenced in subsection 4.3. shall certify to the ~~Director~~ Secretary that the coating line or operation is or will be in compliance with the requirements of the applicable section of this regulation on and after ~~one year from May 31, 1993, or on and after~~ the initial startup date. Such certification shall include:

~~14.3.1.a.~~ 4.3.1.a. The name and location of the facility;

~~24.3.1.b.~~ 4.3.1.b. The address and telephone number of the person responsible for the facility;

~~34.3.1.c.~~ 4.3.1.c. Identification of subject sources;

~~44.3.1.d.~~ 4.3.1.d. The name and identification number of each coating, as applied, on each coating line or operation;

~~54.3.1.e.~~ 4.3.1.e. The mass of VOC per volume (minus water and exempt compounds) and the volume of each coating (minus water and exempt compounds), as applied; and

~~64.3.1.f.~~ 4.3.1.f. The time at which the facility's "day" begins if a time other than midnight local time is used to define a "day".

~~b4.3.2.~~ Recordkeeping. -- ~~On and after one year from May 31, 1993, or o~~ On and after the initial startup date, the owner or operator of a coating line or operation referenced in subsection 4.3. and complying by the use of complying coatings shall collect and record all of the following information each day for each coating line or operation and maintain the information at the facility for a period of 3 years:

~~14.3.2.a.~~ The name and identification number of each coating, as applied, on each coating line or operation; and

~~24.3.2.b.~~ The mass of VOC per volume of each coating (minus water and exempt compounds), as applied, used each day on each coating line or operation.

~~e4.3.3.~~ Reporting. -- ~~On and after one year from May 31, 1993, t~~ The owner or operator of a subject coating line or operation referenced in subsection 4.3. shall notify the ~~Director~~ Secretary in the following instances:

~~14.3.3.a.~~ Any record showing use of any non-complying coatings shall be reported by sending a copy of such record to the ~~Director~~ Secretary within 30 days following that use; and

~~24.3.3.b.~~ At least 30 calendar days before changing the method of compliance from the use of complying coatings to daily-weighted averaging or control devices, the owner or operator shall comply with all requirements of ~~section 4.4.a. subdivision 4.4.1. or section 4.5.a subdivision 4.5.1.,~~ respectively. Upon changing the method of compliance from the use of complying coatings to daily-weighted averaging or control devices, the owner or operator shall comply with all requirements of the section of this regulation applicable to the coating line or operation referenced in subsection 4.3.

4.4. Requirements for coating sources using daily-weighted averaging. -- Any owner or operator of a coating line or operation subject to the limitations of sections 11., 12., 13., 14., 15., 16., 17., 18., or 19. and complying by means of daily-weighted averaging on that line or operation shall comply with the following:

~~a4.4.1.~~ Certification. -- ~~By one year from May 31, 1993, or u~~ Upon startup of a new coating line or operation, or upon changing the method of compliance for an existing subject coating line or operation from the use of complying coatings or control devices to daily-weighted averaging, the owner or operator of the subject coating line or operation shall certify to the ~~Director~~ Secretary that the coating line or operation is or will be in compliance with subsection 4.4. on and after ~~one year from May 31, 1993, or on and after~~ the initial startup date. Such certification shall include:

~~14.4.1.a.~~ The name and location of the facility;

~~24.4.1.b.~~ The address and telephone number of the person responsible for the facility;

~~34.4.1.c.~~ Identification of subject sources;

~~44.4.1.d.~~ The name and identification number of each coating line or operation which will comply by means of daily-weighted averaging;

~~54.4.1.e.~~ The instrument or method by which the owner or operator will accurately measure or calculate the volume of each coating (minus water and exempt compounds), as applied, used each day on each coating line or operation;

~~64.4.1.f.~~ The method by which the owner or operator will create and maintain records each day as required in ~~section 4.4.b. subdivision 4.4.2.;~~

~~74.4.1.g.~~ An example of the format in which the records required in ~~section 4.4.b. subdivision 4.4.2.~~ will be kept;

~~84.4.1.h.~~ Calculation of the daily-weighted average, using the procedure in subsection 4.3.1., for a day representative of current or projected maximum production levels; and

~~94.4.1.i.~~ The time at which the facility's "day" begins if a time other than midnight local time is used to define a "day".

~~b4.4.2.~~ Recordkeeping. -- On and after ~~one year from May 31, 1993, or on and after~~ the initial startup date, the owner or operator of a coating line or operation referenced in subsection 4.4. and complying

by means of daily-weighted averaging shall collect and record all of the following information each day for each coating line or operation and maintain the information at the facility for a period of 3 years:

~~14.4.2.a.~~ The name and identification number of each coating, as applied, on each coating line or operation;

~~24.4.2.b.~~ The mass of VOC per volume (minus water and exempt compounds) and the volume of each coating (minus water and exempt compounds), as applied, used each day on each coating line or operation; and

~~34.4.2.c.~~ The daily-weighted average VOC content of all coatings, as applied, on each coating line or operation calculated according to the procedure in subsection 43.1.

~~e4.4.3.~~ Reporting. -- ~~On and after one year from May 31, 1993, t~~ The owner or operator of a subject coating line or operation referenced in subsection 4.4. shall notify the ~~Director~~ Secretary in the following instances:

~~14.4.3.a.~~ Any record showing noncompliance with the applicable daily-weighted average requirements shall be reported by sending a copy of the record to the ~~Director~~ Secretary within 30 days following the occurrence, except as provided in subsection 9.3.

~~24.4.3.b.~~ At least 30 calendar days before changing the method of compliance from daily-weighted averaging to the use of complying coatings or control devices, the owner or operator shall comply with all requirements of ~~section 4.3.a. subdivision 4.3.1. or section 4.5.a. subdivision 4.5.1., respectively.~~ Upon changing the method of compliance from daily-weighted averaging to the use of complying coatings or control devices, the owner or operator shall comply with all requirements of the section of this regulation applicable to the coating line or operation referenced in subsection 4.4. of this section.

4.5. Requirements for coating sources using control devices. -- Any owner or operator of a coating line or operation subject to the limitations of sections 11., 12., 13., 14., 15., 16., 17., 18., or 19. and complying by means of control devices shall comply with the following:

~~a4.5.1.~~ Testing of control equipment. -- ~~By one year from May 31, 1993, or u~~ Upon startup of a new coating line or operation, or upon changing the method of compliance for an existing coating line or operation from the use of complying coatings or daily-weighted averaging to control devices, the owner or operator of the subject coating line or operation shall perform a compliance test. Testing shall be performed pursuant to the procedures in sections 41. through 44. The owner or operator of the subject coating line or operation shall submit to the ~~Director~~ Secretary the results of all tests and calculations necessary to demonstrate that the subject coating line or operation is or will be in compliance with the applicable section of this regulation ~~on and after one year from May 31, 1993, or on and after the initial startup date.~~

~~b4.5.2.~~ Recordkeeping. -- ~~On and after one year from May 31, 1993, or on and after the initial startup date,~~ the owner or operator of a coating line or operation referenced in subsection 4.5. shall collect and record all of the following information each day for each coating line or operation and maintain the information at the facility for a period of 3 years:

~~14.5.2.a.~~ The name and identification number of each coating used on each coating line or operation;

~~24.5.2.b.~~ The mass of VOC per unit volume of coating solids, as applied, the volume solids content, as applied, and the volume, as applied, of each coating used each day on each coating line or operation;

~~34.5.2.c.~~ The maximum VOC content (mass of VOC per unit volume of coating solids, as applied) or the daily-weighted average VOC content (mass of VOC per unit volume of coating solids, as applied) of the coatings used each day on each coating line or operation;

~~44.5.2.d.~~ The required overall emission reduction efficiency for each day for each coating line

or operation as determined in ~~sections 11.5.e., 12.5.e., 13.5.e., 14.5.e., 15.5.e., 16.5.e., 17.5.e., 18.5.e., or 19.5.e.~~ subdivisions 11.5.3., 12.5.3., 13.5.3., 14.5.3., 15.5.3., 16.5.3., 17.5.3., 18.5.3., or 19.5.3.;

~~54.5.2.e.~~ The actual overall emission reduction efficiency achieved for each day for each coating line or operation as determined in subsection 44.3.;

~~64.5.2.f.~~ Control device monitoring data;

~~74.5.2.g.~~ A log of operating time for the capture system, control device, monitoring equipment, and the associated coating line or operation;

~~84.5.2.h.~~ A maintenance log for the capture system, control device, and monitoring equipment detailing all routine and non-routine maintenance performed including dates and duration of any outages;

~~94.5.2.i.~~ For thermal incinerators, all 3-hour periods of operation in which the average combustion temperature was more than 28EC (50EF) below the average combustion temperature during the most recent performance test that demonstrated that the facility was in compliance;

~~104.5.2.j.~~ For catalytic incinerators, all 3-hour periods of operation in which the average temperature of the process vent stream immediately before the catalyst bed is more than 28EC (50EF) below the average temperature of the process vent stream during the most recent performance test that demonstrated that the facility was in compliance; and

~~114.5.2.k.~~ For carbon adsorbers, all 3-hour periods of operation during which the average VOC concentration or reading of organics in the exhaust gases is more than 20 percent greater than the average exhaust gas concentration or reading measured by the organics monitoring device during the most recent determination of the recovery efficiency of the carbon adsorber that demonstrated that the facility was in compliance.

~~e4.5.3.~~ Reporting. -- ~~On and after one year from May 31, 1993, t~~ The owner or operator of a subject coating line or operation referenced in subsection 4.5. shall notify the ~~Director~~ Secretary in the following instances:

~~14.5.3.a.~~ Any record showing noncompliance with the applicable requirements for control devices shall be reported by sending a copy of the record to the ~~Director~~ Secretary within 30 days following the occurrence, except as provided in subsection 9.3.

~~24.5.3.b.~~ At least 30 calendar days before changing the method of compliance from control devices to the use of complying coatings or daily-weighted averaging, the owner or operator shall comply with all requirements of ~~section 4.3.a.~~ subdivision 4.3.1. or ~~section 4.4.a.~~ subdivision 4.4.1., respectively. Upon changing the method of compliance from control devices to the use of complying coatings or daily-weighted averaging, the owner or operator shall comply with all requirements of the section of this regulation applicable to the coating line or operation referenced in subsection 4.5.

§45-21-5. Compliance Certification, Recordkeeping, and Reporting Requirements for Non-Coating Sources.

5.1. Initial compliance certification. -- ~~The owner or operator of any facility containing sources subject to this section 5. shall submit to the Director an initial compliance certification by one year from May 31, 1993.~~ The owner or operator of any ~~new~~ facility containing sources that become subject to this section 5. after May 31, 1993 shall submit an initial compliance certification to the Secretary immediately upon start-up of the facility.

~~a5.1.1.~~ The initial compliance certification shall provide as a minimum the following information:

~~14.5.1.1.a.~~ The name and location of the facility;

~~25.1.1.1.b.~~ The address and telephone number of the person responsible for the facility; and

35.1.1.c. Identification of subject sources.

5.1.2. For each subject source, the initial compliance certification shall also provide as a minimum:

45.1.2.a. The applicable emission limitation, equipment specification, or work practice;

25.1.2.b. The method of compliance;

35.1.2.c. For each source subject to numerical emission limitations, the estimated emissions without control;

45.1.2.d. The control system(s) in use;

55.1.2.e. The design performance efficiency of the control system;

65.1.2.f. For each source subject to numerical emission limitations, the estimated emissions after control;

75.1.2.g. Certification that all subject sources at the facility are in compliance with the applicable emission limitation, equipment specification, or work practice; and

85.1.2.h. The time at which the facility's "day" begins if a time other than midnight local time is used to define a "day".

5.2. Reports of excess emissions. -- ~~Except as provided in section 9.3, +~~ The owner or operator of any facility containing sources subject to this section 5. shall, for each occurrence of excess emissions expected to last more than 7 days, within 1 business day of becoming aware of such occurrence, supply the ~~Director~~ Secretary by letter with the following information:

a5.2.1. The name and location of the facility;

b5.2.2. The subject sources that caused the excess emissions;

e5.2.3. The time and date of first observation of the excess emissions; and

d5.2.4. The cause and expected duration of the excess emissions.

e5.2.5. For sources subject to numerical emission limitations, the estimated rate of emissions (expressed in the units of the applicable emission limitation) and the operating data and calculations used in determining the magnitude of the excess emissions; and

f5.2.6. The proposed corrective actions and schedule to correct the conditions causing the excess emissions.

5.3. Requirements for sources using control devices.—

a5.3.1. Initial compliance certification of control equipment. Testing of control equipment. -- ~~By one year from May 31, 1993, or a~~ Upon startup of a new source, or upon changing the method of compliance for an existing source, the owner or operator of the subject source shall perform all tests pursuant to the procedures in sections 41. and 44. and submit to the ~~Director~~ Secretary the results of all tests and calculations necessary to demonstrate that the subject source will be in compliance with the applicable section of this regulation on and after ~~one year from May 31, 1993, or on and after~~ the initial startup date.

b5.3.2. Recordkeeping.

45.3.2.a. Each owner or operator of a source subject to this section 5. shall maintain up-to-

date, readily accessible records of any equipment operating parameters specified to be monitored in the applicable section of this regulation as well as up-to-date, readily accessible records of periods of operation during which the parameter boundaries established during the most recent performance test are exceeded. These records shall be maintained for at least 3 years. The ~~Director~~ Secretary may at any time require a report of these data. Periods of operation during which the parameter boundaries established during the most recent performance tests are exceeded are defined as follows:

~~A~~5.3.2.a.1. For thermal incinerators, all 3-hour periods of operation in which the average combustion temperature was more than 28EC (50EF) below the average combustion temperature during the most recent performance test that demonstrated that the facility was in compliance.

~~B~~5.3.2.a.2. For catalytic incinerators, all 3-hour periods of operation in which the average temperature of the process vent stream immediately before the catalyst bed is more than 28EC (50EF) below the average temperature of the process vent stream during the most recent performance test that demonstrated that the facility was in compliance.

~~C~~5.3.2.a.3. For carbon adsorbers, all 3-hour periods of operation during which the average VOC concentration or reading of organics in the exhaust gases is more than 20 percent greater than the average exhaust gas concentration or reading measured by the organics monitoring device during the most recent determination of the recovery efficiency of the carbon adsorber that demonstrated that the facility was in compliance.

~~2~~5.3.2.b. A log of operating time for the capture system, control device, monitoring equipment, and the associated source; and

~~3~~5.3.2.c. A maintenance log for the capture system, control device, and monitoring equipment detailing all routine and non-routine maintenance performed including dates and duration of any outages.

§45-21-6. Requirements for Sources Complying by Use of Control Devices.

6.1. Any owner or operator of a coating line or operation subject to this section 6. shall ensure that:

~~a~~6.1.1. A capture system and control device are operated at all times that the line is in operation, and the owner or operator demonstrates compliance with this section through the applicable coating analysis and capture system and control device efficiency test methods specified in sections 42. and 44.; and

~~b~~6.1.2. The control device is equipped with the applicable monitoring equipment specified in subsection 44.2., and the monitoring equipment is installed, calibrated, operated, and maintained according to the vendor's specifications at all times the control device is in use.

§45-21-7. Circumvention.

7.1. No owner or operator subject to this regulation shall build, erect, install, or use any article, machine, equipment, process, or other method the use of which conceals emissions that would otherwise constitute non-compliance with an applicable regulation.

7.2. Subsection 7.1. includes, but is not limited to, the use of gaseous diluents to achieve compliance, and the piecemeal carrying out of an operation to avoid coverage by a regulation that applies only to operations larger than a specified size.

7.3. No owner or operator subject to this regulation shall discharge or dispose of VOCs or material containing VOCs to surface impoundments, pits, wastewater treatment facilities, or sewers for the purpose of circumventing any provision or requirement of this regulation.

§45-21-8. Handling, Storage, and Disposal of Volatile Organic Compounds (VOCs).

8.1. No owner or operator of a facility subject to the requirements of sections 11. through 20. and section 34. shall cause, allow, or permit the disposal of any volatile organic compound (VOC), or of any

materials containing any VOC, at that facility in any 1 day in a manner that would permit the evaporation of more than 6.8 kilograms (kg) (15 pounds [lb]) of VOC into the ambient air. This provision does not apply to coating sources that are specifically exempt from the emission limitations of sections 11. through 20. and section 34.

8.2. No owner or operator of a facility subject to this section 8. shall use open containers for the storage or disposal of cloth or paper impregnated with VOCs that are used for surface preparation, cleanup, or coating removal.

8.3. No owner or operator of a facility subject to this section 8. shall store in open containers spent or fresh VOC to be used for surface preparation, cleanup or coating removal.

8.4. No owner or operator of a facility subject to this section 8. shall use VOCs for the cleanup of spray equipment unless equipment is used to collect the cleaning compounds and to minimize their evaporation to the atmosphere.

§45-21-9. Compliance Programs, Registration, Variance, Permits, Enforceability.

9.1. ~~Extended compliance programs and schedules. — For sources as a result of this regulation that are required to make major process changes and/or major capital expenditures, as determined by the Director, an acceptable program to comply with this regulation shall be developed and submitted to the Director by the owner and/or operator of such source within 180 days of May 31, 1993. The program shall include the dates for ordering, receiving, installation, and start up of necessary equipment. All such programs shall be embodied in an order or permit and approved by the Director. All such orders or permits shall contain a schedule and timetable for compliance certification, including increments of progress which will require compliance with the applicable requirements as expeditiously as practicable, but not later than December 31, 1996. Reserved.~~

9.2. Registration. -- ~~Within 30 days after May 31, 1993 a~~ All persons owning and/or operating a source subject to this regulation ~~and not previously registered shall have registered such source(s) with the Director~~ Secretary: Provided, that on a case by case basis, the Director may extend the 30 day period for the registration of sources to allow sources up to one hundred eighty (180) days after May 31, 1993 to register. The information required for registration shall be determined and provided in the manner specified by the ~~Director~~ Secretary. Registration forms shall be requested from the ~~Director~~ Secretary by the owner or operator of such source(s).

9.3. Variance. — ~~If the provisions of this regulation cannot be satisfied due to repairs made as the result of routine maintenance or in response to the unavoidable malfunction of equipment, the Director may permit the owner or operator of a source subject to this regulation to continue to operate said source for periods not to exceed 10 days upon specific application to the Director. Such application shall be made prior to the making of repairs and, in the case of equipment malfunction, within 24 hours of the equipment malfunction. Where repairs will take in excess of 10 days to complete, additional time periods may be granted by the Director. In cases of major equipment failure, additional time periods may be granted by the Director provided a corrective program has been submitted by the owner or operator and approved by the Director. During such time periods, the owner or operator shall take all reasonable and practicable steps to minimize VOC emissions. Reserved.~~

9.4. Permits. -- ~~After May 31, 1993, a~~ No person shall construct or modify any source subject to this regulation without first obtaining a permit for such construction or modification pursuant to regulations of the ~~Director~~ Secretary.

9.5. Enforceability. -- For the purpose of federal enforceability of the provisions of this regulation which are adopted and incorporated in the state implementation plan, references to the ~~Director~~ Secretary shall also mean the Administrator of the U.S. EPA.

9.6. Severability. -- The provisions of this regulation are severable and if any provision or part thereof shall be held invalid, unconstitutional, or inapplicable to any person or circumstance, such invalidity, unconstitutionality, or inapplicability shall not affect or impair any of the remaining provisions, sections,

or parts of this regulation or their application to any persons and circumstances.

§45-21-10. [RESERVED]

§45-21-11. Can Coating.

11.1. Applicability.

~~a~~11.1.1. This section 11. applies to any can coating line used to apply the following coatings: sheet base coat, exterior base coat, interior body spray coat, overvarnish, side seam spray coat, exterior end coat, and end sealing compound coat.

~~b~~11.1.2. The emission limits of this section 11. do not apply to coating lines within any facility whose actual emissions without control devices from all can coating lines within the facility are less than 6.8 kilograms (kg) (15 pounds [lb]) volatile organic compound (VOC) per day. An owner or operator of a facility whose emissions are below this applicability threshold shall comply with the certification, recordkeeping, and reporting requirements of ~~section 11.7.a~~ subdivision 11.7.1.

11.2. Definitions. -- As used in this section 11., all terms not defined herein shall have the meaning given them in section 2.

~~a~~11.2.1. "Can" means any cylindrical single walled container, with or without a top, cover, spout, and/or handle, that is manufactured from metal sheets thinner than 29 gauge (0.0141 inches [in]) and into which solid or liquid materials are packaged.

~~b~~11.2.2. "Can coating line" means a coating line in which any coating is applied onto the surface of cans or can components.

~~c~~11.2.3. "End sealing compound coat" means a compound applied onto can ends that functions as a gasket when the end is assembled onto the can.

~~d~~11.2.4. "Exterior base coat" means a coating applied to the exterior of a two-piece can body to provide protection to the metal or to provide background for any lithographic or printing operation.

~~e~~11.2.5. "Interior body spray coat" means a coating applied to the interior of the can body to provide a protective film between the product and the can.

~~f~~11.2.6. "Overvarnish" means a coating applied directly over a design coating or directly over ink to reduce the coefficient of friction, to provide gloss, and to protect the finish against abrasion and corrosion.

~~g~~11.2.7. "Sheet basecoat" means a coating applied to metal in sheet form to serve as either the exterior or interior of two-piece or three-piece can bodies or can ends.

~~h~~11.2.8. "Side-seam spray coat" means a coating applied to the seam of a three-piece can.

~~i~~11.2.9. "Three-piece can" means a can that is made by rolling a rectangular sheet of metal into a cylinder that is soldered, welded, or cemented at the seam and attaching two ends.

~~j~~11.2.10. "Two-piece can" means a can whose body and one end are formed from a shallow cup and to which the other end is later attached.

~~k~~11.2.11. "Two-piece can exterior end coat" means a coating applied by roller coating or spraying to the exterior end of a two-piece can to provide protection to the metal.

11.3. Standards.

~~a~~11.3.1. No owner or operator of a can coating line subject to this section 11. shall cause or allow the application of any coating on that line with VOC content, as applied, that exceeds the limits in ~~sections~~

~~11.3.a.1. through 11.3.a.6~~ Table 45-21A.

		kg/L	lb/gal ^a
1.	Sheet basecoat and sheet overvarnish	0.34	2.8
2.	Exterior basecoat and overvarnish (two-piece can)	0.34	2.8
3.	Interior body spray coat	0.51	4.2
4.	Two-piece can exterior end coat	0.51	4.2
5.	Side seam spray coat	0.66	5.5
6.	End sealing compound coat	0.44	3.7

Table 45-21A

<u>Emission Limit</u>	<u>kg/L</u>	<u>lb/gal^a</u>
<u>Sheet basecoat and sheet overvarnish</u>	<u>0.34</u>	<u>2.8</u>
<u>Exterior basecoat and overvarnish (two-piece can)</u>	<u>0.34</u>	<u>2.8</u>
<u>Interior body spray coat</u>	<u>0.51</u>	<u>4.2</u>
<u>Two-piece can exterior end coat</u>	<u>0.51</u>	<u>4.2</u>
<u>Side seam spray coat</u>	<u>0.66</u>	<u>5.5</u>
<u>End sealing compound coat</u>	<u>0.44</u>	<u>3.7</u>

^a VOC content values are expressed in units of mass of VOC (kg, lb) per volume of coating (liter [L], gallon [gal]), minus water and exempt compounds, as applied.

~~b~~11.3.2. As an alternative to compliance with the emission limits in ~~section 11.3.a.~~ subdivision 11.3.1., an owner or operator of a can coating line may comply with the requirements of this section 11. by meeting the requirements of subsection 11.4. or subsection 11.5.

11.4. Daily-weighted average limitations. -- No owner or operator of a can coating line subject to this section 11. shall apply coatings on that line, during any day, whose daily-weighted average VOC content, calculated in accordance with the procedure specified in section 43., exceeds the emission limits in ~~section 11.3.a.~~ subdivision 11.3.1.

11.5. Control devices. -- An owner or operator of a can coating line subject to this section 11. shall comply with this section 11. by:

~~a~~11.5.1. Installing and operating a capture system on that line;

~~b~~11.5.2. Installing and operating a control device on that line;

~~c~~11.5.3. Determining for each day the overall emission reduction efficiency needed to demonstrate compliance. The overall emission reduction needed for a day is the lesser of the value calculated according to the procedure in subsection 43.2. for that day or 95 percent; and

~~d~~11.5.4. Demonstrating each day that the overall emission reduction efficiency achieved for that day, as determined in subsection 44.3., is greater than or equal to the overall emission reduction efficiency required for that day.

11.6. Test methods. -- The test methods found in sections 41. through 44. shall be used to determine compliance with this section 11.

11.7. Recordkeeping and reporting.

~~a~~11.7.1. An owner or operator of a can coating line that is exempt from the emission limitations in subsection 11.3. shall comply with the certification, recordkeeping, and reporting requirements in subsection 4.2.

~~b~~11.7.2. An owner or operator of a can coating line subject to this section 11. and complying with subsection 11.3. by the use of complying coatings shall comply with the certification, recordkeeping, and reporting requirements in subsection 4.3.

~~e~~11.7.3. An owner or operator of a can coating line subject to this section 11. and complying with subsection 11.4. by daily-weighted averaging shall comply with the certification, recordkeeping, and reporting requirements in subsection 4.4.

~~d~~11.7.4. An owner or operator of a can coating line subject to this section 11. and complying with subsection 11.5. by the use of control devices shall comply with the testing, reporting, and recordkeeping requirements in subsection 4.5.

§45-21-12. Coil Coating.

12.1. Applicability.

~~a~~12.1.1. This section 12. applies to any coil coating operation.

~~b~~12.1.2. This section 12. does not apply to any coating operation within a facility whose actual emissions without control devices from all coil coating operations within the facility are less than 6.8 kilograms (kg) (15 pounds [lb]) volatile organic compound (VOC) per day. An owner or operator of a facility whose emissions are below this applicability threshold shall comply with the certification, recordkeeping, and reporting requirements of ~~section 12.7-a~~ subdivision 12.7.1.

12.2. Definitions. -- As used in this section 12., all terms not defined herein shall have the meaning given them in section 2.

~~a~~12.2.1. "Coil" means any continuous metal strip with thickness of 0.15 millimeter (mm) (0.006 inch [in]) or more that is packaged in a roll or coil.

~~b~~12.2.2. "Coil coating line" means a web coating line where coating is applied to coil.

~~e~~12.2.3. "Coil coating operation" means a coating application station and its associated flashoff area, drying area, and/or drying oven wherein coating is applied and dried or cured on a coil coating line. A coil coating line may include more than one coil coating operation.

12.3. Standards.

~~a~~12.3.1. No owner or operator of a coil coating operation subject to this section 12. shall cause or allow the application of any coating on that operation with VOC content in excess of 0.31 kilograms per liter (kg/L) (2.6 pounds per gallon [lb/gal]) of coating, minus water and exempt compounds, as applied.

~~b~~12.3.2. As an alternative to compliance with the emission limit in ~~section 12.3-a~~ subdivision 12.3.1., an owner or operator of a coil coating operation may meet the requirements of subsection 12.4. or subsection 12.5.

12.4. Daily-weighted average limitation. -- No owner or operator of a coil coating operation subject to this section 12. shall apply coatings on that operation, during any day, whose daily-weighted average VOC content, calculated in accordance with the procedure specified in section 43., exceeds the emission limit in ~~section 12.3.a~~ subdivision 12.3.1.

12.5. Control devices. -- An owner or operator of a coil coating operation subject to this section 12. shall comply with this section 12. by:

~~a~~12.5.1. Installing and operating a capture system on that operation;

~~b~~12.5.2. Installing and operating a control device on that operation;

~~c~~12.5.3. Determining for each day the overall emission reduction efficiency needed to demonstrate compliance. The overall emission reduction needed for a day is the lesser of the value calculated according to the procedure in subsection 43.2. for that day or 95 percent; and

~~d~~12.5.4. Demonstrating each day that the overall emission reduction efficiency achieved for that day, as determined in subsection 44.3., is greater than or equal to the overall emission reduction efficiency required for that day.

12.6. Test methods. -- The test methods found in sections 41. through 44. shall be used to determine compliance with this section 12.

12.7. Recordkeeping and reporting.

~~a~~12.7.1. An owner or operator of a coil coating operation that is exempt from the emission limitations in subsection 12.3. shall comply with the certification, recordkeeping, and reporting requirements in subsection 4.2.;

~~b~~12.7.2. An owner or operator of a coil coating operation subject to this section 12. and complying with subsection 12.3. by the use of complying coatings shall comply with the certification, recordkeeping, and reporting requirements in subsection 4.3.

~~c~~12.7.3. An owner or operator of a coil coating operation subject to this section 12. and complying with subsection 12.4. by daily-weighted averaging shall comply with the certification, recordkeeping, and reporting requirements in subsection 4.4.

~~d~~12.7.4. An owner or operator of a coil coating operation subject to this section 12. and complying with subsection 12.5. by the use of control devices shall comply with the testing, reporting, and recordkeeping requirements in subsection 4.5.

§45-21-13. Paper Coating

13.1. Applicability.

~~a~~13.1.1. This section 13. applies to any paper coating operation.

~~b~~13.1.2. This section 13. does not apply to any coating operation within a facility whose actual emissions without control devices from all paper coating operations within the facility are less than 6.8

kilograms (kg) (15 pounds [lb]) volatile organic compound (VOC) per day. An owner or operator of a facility whose emissions are below this applicability threshold shall comply with the certification, recordkeeping, and reporting requirements of ~~section 13.7.a~~ subdivision 13.7.1.

13.2. Definitions. -- As used in this section 13., all terms not defined herein shall have the meaning given them in section 2.

~~a~~13.2.1. "Paper coating line" means a web coating line where coating is applied to paper. Printing presses are not considered paper coating lines. Products produced on a paper coating line include, but are not limited to, adhesive tapes and labels, book covers, post cards, office copier paper, drafting paper, and pressure sensitive tapes. Paper coating lines include, but are not limited to, application by impregnation or saturation or by the use of roll, knife, or rotogravure coating.

~~b~~13.2.2. "Paper coating operation" means a coating application station and its associated flashoff area, drying area, and/or oven wherein coating is applied and dried or cured on a paper coating line. A paper coating line may include more than one paper coating operation.

13.3. Standards.

~~a~~13.3.1. No owner or operator of a paper coating operation subject to this section 13. shall cause, allow, or permit the application of any coating on that operation with VOC content in excess of 0.35 kilograms per liter (kg/L) (2.9 pounds per gallon [lb/gal]) of coating, minus water and exempt compounds, as applied.

~~b~~13.3.2. As an alternative to compliance with the emission limit in ~~section 13.3.a~~ subdivision 13.3.1., an owner or operator of a paper coating operation subject to this section 13. may meet the requirements of subsection 13.4. or subsection 13.5.

13.4. Daily-weighted average limitation. -- No owner or operator of a paper coating operation subject to this section 13. shall apply coatings on that operation, during any day, whose daily-weighted average VOC content, calculated in accordance with the procedure specified in section 43., exceeds the emission limit in ~~section 13.3.a~~ subdivision 13.3.1.

13.5. Control devices. -- An owner or operator of a paper coating operation subject to this section 13. shall comply with this section 13. by:

~~a~~13.5.1. Installing and operating a capture system on that operation;

~~b~~13.5.2. Installing and operating a control device on that operation;

~~c~~13.5.3. Determining for each day the overall emission reduction efficiency needed to demonstrate compliance. The overall emission reduction needed for a day is the lesser of the value calculated according to the procedure in subsection 43.2. for that day or 95 percent; and

~~d~~13.5.4. Demonstrating each day that the overall emission reduction efficiency achieved for that day, as determined in subsection 44.3., is greater than or equal to the overall emission reduction efficiency required for that day.

13.6. Test methods. -- The test methods found in sections 41. through 44. shall be used to determine compliance with this section 13.

13.7. Recordkeeping and reporting.

~~a~~13.7.1. An owner or operator of a paper coating operation that is exempt from the emission limitations in subsection 13.3. shall comply with the certification, recordkeeping, and reporting requirements in subsection 4.2.

~~b~~13.7.2. An owner or operator of a paper coating operation subject to this section 13. and complying with subsection 13.3. by the use of complying coatings shall comply with the certification, recordkeeping, and reporting requirements in subsection 4.3.

~~c~~13.7.3. An owner or operator of a paper coating operation subject to this section 13. and complying with subsection 13.4. by daily-weighted averaging shall comply with the certification, recordkeeping, and reporting requirements in subsection 4.4.

~~d~~13.7.4. An owner or operator of a paper coating operation subject to this section 13. and complying with subsection 13.5. by the use of control devices shall comply with the testing, reporting, and recordkeeping requirements in subsection 4.5.

§45-21-14. Fabric Coating.

14.1. Applicability.

~~a~~14.1.1. This section 14. applies to any fabric coating operation.

~~b~~14.1.2. This section 14. does not apply to any coating operation within a facility whose actual emissions without control devices from all fabric coating operations within the facility are less than 6.8 kilograms (kg) (15 pounds [lb]) volatile organic compound (VOC) per day. An owner or operator of a facility whose emissions are below this applicability threshold shall comply with the certification, recordkeeping, and reporting requirements of ~~section 14.7.a~~ subdivision 14.7.1.

14.2. Definitions. -- As used in this section 14., all terms not defined herein shall have the meaning given them in section 2.

~~a~~14.2.1. "Fabric coating line" means a web coating line where coating is applied to fabric. A fabric printing line is not considered a fabric coating line.

~~b~~14.2.2. "Fabric coating operation" means a coating application station and its associated flashoff area, drying area, and/or oven wherein coating is applied and dried or cured in a fabric coating line. A fabric coating line may include more than one fabric coating operation.

14.3. Standards.

~~a~~14.3.1. No owner or operator of a fabric coating operation subject to this section 14. shall cause or allow the application of any coating on that operation with VOC content in excess of 0.35 kilogram per liter (kg/L) (2.9 pounds per gallon [lb/gal]) of coating, minus water and exempt compounds, as applied.

~~b~~14.3.2. As an alternative to compliance with the emission limit in ~~section 14.3.a~~ subdivision 14.3.1., an owner or operator of a fabric coating operation subject to this section 14. may meet the requirements of subsection 14.4. or subsection 14.5.

14.4. Daily-weighted average limitation. -- No owner or operator of a fabric coating operation subject to this section 14. shall apply coatings on that operation, during any day, whose daily-weighted average VOC content, calculated in accordance with the procedure specified in section 43., exceeds the emission limit in ~~section 14.3.~~ subdivision 14.3.1.

14.5. Control devices. -- An owner or operator of a fabric coating operation subject to this section 14. shall comply with this section 14. by:

~~a~~14.5.1. Installing and operating a capture system on that operation;

~~b~~14.5.2. Installing and operating a control device on that operation;

~~c~~14.5.3. Determining for each day the overall emission reduction efficiency needed to demonstrate compliance. The overall emission reduction needed for a day is the lesser of the value calculated according to the procedure in subsection 43.2. of this regulation for that day or 95 percent; and

~~d~~14.5.4. Demonstrating each day that the overall emission reduction efficiency achieved for that day, as determined in subsection 44.3., is greater than or equal to the overall emission reduction efficiency required for that day.

14.6. Test methods. -- The test methods found in sections 41. through 44. shall be used to determine compliance with this section 14.

14.7. Recordkeeping and reporting.

~~a~~14.7.1. An owner or operator of a fabric coating operation that is exempt from the emission limitations in subsection 14.3. shall comply with the certification, recordkeeping, and reporting requirements in subsection 4.2.

~~b~~14.7.2. An owner or operator of a fabric coating operation subject to this section 14. and complying with subsection 14.3. by the use of complying coatings shall comply with the certification, recordkeeping, and reporting requirements in subsection 4.3.

~~c~~14.7.3. An owner or operator of a fabric coating operation subject to this section 14. and complying with subsection 14.4. by daily-weighted averaging shall comply with the certification, recordkeeping, and reporting requirements in subsection 4.4.

~~d~~14.7.4. An owner or operator of a fabric coating operation subject to this section 14. and complying with subsection 14.5 by the use of control devices shall comply with the testing, reporting, and recordkeeping requirements in subsection 4.5.

§45-21-15. Vinyl Coating.

15.1. Applicability.

~~a~~15.1.1. This section 15. applies to any vinyl coating line.

~~b~~15.1.2. This section 15. does not apply to any coating line within a facility whose actual emissions without control devices from all vinyl coating lines within the facility are less than 6.8 kilograms (kg) (15

pounds [lb]) volatile organic compound (VOC) per day. An owner or operator of a facility whose emissions are below this applicability threshold shall comply with the certification, recordkeeping, and reporting requirements of ~~section 15.7.a~~ subdivision 15.7.1.

15.2. Definitions. -- As used in this section 15., all terms not defined herein shall have the meaning given them in section 2.

15.2.1. "Vinyl coating line" means a web coating line where a decorative, functional, or protective coating is applied to a continuous web of vinyl or vinyl-coated fabric. Lines used for coating and/or printing on vinyl and coating and/or printing on urethane are considered vinyl coating lines.

15.3. Standards.

~~a~~15.3.1. No owner or operator of a vinyl coating line subject to this section 15. shall cause or allow the application of any coating on that line with VOC content in excess of 0.45 kilograms per liter (kg/L) (3.8 pounds per gallon [lb/gal]) of coating, minus water and exempt compounds, as applied.

~~b~~15.3.2. As an alternative to compliance with the emission limit in ~~section 15.3.a~~ subdivision 15.3.1., an owner or operator of a vinyl coating line subject to this section 15. may meet the requirements of subsection 15.4. or subsection 15.5.

15.4. Daily-weighted average limitation. -- No owner or operator of a vinyl coating line subject to this section 15. shall apply coatings on any such line, during any day, whose daily-weighted average VOC content, calculated in accordance with the procedure specified in section 43., exceeds the emission limit in ~~section 15.3.a~~ subdivision 15.3.1.

15.5. Control devices. -- An owner or operator of a vinyl coating line subject to this section 15. shall comply with this section 15. by:

~~a~~15.5.1. Installing and operating a capture system on that line;

~~b~~15.5.2. Installing and operating a control device on that line;

~~c~~15.5.3. Determining for each day the overall emission reduction efficiency needed to demonstrate compliance. The overall emission reduction needed for a day is the lesser of the value calculated according to the procedure in subsection 43.2. for that day or 95 percent; and,

~~d~~15.5.4. Demonstrating each day that the overall emission reduction efficiency achieved for that day, as determined in subsection 44.3., is greater than or equal to the overall emission reduction efficiency required for that day.

15.6. Test methods. -- The test methods found in sections 41. through 44. shall be used to determine compliance with this section 15.

15.7. Recordkeeping and reporting.

~~a~~15.7.1. An owner or operator of a vinyl coating line that is exempt from the emission limitations in subsection 15.3. shall comply with the certification, recordkeeping, and reporting requirements in subsection 4.2.

~~b~~15.7.2. An owner or operator of a vinyl coating line subject to this section 15. and complying with subsection 15.3. by the use of complying coatings shall comply with the certification, recordkeeping, and reporting requirements in subsection 4.3.

~~e~~15.7.3. An owner or operator of a vinyl coating line subject to this section 15. and complying with subsection 15.4. by daily-weighted averaging shall comply with the certification, recordkeeping, and reporting requirements in subsection 4.4.

~~d~~15.7.4. An owner or operator of a vinyl coating line subject to this section 15. and complying with subsection 15.5. by the use of control devices shall comply with the testing, reporting, and recordkeeping requirements in subsection 4.5.

§45-21-16. Coating of Metal Furniture.

16.1. Applicability.

~~a~~16.1.1. This section 16. applies to any metal furniture coating line.

~~b~~16.1.2. This section 16. does not apply to any coating line within a facility whose actual emissions without control devices from all metal furniture coating lines within the facility are less than 6.8 kilograms (kg) (15 pounds [lb]) volatile organic compound (VOC) per day. An owner or operator of a facility whose emissions are below this applicability threshold shall comply with the certification, recordkeeping, and reporting requirements of ~~section 16.7.a~~ subdivision 16.7.1.

16.2. Definitions. -- As used in this section 16., all terms not defined herein shall have the meaning given them in section 2.

~~a~~16.2.1. "Metal furniture" means any furniture piece made of metal or any metal part that will be assembled with other metal, wood, fabric, plastic, or glass parts to form a furniture piece including, but not limited to, tables, chairs, waste baskets, beds, desks, lockers, benches, shelving, file cabinets, and room dividers. This definition shall not apply to the coating of miscellaneous metal parts or products.

~~b~~16.2.2. "Metal furniture coating line" means a coating line in which a protective, decorative, or functional coating is applied onto the surface of metal furniture.

16.3. Standards.

~~a~~16.3.1. No owner or operator of a metal furniture coating line subject to this section 16. shall cause or allow the application of any coating on that line with VOC content in excess of 0.36 kilograms per liter (kg/L) (3.0 pounds per gallon [lb/gal]) of coating, minus water and exempt compounds, as applied.

~~b~~16.3.2. As an alternative to compliance with the emission limit in ~~section 16.3.a~~ subdivision 16.3.1., an owner or operator of a metal furniture coating line may meet the requirements of subsection 16.4. or subsection 16.5.

16.4. Daily-weighted average limitation. -- No owner or operator of a metal furniture coating line subject to this section 16. shall apply coatings on that line, during any day, whose daily-weighted average VOC content, calculated in accordance with the procedure specified in section 43., exceeds the emission limit in ~~section 16.3.a~~ subdivision 16.3.1.

16.5. Control devices. -- An owner or operator of a metal furniture coating line subject to this section 16. shall comply with this section 16. by:

~~a~~16.5.1. Installing and operating a capture system on that line;

~~b~~16.5.2. Installing and operating a control device on that line;

~~c~~16.5.3. Determining for each day the overall emission reduction efficiency needed to demonstrate compliance. The overall emission reduction needed for a day is the lesser of the value calculated according to the procedure in subsection 43.2. for that day or 95 percent; and

~~d~~16.5.4. Demonstrating each day that the overall emission reduction efficiency achieved for that day, as determined in subsection 44.3., is greater than or equal to the overall emission reduction efficiency required for that day.

16.6. Test methods. -- The test methods found in sections 41. through 44. shall be used to determine compliance with this section.

16.7. Recordkeeping and reporting.

~~a~~16.7.1. An owner or operator of a metal furniture coating line that is exempt from the emission limitations in subsection 16.3. shall comply with the certification, recordkeeping, and reporting requirements in subsection 4.2.

~~b~~16.7.2. An owner or operator of a metal furniture coating line subject to this section 16. and complying with subsection 16.3. by the use of complying coatings shall comply with the certification, recordkeeping, and reporting requirements in subsection 4.3.

~~c~~16.7.3. An owner or operator of a metal furniture coating line subject to this section 16. and complying with subsection 16.4. by daily-weighted averaging shall comply with the certification, recordkeeping, and reporting requirements in subsection 4.4.

~~d~~16.7.4. An owner or operator of a metal furniture coating line subject to this section 16. and complying with subsection 16.5. by the use of control devices shall comply with the testing, reporting, and recordkeeping requirements in subsection 4.5.

§45-21-17. Coating of Large Appliances.

17.1. Applicability.

~~a~~17.1.1. This section 17. applies to any large appliance coating line.

~~b~~17.1.2. This section 17. does not apply to:

~~1~~17.1.2.a. Any coating line within a facility whose actual emissions without control devices from all large appliance coating lines within the facility are less than 6.8 kilograms (kg) (15 pounds [lb]) volatile organic compound (VOC) per day; or,

~~2~~17.1.2.b. The use of quick-drying lacquers for repair of scratches and nicks that occur during assembly, provided that the volume of coating does not exceed 0.95 liter (L) (0.25 gallon [gal]) in any one

8-hour period.

~~e~~17.1.3. An owner or operator of a facility whose emissions are below this applicability threshold shall comply with the certification, recordkeeping, and reporting requirements of ~~section 17.7.a~~ subdivision 17.7.1.

17.2. Definitions. -- As used in this section 17., all terms not defined herein shall have the meaning given them in section 2.

~~a~~17.2.1. "Large appliance" means any residential or commercial washer, dryer, range, refrigerator, freezer, water heater, dishwasher, trash compactor, air conditioner, or other similar products under Standard Industrial Classification Code 363.

~~b~~17.2.2. "Large appliance coating line" means a coating line in which any protective, decorative, or functional coating onto the surface of component metal parts (including, but not limited to, doors, cases, lids, panels, and interior parts) of large appliances.

17.3. Standards.

~~a~~17.3.1. No owner or operator of a large appliance coating line subject to this section 17. shall cause or allow the application of any coating on that line with VOC content in excess of 0.34 kilograms per liter (kg/L) (2.8 pounds per gallon [lb/gal]) of coating, minus water and exempt compounds, as applied.

~~b~~17.3.2. As an alternative to compliance with the emission limit in ~~section 17.3.a~~ subdivision 17.3.1., an owner or operator of a large appliance coating line subject to this section 17. may meet the requirements of subsection 17.4. or 17. 5.

17.4. Daily-weighted average limitation. -- No owner or operator of a large appliance coating line subject to this section 17. shall apply coatings on that line, during any day, whose daily-weighted average VOC content, calculated in accordance with the procedure specified in section 43., exceeds the emission limit in ~~section 17.3.a~~ subdivision 17.3.1.

17.5. Control devices. -- An owner or operator of a large appliance coating line subject to this section 17. shall comply with this section 17. by:

~~a~~17.5.1. Installing and operating a capture system on that line;

~~b~~17.5.2. Installing and operating a control device on that line;

~~c~~17.5.3. Determining for each day the overall emission reduction efficiency needed to demonstrate compliance. The overall emission reduction needed for a day is the lesser of the value calculated according to the procedure in subsection 43.2. for that day or 95 percent; and

~~d~~17.5.4. Demonstrating each day that the overall emission reduction efficiency achieved for that day, as determined in subsection 44.3., is greater than or equal to the overall emission reduction efficiency required for that day.

17.6. Test methods. -- The test methods found in sections 41. through 44. shall be used to determine compliance with this section 17.

17.7. Recordkeeping and reporting.

~~a~~17.7.1. An owner or operator of a large appliance coating line that is exempt from the emission limitations in subsection 17.3. shall comply with the certification, recordkeeping, and reporting requirements in subsection 4.2.

~~b~~17.7.2. An owner or operator of a large appliance coating line subject to this section 17. and complying with subsection 17.3. by the use of complying coatings shall comply with the certification, recordkeeping, and reporting requirements in subsection 4.3.

~~c~~17.7.3. An owner or operator of a large appliance coating line subject to this section 17. and complying with subsection 17.4. by daily-weighted averaging shall comply with the certification, recordkeeping, and reporting requirements in subsection 4.4.

~~d~~17.7.4. An owner or operator of a large appliance coating line subject to this section 17. and complying with subsection 17.5. by the use of control devices shall comply with the testing, reporting, and recordkeeping requirements in subsection 4.5.

§45-21-18. Coating of Magnet Wire.

18.1. Applicability.

~~a~~18.1.1. This section 18. applies to any magnet wire coating line.

~~b~~18.1.2. This section 18. does not apply to any coating line within a facility whose emissions without control devices from all magnet wire coating lines within the facility are less than 6.8 kilograms (kg) (15 pounds [lb]) volatile organic compound (VOC) per day. An owner or operator of a facility whose emissions are below this applicability threshold shall comply with the certification, recordkeeping, and reporting requirements of ~~section 18.7-a~~ subdivision 18.7.1.

18.2. Definitions. -- As used in this section 18., all terms not defined herein shall have the meaning given them in section 2.

18.2.1. "Magnet wire coating line" means a coating line in which an electrically insulating varnish or enamel is applied onto the surface of wire for use in electrical machinery.

18.3. Standards.

~~a~~18.3.1. No owner or operator of a magnet wire coating line subject to this section 18. shall cause or allow the use of any coating with VOC content in excess of 0.20 kilograms per liter (kg/L) (1.7 pounds per gallon [lb/gal]) of coating, minus water and exempt compounds, as applied.

~~b~~18.3.2. As an alternative to compliance with the emission limit in ~~section 18.3-a~~ subdivision 18.3.1., an owner or operator of a magnet wire coating line subject to this section 18. may meet the requirements of subsection 18.4. or subsection 18.5.

18.4. Daily-weighted average limitation. -- No owner or operator of a magnet wire coating line subject to this section 18. shall apply coatings on that line, during any day, whose daily-weighted average VOC content, calculated in accordance with the procedure specified in section 43., exceeds the emission limit in ~~section 18.3-a~~ subdivision 18.3.1.

18.5. Control devices. -- An owner or operator of a magnet wire coating line subject to this section 18. shall comply with this section 18. by:

~~a~~18.5.1. Installing and operating a capture system on that line;

~~b~~18.5.2. Installing and operating a control device on that line;

~~c~~18.5.3. Determining for each day the overall emission reduction efficiency needed to demonstrate compliance. The overall emission reduction needed for a day is the lesser of the value calculated according to the procedure in subsection 43.2. for that day or 95 percent; and

~~d~~18.5.4. Demonstrating each day that the overall emission reduction efficiency achieved for that day, as determined in subsection 44.3., is greater than or equal to the overall emission reduction efficiency required for that day.

18.6. Test methods. -- The test methods found in sections 41. through 44. shall be used to determine compliance with this section 18.

18.7. Recordkeeping and reporting.

~~a~~18.7.1. An owner or operator of a magnet wire coating line that is exempt from the emission limitations in subsection 18.3. shall comply with the certification, recordkeeping, and reporting requirements in subsection 4.2.

~~b~~18.7.2. An owner or operator of a magnet wire coating line subject to this section 18. and complying with subsection 18.3. by the use of complying coatings shall comply with the certification, recordkeeping, and reporting requirements in subsection 4.3.

~~c~~18.7.3. An owner or operator of a magnet wire coating line subject to this section 18. and complying with subsection 18.4. by daily-weighted averaging shall comply with the certification, recordkeeping, and reporting requirements in subsection 4.4.

~~d~~18.7.4. An owner or operator of a magnet wire coating line subject to this section 18. and complying with subsection 18.5. by the use of control devices shall comply with the testing, reporting, and recordkeeping requirements in subsection 4.5.

§45-21-19. Coating of Miscellaneous Metal Parts.

19.1. Applicability.

~~a~~19.1.1. This section 19. applies to any miscellaneous metal parts and products coating line.

~~b~~19.1.2. This section 19. does not apply to the coating of the following metal parts and products that are covered by other sections of this regulation:

~~+19.1.2.a.~~ Automobiles and light-duty trucks;

~~219.1.2.b.~~ Metal cans;

~~3~~19.1.2.c. Flat metal sheets and strips in the form of rolls or coils;

~~4~~19.1.2.d. Magnet wire for use in electrical machinery;

~~5~~19.1.2.e. Metal furniture; and

~~6~~19.1.2.f. Large appliances.

~~e~~19.1.3. This section 19. does not apply to:

~~+~~19.1.3.a. Exterior of completely assembled aircraft;

~~2~~19.1.3.b. Exterior of major aircraft subassemblies, if approved by the ~~Director~~ Secretary and the U.S. EPA;

~~3~~19.1.3.c. Automobile and truck refinishing;

~~4~~19.1.3.d. Customized top coating of automobiles and trucks, if production is less than 35 vehicles per day;

~~5~~19.1.3.e. Exterior of completely assembled marine vessels; or

~~6~~19.1.3.f. Exterior of major marine vessel subassemblies if approved by the ~~Director~~ Secretary and the U.S. EPA.

~~d~~19.1.4. The emission limits in this section 19. do not apply to any coating line within a facility whose actual emissions without control devices from all miscellaneous metal part and products coating lines within the facility are less than 6.8 kilograms (kg) (15 pounds [lb]) volatile organic compound (VOC) per day. An owner or operator of a facility whose emissions are below this applicability threshold shall comply with the certification, recordkeeping, and reporting requirements of ~~section 19.7.a~~ subdivision 19.7.1.

19.2. Definitions. -- As used in this section 19., all terms not defined herein shall have the meaning given them in section 2.

~~a~~19.2.1. "Air-dried coating" means a coating that is dried by the use of air or forced warm air at temperatures up to 90EC (194EF).

~~b~~19.2.2. "Clear coating" means a coating that (1) either lacks color and opacity or is transparent and (2) uses the surface to which it is applied as a reflective base or undertone color.

~~e~~19.2.3. "Drum" means any cylindrical metal shipping container of 13- to 110-gallon capacity.

~~d~~19.2.4. "Extreme environmental conditions" means any of the following: the weather all of the time, temperatures frequently above 95EC (203EF), detergents, abrasive and scouring agents, solvents, corrosive atmospheres, or similar environmental conditions.

~~e~~19.2.5. "Extreme performance coatings" means coatings intended for exposure to extreme environmental conditions.

~~§~~19.2.6. "Miscellaneous metal parts and products coating line" means a coating line in which a coating is applied to any miscellaneous metal parts and products.

~~§~~19.2.7. "Miscellaneous parts and products" means any metal part or metal product, even if attached to or combined with a nonmetal part or product. Miscellaneous metal parts and products include, but are not limited to:

~~4~~19.2.7.a. Large farm machinery (harvesting, fertilizing and planting machines, tractors, combines, etc.);

~~2~~19.2.7.b. Small farm machinery (lawn and garden tractors, lawn mowers, rototillers, etc.);

~~3~~19.2.7.c. Small appliances (fans, mixers, blenders, crock pots, dehumidifiers, vacuum cleaners, etc.);

~~4~~19.2.7.d. Commercial machinery (office equipment, computers and auxiliary equipment, typewriters, calculators, vending machines, etc.);

~~5~~19.2.7.e. Industrial machinery (pumps, compressors, conveyor components, fans, blowers, transformers, etc.);

~~6~~19.2.7.f. Fabricated metal products (metal covered doors, frames, etc.);

~~7~~19.2.7.g. Any other industrial category that coats metal parts or products under the Standard Industrial Classification Codes of Major Group 33 (primary metal industries), Major Group 34 (fabricated metal products), Major Group 35 (nonelectric machinery), Major Group 36 (electrical machinery), Major Group 37 (transportation equipment), Major Group 38 (miscellaneous instruments), and Major Group 39 (miscellaneous manufacturing industries); and

~~§~~19.2.7.h. Application of underbody antichip materials (e.g., underbody plastisol) and coating application operations other than prime, primer surfacer, topcoat, and final repair operations at automobile and light-duty truck assembly plants.

~~h~~19.2.8. "Pail" means any cylindrical metal shipping container of 1- to 12-gallon capacity and constructed of 29-gauge and heavier material.

~~i~~19.2.9. "Refinishing" means the repainting of used equipment.

19.3. Standards.

~~a~~19.3.1. No owner or operator of a miscellaneous metal parts and products coating line subject to this section 19. shall cause or allow the application of any coating with VOC content in excess of the emission limits in ~~sections 19.3.a.1. through 19.3.a.5~~ Table 45-21B.

	kg/L ^a	lb/gal ^a
1. Clear coating	0.52	4.3
2. Steel pail & drum interior coating	0.52	4.3

3. Air-dried coating	0.42	3.5
4. Extreme performance coating	0.42	3.5
5. All other coatings	0.36	3.0

Table 45-21B

<u>Emission Limit</u>	<u>kg/L^a</u>	<u>lb/gal^a</u>
<u>Clear coating</u>	<u>0.52</u>	<u>4.3</u>
<u>Steel pail & drum interior coating</u>	<u>0.52</u>	<u>4.3</u>
<u>Air-dried coating</u>	<u>0.42</u>	<u>3.5</u>
<u>Extreme performance coating</u>	<u>0.42</u>	<u>3.5</u>
<u>All other coatings</u>	<u>0.36</u>	<u>3.0</u>

^a VOC content values are expressed in units of mass of VOC (kg, lb) per volume of coating (liter [L], gallon [gal]), minus water and exempt compounds, as applied.

~~b~~19.3.2. If more than one emission limit in ~~section 19.3.a.~~ subdivision 19.3.1. applies to a specific coating, then the least stringent emission limit shall be applied.

~~e~~19.3.3. As an alternative to compliance with the emission limits in ~~section 19.3.a.~~ subdivision 19.3.1., an owner or operator of a miscellaneous metal parts and products coating line may meet the requirements of subsection 19.4. or subsection 19.5.

19.4. No owner or operator of a miscellaneous metal parts and products coating line that applies multiple coatings, all of which are subject to the same numerical emission limitation within ~~section 19.3.a.~~ subdivision 19.3.1., during the same day (e.g., all coatings used on the line are subject to 0.42 kg/L [3.5 lb/gal]), shall apply coatings on that line during any day whose daily-weighted average VOC content calculated in accordance with the procedure specified in section 43. exceeds the coating VOC content limit corresponding to the category of coating used.

19.5. Control devices. -- An owner or operator of a miscellaneous metal parts and products coating line subject to this section 19. shall comply with this section 19. by:

~~a~~19.5.1. Installing and operating a capture system on that line;

~~b~~19.5.2. Installing and operating a control device on that line;

~~e~~19.5.3. Determining for each day the overall emission reduction efficiency needed to demonstrate compliance. The overall emission reduction needed for a day is the lesser of the value calculated according to the procedure in subsection 43.2. for that day or 95 percent; and

~~d~~19.5.4. Demonstrating each day that the overall emission reduction efficiency achieved for that day, as determined in subsection 44.3., is greater than or equal to the overall emission reduction efficiency required for that day.

19.6. Test methods. -- The test methods found in sections 41. through 44. shall be used to determine compliance with this section 19.

19.7. Recordkeeping and reporting.

~~a~~19.7.1. An owner or operator of a miscellaneous metal parts and products coating line that is exempt from the emission limitations in subsection 19.3 shall comply with the certification, recordkeeping, and reporting requirements in subsection 4.2.

~~b~~19.7.2. An owner or operator of a miscellaneous metal parts and products coating line subject to this section 19. and complying with subsection 19.3. by the use of complying coatings shall comply with the certification, recordkeeping, and reporting requirements in subsection 4.3.

~~e~~19.7.3. An owner or operator of a miscellaneous metal parts and products coating line subject to this section 19. and complying with subsection 19.4. by daily-weighted averaging shall comply with the certification, recordkeeping, and reporting requirements in subsection 4.4.

~~d~~19.7.4. An owner or operator of a miscellaneous metal parts and products coating line subject to this section 19. and complying with subsection 19.5. by the use of control devices shall comply with the testing, reporting, and recordkeeping requirements in subsection 4.5.

§45-21-20. Coating of Flat Wood Paneling.

20.1. Applicability.

~~a~~20.1.1. This section 20. applies to all flat wood paneling coating lines.

~~b~~20.1.2. This section 20. does not apply to:

~~1~~20.1.2.a. Any coating line within any facility whose actual emissions without control devices from all flat wood paneling coating lines within the facility are less than 6.8 kilograms (kg) (15 pounds [lb]) volatile organic compound (VOC) per day; or

~~2~~20.1.2.b. Class I hardwood panels, particle board used in furniture, insulation board, exterior siding, tileboard, and softwood plywood coating lines.

~~e~~20.1.3. An owner or operator of a facility whose emissions are below the applicability threshold in ~~section 20.1.b.1.~~ paragraph 20.1.2.a. shall comply with the certification, recordkeeping, and reporting requirements of subsection 20.6.

20.2. Definitions. -- As used in this section 20., all terms not defined herein shall have the meaning given them in section 2.

~~a~~20.2.1. "Class II hardboard paneling finish" means finishes that meet the specifications of Voluntary Product Standard PS-59-73 as approved by the American National Standards Institute.

~~b~~20.2.2. "Flat wood paneling coating line" means a coating line used to apply and dry or cure coatings applied to flat wood panels including: printed interior panels made of hardwood plywood and thin particle board (i.e., less than or equal to 0.64 centimeters (cm) (0.25 inches [in]) in thickness); natural finish hardwood plywood panels; and hardwood paneling with Class II finishes.

~~e~~20.2.3. "Hardboard" is a panel manufactured primarily from inter-felted ligno-cellulosic fibers that are consolidated under heat and pressure in a hot press.

~~d~~20.2.4. "Hardwood plywood" is plywood whose surface layer is a veneer of hardwood.

~~e~~20.2.5. "Natural finish hardwood plywood panels" means panels whose original grain pattern is enhanced by essentially transparent finishes frequently supplemented by fillers and toners.

~~f~~20.2.6. "Printed interior panels" means panels whose grain or natural surface is obscured by fillers and basecoats upon which a simulated grain or decorative pattern is printed.

~~g~~20.2.7. "Thin particleboard" is a manufactured board that is 0.64 cm (0.25 in) or less in thickness made of individual wood particles that have been coated with a binder and formed into flat sheets by pressure.

~~h~~20.2.8. "Tileboard" means paneling that has a colored, waterproof surface coating.

20.3. Standards.

~~a~~20.3.1. No owner or operator of a flat wood paneling coating line subject to this section 20. shall cause or allow VOC emissions from the coating of any flat wood paneling product in excess of the emission limits in ~~sections 20.3.a.1. through 20.3.a.3~~ Table 45-21C.

	kg/100 m ^{2a}	lb/1,000 ft ^{2a}
1. Printed interior panels	2.9	6.0
2. Natural finish hardwood plywood panels	5.8	12.0
3. Class II finish on hardwood panels	4.8	10.0

Table 45-21C

<u>Emission limit</u>	<u>kg/100 m^{2a}</u>	<u>lb/1,000 ft^{2a}</u>
<u>Printed interior panels</u>	<u>2.9</u>	<u>6.0</u>
<u>Natural finish hardwood plywood panels</u>	<u>5.8</u>	<u>12.0</u>
<u>Class II finish on hardwood panels</u>	<u>4.8</u>	<u>10.0</u>

^a VOC content values are expressed in units of mass of VOC (kg, lb) per area of surface to which the coating is applied (100 square meters (m²), 1,000 square feet (ft²)).

~~b~~20.3.2. As an alternative to compliance with the emission limits in ~~section 20.3.a.~~ subdivision 20.3.1., an owner or operator of a flat wood paneling coating line may meet the requirements of subsection 20.4 or meet the daily-weighted average limitation of ~~section 20.5.a~~ subdivision 20.5.1.

20.4. Control devices. -- An owner or operator of a flat wood paneling coating line subject to this section 20. shall comply with this section 20. by:

~~a~~20.4.1. Installing and operating a capture system on that line;

~~b~~20.4.2. Installing and operating a control device on that line;

~~c~~20.4.3. Determining for each day the overall emission reduction efficiency needed to demonstrate compliance. The overall emission reduction needed for a day is the lesser of the value calculated according

to the procedure in ~~section 20.5.b.~~ subdivision 20.5.2. for that day or 95 percent; and

~~d20.4.4.~~ demonstrating each day that the overall emission reduction efficiency achieved for that day, as determined in subsection 44.3., is greater than or equal to the overall emission reduction efficiency required for that day.

20.5. Test methods. -- The test methods found in sections 41., 42., 44. and this subsection 20.5 shall be used to determine compliance.

~~a20.5.1.~~ Daily-weighted average. -- The daily-weighted average VOC content, in units of mass of VOC per area of surface coated, of the coatings used on a day on a flatwood paneling coating line shall be calculated using the following equation:

$$VOC_w = \frac{\sum_{i=1}^n V_i C_i}{a}$$

~~w~~Where:

VOC_w = The daily-weighted average VOC content of the coatings, as applied, used on a coating line in units of kilograms of VOC per 100 square meters of surface area coated (kg VOC/100 m²) (pounds of VOC per 1,000 square feet of surface area coated (lb VOC/1,000 ft²))

n = The number of different coatings, as applied, each day on a coating line;

V_i = The volume of each coating applied each day on a coating line in units of L (gal); and

C_i = The VOC content of each coating, as applied, each day on a coating line in units of kg VOC/L of coating (lb VOC/gal); and

a = Surface area coated per day in terms of m²/100 or surface area coated per day in terms of ft²/1000.

~~b20.5.2.~~ Calculate the required overall emission reduction efficiency of the control system for the day according to the following equation:

$$E = \left[\frac{(VOC_a - S)}{VOC_a} \right] \times 100$$

~~w~~Where:

E = The required overall emission reduction efficiency of the control system for the day;

VOC_a = (1) The maximum VOC content of the coatings, as applied, used each day on a coating line in units of kg VOC/100 m² of surface area coated (lb VOC/1,000 ft²), as determined by the applicable test methods and procedures specified in section 42.; or (2) The daily-weighted average VOC content, as applied, of the coatings used each day on a coating line in units of kg VOC/100 m² of surface area coated (lb VOC/1,000 ft²), as determined by the applicable test methods and procedures specified in section 42. and the procedure in ~~section 20.5.a.~~ subdivision 20.5.1.; and

S = VOC emission limitation in terms of kg VOC/100 m² of surface area coated (lb VOC/1,000 ft²).

20.6. Recordkeeping and reporting.

~~a20.6.1.~~ Requirements for coating sources exempt from emission limitations. -- An owner or operator of a flat wood paneling coating line that is exempt from the emission limitations of ~~section 20.3.a.~~

subdivision 20.3.1. because combined VOC emissions from all coating lines at the facility are below the applicability threshold specified in ~~section 20.1.b.~~ subdivision 20.1.2., before the application of capture systems and control devices, shall comply with the following:

~~20.6.1.a.~~ Certification. -- ~~By one year from May 31, 1993,~~ The owner or operator of a facility referenced in ~~section 20.6.a.~~ subdivision 20.6.1. shall certify to the ~~Director~~ Secretary that the facility is exempt by providing the following:

~~A~~20.6.1.a.1. The name and location of the facility;

~~B~~20.6.1.a.2. The address and telephone number of the person responsible for the facility;

~~C~~20.6.1.a.3. A declaration that the facility is exempt from the emission limitations of ~~section 20.3.a.~~ subdivision 20.3.1. because combined VOC emissions from all coating lines and at the facility are below the applicability threshold before the application of capture systems and control devices; and

~~D~~20.6.1.a.4. Calculations of the daily-weighted average that demonstrate that the combined VOC emissions from all coating lines at the facility for a day representative of current maximum production levels are 6.8 kilograms (kg) (15 pounds [lb]) or less before the application of capture systems and control devices. The following equation shall be used to calculate total VOC emissions for that day:

$$T = \sum_{i=1}^n C_i D_i a$$

~~w~~Where:

T = Total VOC emissions from coating lines and operations at the facility before the application of capture systems and control devices in units of kg/day (lb/day);

n = Number of different coatings applied on each coating line or each operation at the facility;

i = Subscript denoting an individual coating;

C = Mass of VOC per area of surface to which the coating is applied in units of kg/100 m² (lb/1,000 ft²);

D = The surface area coated at the facility each day in units of m²/day (ft²/day);

a = Constant = 100 m² if using metric units; and = 1,000 ft² if using english units.

~~220.6.1.b.~~ Recordkeeping. -- ~~On and after one year from May 31, 1993,~~ The owner or operator of a facility referenced in ~~section 20.6.a.~~ subdivision 20.6.1. shall collect and record all of the following information each day and maintain the information at the facility for a period of 3 years:

~~A~~20.6.1.b.1. The name and identification number of each coating, as applied;

~~B~~20.6.1.b.2. The volume of coating (i) (minus water and exempt compounds), as applied, used each day, and the surface area coated each day; and

~~C~~20.6.1.b.3. The total VOC emissions at the facility, as calculated using the equation under ~~section 20.6.a.1.D~~ subparagraph 20.6.1.a.4.

~~320.6.1.c.~~ Reporting. -- ~~On and after one year from May 31, 1993,~~ The owner or operator of a facility referenced in ~~section 20.6.a.~~ subdivision 20.6.1. shall notify the ~~Director~~ Secretary of any record

showing that combined VOC emissions from all coating lines and operations at the coating facility exceed 6.8 kg (15 lb) on any day, before the application of capture systems and control devices. A copy of such record shall be sent to the ~~Director~~ Secretary within 30 days after the exceedance occurs.

~~b~~20.6.2. Requirements for coating sources using complying coatings. -- An owner or operator of a flat wood paneling subject to this section 20. and complying with subsection 20.3. by means of the use of complying coatings shall comply with the following:

~~1~~20.6.2.a. Certification. -- ~~By one year after May 31, 1993, or on~~ Upon startup of a new coating line, or upon changing the method of compliance for an existing subject coating line from daily-weighted averaging or control devices to the use of complying coatings, the owner or operator of a coating line referenced in ~~section 20.6.b.~~ subdivision 20.6.2. shall certify to the ~~Director~~ Secretary that the coating line is or will be in compliance with the requirements of the applicable section of this regulation ~~on and after one year after May 31, 1993, or on~~ and after the initial startup date. Such certification shall include:

~~A~~20.6.2.a.1. The name and location of the facility;

~~B~~20.6.2.a.2. The address and telephone number of the person responsible for the facility;

~~C~~20.6.2.a.3. Identification of subject sources;

~~D~~20.6.2.a.4. The name and identification number of each coating, as applied, on each coating line; and

~~E~~20.6.2.a.5. The mass of VOC per area of surface to which the coating is applied in terms of kg/100 m² (lb/1,000 ft²) and the surface area coated.

~~2~~20.6.2.b. Recordkeeping. -- On and after ~~one year from May 31, 1993, or on and after the~~ initial startup date, the owner or operator of a coating line referenced in ~~section 20.6.b.~~ subdivision 20.6.2. and complying by the use of complying coatings shall collect and record all of the following information each day for each coating line and maintain the information at the facility for a period of 3 years:

~~A~~20.6.2.b.1. The name and identification number of each coating, as applied, on each coating line or operation; and

~~B~~20.6.2.b.2. The mass of VOC per area of surface to which the coating is applied for each coating used each day on each coating line in terms of kg/100 m² (lb/1,000 ft²).

~~3~~20.6.2.c. Reporting. -- ~~On and after one year from May 31, 1993, t~~ The owner or operator of a flatwood paneling coating line referenced in ~~section 20.6.b.~~ subdivision 20.6.2. shall notify the ~~Director~~ Secretary in the following instances:

~~A~~20.6.2.c.1. Any record showing use of any non-complying coatings shall be reported by sending a copy of such record to the ~~Director~~ Secretary within 30 days following that use; and

~~B~~20.6.2.c.2. At least 30 calendar days before changing the method of compliance from the use of complying coatings to daily-weighted averaging or control devices, the owner or operator shall comply with all requirements of ~~section 20.6.c.1.~~ paragraph 20.6.3.a. or ~~section 20.6.d.1.~~ paragraph 20.6.4.a., respectively. Upon changing the method of compliance from the use of complying coatings to daily-weighted averaging or control devices, the owner or operator shall comply with all requirements of

the section of this regulation applicable to the coating line referenced in ~~section 20.6.b~~ subdivision 20.6.2.

~~e~~20.6.3. Requirements for coating sources using daily-weighted averaging. -- Any owner or operator of a coating line subject to the limitations of this section 20. and complying by means of daily-weighted averaging on that line shall comply with the following:

~~1~~20.6.3.a. Certification. -- ~~By one year after May 31, 1993, or a~~ Upon startup of a new flat wood paneling coating line, or upon changing the method of compliance for an existing flat wood paneling coating line from the use of complying coatings or control devices to daily-weighted averaging, the owner or operator of the flat wood paneling coating line shall certify to the ~~Director~~ Secretary that the coating line or operation is or will be in compliance with the requirements of the applicable section of this ~~regulation~~ rule ~~on and after one year after May 31, 1993, or on and after the initial startup date.~~ Such certification shall include:

~~A~~20.6.3.a.1. The name and location of the facility;

~~B~~20.6.3.a.2. The address and telephone number of the person responsible for the facility;

~~C~~20.6.3.a.3. Identification of subject sources;

~~D~~20.6.3.a.4. The name and identification number of each coating line which will comply by means of daily-weighted averaging;

~~E~~20.6.3.a.5. The instrument or method by which the owner or operator will accurately measure or calculate the volume of each coating (minus water and exempt compounds), as applied, used each day on each coating line;

~~F~~20.6.3.a.6. The method by which the owner or operator will create and maintain records each day as required in ~~section 20.6.e.2.~~ paragraph 20.6.3.b.;

~~G~~20.6.3.a.7. An example of the format in which the records required in ~~section 20.6.e.2.~~ paragraph 20.6.3.b. will be kept; and

~~H~~20.6.3.a.8. Calculation of the daily-weighted average, using the procedure in ~~section 20.5.a.~~ subdivision 20.5.1., for a day representative of current or projected maximum production levels.

~~2~~20.6.3.b. Recordkeeping. -- On and after ~~one year from May 31, 1993, or on and after the~~ initial startup date, the owner or operator of a flat wood paneling coating line referenced in ~~section 20.6.e.~~ subdivision 20.6.3. and complying by means of daily-weighted averaging shall collect and record all of the following information each day for each coating line and maintain the information at the facility for a period of 3 years:

~~A~~20.6.3.b.1. The name and identification number of each coating, as applied, on each coating line;

~~B~~20.6.3.b.2. The mass of VOC per volume (minus water and exempt compounds) and the volume of each coating (minus water and exempt compounds), as applied, used each day on each coating line; and

~~C~~20.6.3.b.3. The daily-weighted average VOC content of all coatings, as applied, on each

coating line calculated according to the procedure in ~~section 20.5.a~~ subdivision 20.5.1.

~~3~~20.6.3.c. Reporting. -- ~~On and after one year from May 31, 1993, t~~ The owner or operator of a subject coating line referenced in ~~section 20.6.e.~~ subdivision 20.6.3. shall notify the ~~Director~~ Secretary in the following instances:

~~A~~20.6.3.c.1. Any record showing noncompliance with the applicable daily-weighted average requirements shall be reported by sending a copy of the record to the ~~Director~~ Secretary within 30 days following the occurrence, except as provided in subsection 9.3.

~~B~~20.6.3.c.2. At least 30 calendar days before changing the method of compliance from daily-weighted averaging to the use of complying coatings or control devices, the owner or operator shall comply with all requirements of ~~section 20.6.b.1.~~ paragraph 20.6.2.a. or ~~section 20.6.d.1.~~ paragraph 20.6.4.a., respectively. Upon changing the method of compliance from daily-weighted averaging to the use of complying coatings or control devices, the owner or operator shall comply with all requirements of the section of this regulation applicable to the coating line referenced in ~~section 20.6.e.~~ subdivision 20.6.3.

~~d~~20.6.4. Requirements for coating sources using control devices. -- Any owner or operator of a flat wood paneling coating line subject to this section 20. and complying with subsection 20.3. by the use of control devices shall comply with the following:

~~1~~20.6.4.a. Testing of control equipment. -- ~~By one year from May 31, 1993, or u~~ Upon startup of a new coating line, or upon changing the method of compliance for an existing coating line from the use of complying coatings or daily-weighted averaging to control devices, the owner or operator of the subject coating line shall perform a compliance test. Testing shall be performed pursuant to the procedures in sections 41., 42., 44., and subsection 20.5. The owner or operator of the subject coating line shall submit to the ~~Director~~ Secretary the results of all tests and calculations necessary to demonstrate that the subject coating line is or will be in compliance with the applicable section of this regulation ~~on and after one year from May 31, 1993, or~~ on and after the initial startup date.

~~2~~20.6.4.b. Recordkeeping. -- On and after ~~one year from May 31, 1993, or on and after~~ the initial startup date, the owner or operator of a coating line referenced in ~~section 20.6.d.~~ subdivision 20.6.4. shall collect and record all of the following information each day for each coating line and maintain the information at the facility for a period of 3 years:

~~A~~20.6.4.b.1. The name and identification number of each coating used on each coating line;

~~B~~20.6.4.b.2. The mass of VOC per area of surface to which the coating is applied in terms of kg/100 m² (lb/1,000 ft²), and the surface area coated each day on each coating line;

~~C~~20.6.4.b.3. The maximum VOC content (mass of VOC per area of surface to which the coating is applied in terms of kg/100 m² (lb/1,000 ft²) or the daily-weighted average VOC content (mass of VOC per area of surface to which the coating is applied in terms of kg/100 m² (lb/1,000 ft²) of the coatings used each day on each coating line;

~~D~~20.6.4.b.4. The required overall emission reduction efficiency for each day for each coating line as determined in ~~section 20.4.e.~~ subdivision 20.4.3.;

~~E~~20.6.4.b.5. The actual overall emission reduction efficiency achieved for each day for

each coating line as determined in subsection 44.3.;

~~F~~20.6.4.b.6. Control device monitoring data;

~~G~~20.6.4.b.7. A log of operating time for the capture system, control device, monitoring equipment, and the associated coating line;

~~H~~20.6.4.b.8. A maintenance log for the capture system, control device, and monitoring equipment detailing all routine and non-routine maintenance performed including dates and duration of any outages;

~~I~~20.6.4.b.9. For thermal incinerators, all 3-hour periods of operation in which the average combustion temperature was more than 28EC (50EF) below the average combustion temperature during the most recent performance test that demonstrated that the facility was in compliance;

~~J~~20.6.4.b.10. For catalytic incinerators, all 3-hour periods of operation in which the average temperature of the process vent stream immediately before the catalyst bed is more than 28EC (50EF) below the average temperature of the process vent stream during the most recent performance test that demonstrated that the facility was in compliance; and

~~K~~20.6.4.b.11. For carbon adsorbers, all 3-hour periods of operation during which the average VOC concentration or reading of organics in the exhaust gases is more than 20 percent greater than the average exhaust gas concentration or reading measured by the organics monitoring device during the most recent determination of the recovery efficiency of the carbon adsorber that demonstrated that the facility was in compliance.

~~3~~20.6.4.c. Reporting. -- ~~On and after one year from May 31, 1993, t~~ The owner or operator of a subject coating line referenced in ~~section 20.6.d.~~ subdivision 20.6.4. shall notify the ~~Director~~ Secretary in the following instances:

~~A~~20.6.4.c.1. Any record showing noncompliance with the applicable requirements for control devices shall be reported by sending a copy of the record to the ~~Director~~ Secretary within 30 days following the occurrence, except as provided in subsection 9.3.

~~B~~20.6.4.c.2. At least 30 calendar days before changing the method of compliance from control devices to the use of complying coatings or daily-weighted averaging, the owner or operator shall comply with all requirements of ~~section 20.6.b.1.~~ paragraph 20.6.2.a. or ~~section 20.6.e.1.~~ paragraph 20.6.3.a., respectively. Upon changing the method of compliance from control devices to the use of complying coatings or daily-weighted averaging, the owner or operator shall comply with all requirements of the section of this regulation applicable to the coating line referenced in ~~section 20.6.d.~~ subdivision 20.6.4.

§45-21-21. Bulk Gasoline Plants.

21.1. Applicability.

~~a~~21.1.1. This section 21. applies to all unloading, loading, and storage operations at bulk gasoline plants and to any tank truck delivering or receiving gasoline at a bulk gasoline plant.

~~b~~21.1.2. The following are subject only to the requirements of ~~sections 21.2.e.7., 21.2.e.8., and~~

~~21.2.e.9.~~ paragraphs 21.2.3.g., 21.2.3.h., and 21.2.3.i.:

~~421.1.2.a.~~ Any stationary storage tank of 2,082 liters (L) (550 gallons [gal]) capacity or less notwithstanding section 8.; or

~~221.1.2.b.~~ Any bulk gasoline plant with an average daily throughput of gasoline of less than 15,000 L (4,000 gal) on a 30-day rolling average provided that records are maintained according to the requirements in ~~section 21.4.a~~ subdivision 21.4.1.

21.2. Standards.

~~a21.2.1.~~ Each bulk gasoline plant subject to this section 21. shall be equipped with a vapor balance system between the gasoline storage vessel and the incoming gasoline tank truck designed to capture and transfer vapors displaced during filling of the gasoline storage vessel. These lines shall be equipped with fittings that are vapor tight and that automatically and immediately close upon disconnection.

~~b21.2.2.~~ Each bulk gasoline plant subject to this section 21. shall be equipped with a vapor balance system between the gasoline storage vessel and the outgoing gasoline tank truck designed to capture and transfer vapors displaced during the loading of the gasoline tank truck. The vapor balance system shall be designed to prevent any vapors collected at one loading rack from passing to another loading rack.

~~e21.2.3.~~ Each owner or operator of a bulk gasoline plant subject to this section 21. shall act to ensure that the procedures in ~~sections 21.2.e.1. through 21.2.e.9.~~ paragraphs 21.2.3.a. through 21.2.3.i. are followed during all loading, unloading, and storage operations:

~~421.2.3.a.~~ The vapor balance system required by ~~sections 21.2.a. and 21.2.b.~~ subdivisions 21.2.1. and 21.2.2. shall be connected between the tank truck and storage vessel during all gasoline transfer operations;

~~221.2.3.b.~~ All storage vessel openings, including inspection hatches and gauging and sampling devices shall be vapor tight when not in use;

~~321.2.3.c.~~ The gasoline tank truck compartment hatch covers shall not be opened during the gasoline transfer;

~~421.2.3.d.~~ All vapor balance systems shall be designed and operated at all times to prevent gauge pressure in the gasoline tank truck from exceeding 450 millimeters (mm) (18 inches [in]) of water and vacuum from exceeding 150 mm (5.9 in) of water during product transfers;

~~521.2.3.e.~~ No pressure vacuum relief valve in the bulk gasoline plant vapor balance system shall begin to open at a system pressure of less than 450 mm (18 in) of water or at a vacuum of less than 150 mm (5.9 in) of water;

~~621.2.3.f.~~ All product transfers involving gasoline tank trucks at bulk gasoline plants subject to this section 21. shall be limited to vapor-tight gasoline tank trucks;

~~721.2.3.g.~~ Filling of storage vessels shall be restricted to submerged fill;

~~821.2.3.h.~~ Loading of outgoing gasoline tank trucks shall be limited to submerged fill; and

~~9~~21.2.3.i. Owners or operators of bulk gasoline plants or owners or operators of tank trucks shall observe all parts of the transfer and shall discontinue transfer if any leaks are observed.

~~d~~21.2.4. Each calendar month, the vapor balance systems described in ~~sections 21.2.a. and 21.2.b.~~ subdivisions 21.2.1. and 21.2.2. and each loading rack handling gasoline shall be inspected for liquid or vapor leaks during gasoline transfer operations. For purposes of this ~~section 21.2.d.~~ subdivision 21.2.4., detection methods incorporating sight, sound, or smell are acceptable. Each leak that is detected shall be repaired within 15 calendar days after it is detected.

21.3. Compliance provisions. -- A pressure measurement device (liquid manometer, magnehelic gauge, or equivalent instrument) capable of measuring 500 mm (20 in) of water gauge pressure within a ± 2.5 mm (0.098 in) of water precision, shall be calibrated and installed on the bulk gasoline plant vapor balance system at a pressure tap, located as close as possible to the connection with the gasoline tank truck, to allow determination of compliance with ~~section 21.2.e.4~~ paragraph 21.2.3.d.

21.4. Recordkeeping. -- The owner or operator of a facility subject to this section 21. shall maintain the following records in a readily accessible location for at least 3 years and shall make these records available to the ~~Director~~ Secretary upon verbal or written request.

~~a~~21.4.1. All bulk gasoline plants subject to this section 21. shall maintain daily records showing the quantity of all gasoline loaded into gasoline tank trucks.

~~b~~21.4.2. A record of each monthly leak inspection required under ~~section 21.2.d.~~ subdivision 21.2.4. shall be kept on file at the plant. Inspection records shall include, as a minimum, the following information:

~~1~~21.4.2.a. Date of inspection;

~~2~~21.4.2.b. Findings (may indicate no leaks discovered or location, nature, and severity of each leak);

~~3~~21.4.2.c. Leak determination method;

~~4~~21.4.2.d. Corrective action (date each leak repaired; reasons for any repair interval in excess of 15 days); and

~~5~~21.4.2.e. Inspector name and signature.

21.5. Reporting. -- The owner or operator of any facility containing sources subject to this section 21. shall comply with the requirements in subsections 5.1. and 5.2.

§45-21-22. Bulk Gasoline Terminals.

22.1. Applicability. -- This section 22. applies to all loading racks at any bulk gasoline terminal which deliver liquid product into gasoline tank trucks.

22.2. Standards for loading racks at bulk gasoline terminals.

~~a~~22.2.1. Each loading rack at a bulk gasoline terminal subject to this section 22. shall be equipped with a vapor collection system designed to collect the total volatile organic compound (VOC) vapors

displaced from tank trucks during product loading.

~~b~~22.2.2. Each vapor collection system shall be designed to prevent any VOC vapors collected at one loading rack from passing to another loading rack.

~~c~~22.2.3. Loadings of liquid product into gasoline tank trucks shall be limited to vapor-tight gasoline tank trucks using the following procedures:

~~1~~22.2.3.a. The owner or operator shall obtain the vapor tightness documentation described in ~~sections 22.4.a. and 22.4.b.~~ subdivisions 22.4.1. and 22.4.2. for each gasoline tank truck that is to be loaded at the bulk gasoline terminal loading rack subject to this section 22.;

~~2~~22.2.3.b. The owner or operator shall require the tank identification number to be recorded as each gasoline tank truck is loaded at the terminal;

~~3~~22.2.3.c. The owner or operator shall cross-check each tank identification number obtained in ~~section 22.2.e.2.~~ paragraph 22.2.3.b. with the file of tank vapor tightness documentation within 2 weeks after the corresponding tank is loaded;

~~4~~22.2.3.d. The terminal owner or operator shall notify the owner or operator of each non-vapor-tight gasoline tank truck loaded at the bulk gasoline terminal loading rack that the truck is not vapor tight subject to this section 22. within 3 weeks after the loading has occurred; and

~~5~~22.2.3.e. The terminal owner or operator shall take steps to assure that the non-vapor-tight gasoline tank truck will not be reloaded at the bulk gasoline terminal loading rack subject to this section 22. until vapor tightness documentation for that tank is obtained.

~~d~~22.2.4. The terminal owner or operator shall act to ensure that loadings of gasoline tank trucks at the bulk gasoline terminal loading rack subject to this section 22. are made only into tanks equipped with vapor collection equipment that is compatible with the terminal's vapor collection system.

~~e~~22.2.5. The terminal owner or operator shall act to ensure that the terminal's and the tank truck's vapor collection systems are connected during each loading of a gasoline tank truck at the bulk gasoline terminal loading racks subject to this section 22.

~~f~~22.2.6. The vapor collection and liquid loading equipment shall be designed and operated to prevent gauge pressure in the delivery tank from exceeding 4,500 Pascals (Pa) (450 millimeters [mm] of water) during product loading. This level is not to be exceeded when measured by the procedures specified in ~~section 22.3.a~~ subdivision 22.3.1.

~~g~~22.2.7. No pressure-vacuum vent in the bulk gasoline terminal's vapor collection system shall begin to open at a system pressure less than 4,500 Pa (450 mm of water).

~~h~~22.2.8. Each calendar month, the vapor collection system, the vapor control system, and each loading rack handling gasoline shall be inspected during the loading of gasoline tank trucks for total organic compounds liquid or vapor leaks. For purposes of this ~~section 22.2.h.~~ subdivision 22.2.8., detection methods incorporating sight, sound, or smell are acceptable. Each detection of a leak shall be recorded and the source of the leak repaired within 15 calendar days after it is detected.

~~i~~22.2.9. The total organic compounds emissions to the atmosphere from the vapor collection

system due to the loading of liquid product into gasoline tank trucks shall not exceed 80 milligrams per liter (mg/L) (4.7 grains per gallon [grain/gal]) of gasoline loaded.

j22.2.10. Loading of outgoing gasoline tank trucks shall be restricted to the use of submerged fill.

22.3. Test methods and procedures.

~~a22.3.1.~~ For the purpose of determining compliance with ~~section 22.2.f.~~ subdivision 22.2.6., the following procedures shall be used:

~~+22.3.1.a.~~ Calibrate and install a pressure measurement device (liquid manometer, magnehelic gauge, or equivalent instrument) capable of measuring up to 500 mm (20 inches [in]) of water gauge pressure with $\nabla 2.5$ mm (0.098 in) of water precision.

22.3.1.b. Connect the pressure measurement device to a pressure tap in the terminal's vapor collection system, located as close as possible to the connection with the gasoline tank truck.

322.3.1.c. During the performance test, record the pressure every 5 minutes (min) while a gasoline tank truck is being loaded, and record the highest instantaneous pressure that occurs during each loading. Every loading position shall be tested at least once during the performance test.

~~b22.3.2.~~ For the purpose of determining compliance with the mass emission limitations of ~~section 22.2.i.~~ subdivision 22.2.9., the following reference methods shall be used:

~~+22.3.2.a.~~ For the determination of volume at the exhaust vent:

A22.3.2.a.1. Method 2B of 40 CFR Part 60, Appendix A for combustion vapor processing systems; and

B22.3.2.a.2. Method 2A of 40 CFR Part 60, Appendix A for all other vapor processing systems; and

22.3.2.b. For the determination of total organic compounds concentration at the exhaust vent, Method 25A or 25B of 40 CFR Part 60, Appendix A. The calibration gas shall be either propane or butane.

~~e22.3.3.~~ Immediately prior to a performance test required for determination of compliance with ~~sections 22.2.f. and 22.2.i.~~ subdivisions 22.2.6. and 22.2.9., all potential sources of vapor and liquid leakage in the terminal's vapor collection system equipment shall be monitored for leaks according to the procedures in section 46. The monitoring shall be conducted only while a gasoline tank truck is being loaded. A reading of 10,000 parts per million by volume (ppmv) or greater as methane shall be considered a leak. All leaks shall be repaired prior to conducting the performance test.

~~d22.3.4.~~ The test procedure for determining compliance with ~~sections 22.2.f. and 22.2.i.~~ subdivisions 22.2.6. and 22.2.9. is as follows:

~~+22.3.4.a.~~ All testing equipment shall be prepared and installed as specified in the appropriate test methods.

22.3.4.b. The time period for a performance test shall be not less than 6 hours, during which at least 300,000 liters (L) (80,000 gallons [gal]) of gasoline are loaded. If the throughput criterion is not

met during the initial 6 hours, the test may be either continued until the throughput criterion is met, or resumed the next day with another complete 6 hours of testing. As much as possible, testing shall be conducted during the 6-hour period in which the highest throughput normally occurs.

322.3.4.c. For intermittent vapor processing systems:

A22.3.4.c.1. The vapor holder level shall be recorded at the start of the performance test. The end of the performance test shall coincide with a time when the vapor holder is at its original level; and

B22.3.4.c.2. At least two startups and shutdowns of the vapor processor shall occur during the performance test. If this does not occur under automatically controlled operation, the system shall be manually controlled.

422.3.4.d. The volume of gasoline dispensed during the performance test period at all loading racks whose vapor emissions are controlled by the vapor processing system being tested shall be determined. This volume may be determined from terminal records or from gasoline dispensing meters at each loading rack.

522.3.4.e. An emission testing interval shall consist of each 5-minute period during the performance test. For each interval:

A22.3.4.e.1. The reading from each measurement instrument shall be recorded; and

B22.3.4.e.2. The volume exhausted and the average total organic compounds concentration in the exhaust vent shall be determined, as specified in the appropriate test method. The average total organic compounds concentration shall correspond to the volume measurement by taking into account the sampling system response time;

622.3.4.f. The mass emitted during each testing interval shall be calculated as follows:

$$M_{ei} = 10^{-6} K V_{es} C_e$$

Where:

M_{ei} = Mass of total organic compounds (milligrams [mg]) emitted during testing interval i

V_{es} = Volume of air-vapor mixture exhausted (cubic meters (m^3)), at standard conditions;

C_e = Total organic compounds concentration (as measured) at the exhaust vent (ppmv);

K = Density of calibration gas (milligrams/cubic meter (mg/m^3)) at standard conditions; which is $= 1.83 \times 10^6$ for propane and $= 2.41 \times 10^6$ for butane; and

s = Standard conditions, 20EC and 760 millimeters of Mercury (mm Hg); and

The total organic compounds mass emissions shall be calibrated as follows:

$$E = \frac{\sum_{i=1}^n M_{ei}}{L}$$

Where:

E = mass of total organic compounds emitted per volume of gasoline loaded, mg/L;

M_{ei} = mass of total organic compounds emitted during testing interval i, mg;

L = total volume of gasoline loaded, L; and

N = number of testing intervals.

~~e~~22.3.5. The owner or operator may adjust the emission results to exclude the methane and ethane content in the exhaust vent by any method approved by the ~~Director~~ Secretary and the U.S. EPA.

22.4. Recordkeeping. -- The owner or operator of a facility subject to the requirements of this section 22. shall maintain the following records in a readily accessible location for at least 3 years and shall make these records available to the ~~Director~~ Secretary upon verbal or written request.

~~a~~22.4.1. The tank truck vapor tightness documentation required under ~~section 22.2.e.~~ subdivision 22.2.3. shall be kept on file at the terminal in a permanent form available for inspection.

~~b~~22.4.2. The documentation file for each gasoline tank truck shall be updated at least once per year to reflect current test results as determined by Method 27 of 40 CFR Part 60, Appendix A. This documentation shall include, as a minimum, the following information:

~~1~~22.4.2.a. Test title: Gasoline Delivery Tank Pressure Test--EPA Reference Method 27;

~~2~~22.4.2.b. Tank owner and address;

~~3~~22.4.2.c. Tank identification number;

~~4~~22.4.2.d. Testing location;

~~5~~22.4.2.e. Date of test;

~~6~~22.4.2.f. Tester name and signature;

~~7~~22.4.2.g. Witnessing inspector, if any: Name, signature, and affiliation; and

~~8~~22.4.2.h. Test results: Actual pressure change in 5 min, mm of water (average for two runs).

~~e~~22.4.3. A record of each monthly leak inspection required under ~~section 22.2.h.~~ subdivision 22.2.8. shall be kept on file at the terminal. Inspection records shall include, as a minimum, the following information:

~~1~~22.4.3.a. Date of inspection;

~~2~~22.4.3.b. Findings (may indicate no leaks discovered or location, nature, and severity of each leak);

~~3~~22.4.3.c. Leak determination method;

~~4~~22.4.3.d. Corrective action (date each leak repaired, reasons for any repair interval in excess of 15 days); and

§22.4.3.e. Inspector name and signature.

~~§22.4.4.~~ The terminal owner or operator shall keep documentation of all notifications required under ~~section 22.2.e.4.~~ paragraph 22.2.3.d. on file at the terminal.

~~§22.4.5.~~ Daily records shall be maintained of gasoline throughput.

22.5. Reporting. -- The owner or operator of any facility containing sources subject to this section 22. shall comply with the requirements in subsections 5.1. and 5.2.

§45-21-23. Gasoline Dispensing Facility--Stage I Vapor Recovery.

23.1. Applicability.

~~§23.1.1.~~ This section 23. applies to any gasoline dispensing facility and the appurtenant equipment necessary to a gasoline dispensing facility.

~~§23.1.2.~~ The following are subject only to ~~section 23.2.a.1.~~ paragraph 23.2.1.a.:

~~423.1.2.a.~~ Any transfer made to a gasoline dispensing facility storage tank that is equipped with a floating roof or its equivalent that has been approved by the U.S. EPA;

~~223.1.2.b.~~ Any stationary gasoline storage container with a capacity that is less than 2,080 liters (L) (550 gallons [gal]) that is used exclusively for the fueling of implements of husbandry;

~~323.1.2.c.~~ Any stationary storage tank with a capacity of less than 7,600 L (2,000 gal) that was constructed prior to January 1, 1979; and

~~423.1.2.d.~~ Any stationary storage tank with a capacity of less than 950 L (250 gal) that was constructed after December 31, 1978.

~~§23.1.3.~~ Any gasoline dispensing facility with a throughput of less than 38,000 L (10,000 gal) per month is subject only to the provisions of ~~sections 23.2.a.1.~~ paragraph 23.2.1.a. and subsection 23.3.

23.2. Standards.

~~§23.2.1.~~ The owner or operator of each gasoline dispensing facility subject to this section 23. shall comply with the following requirements:

~~423.2.1.a.~~ All gasoline storage vessels at gasoline dispensing facilities shall be loaded by submerged fill;

~~223.2.1.b.~~ All vapor lines on the storage vessel shall be equipped with closures that seal upon disconnect;

~~323.2.1.c.~~ A vapor balance system shall be installed with a vapor-tight line from the gasoline storage tank to the gasoline tank truck. The system shall be designed such that the back pressure in the gasoline tank truck does not exceed 450 millimeters (mm) (18 inches [in]) of water pressure or 150 mm (5.9 in) of water vacuum;

~~423.2.1.d.~~ If a gauge well separate from the fill tube is used, it shall be provided with a submerged drop tube that extends to within 150 mm (5.9 in) of the gasoline storage vessel bottom; and

~~§23.2.1.e.~~ Liquid fill connections for all systems shall be equipped with vapor tight caps.

~~b23.2.2.~~ The owner or operator of a gasoline tank truck shall not unload gasoline to a gasoline storage vessel at a gasoline dispensing facility subject to this section 23. unless the following conditions are met:

~~+23.2.2.a.~~ All hoses in the vapor balance system are properly connected;

~~223.2.2.b.~~ Closures that seal upon disconnect are required on the adapters or couplers that attach to the vapor line on the gasoline storage vessel;

~~323.2.2.c.~~ All vapor return hoses, couplers, and adapters used in the gasoline delivery are vapor tight;

~~423.2.2.d.~~ All vapor return equipment are compatible with the vapor balance equipment installed on the gasoline dispensing facility storage vessel;

~~§23.2.2.e.~~ All hatches on the gasoline tank truck are closed and securely fastened; and

~~623.2.2.f.~~ The filling of storage vessels at gasoline dispensing facilities are limited to unloading by vapor-tight gasoline tank trucks. Documentation that the gasoline tank truck has met the specifications of Method 27 of 40 CFR Part 60, Appendix A, shall be carried on the tank truck. This documentation shall include all of the information required under 40 CFR 60.505. In addition, test results shall be included for both the pressure and vacuum tests.

23.3. Recordkeeping. -- The owner or operator of each gasoline dispensing facility subject to this section 23. shall maintain daily records showing the quantity of all gasoline delivered to the site. These records shall be retained for at least 3 years in a readily accessible location and shall be made available to the ~~Director~~ Secretary upon verbal or written request.

23.4. Reporting. -- The owner or operator of any facility containing sources subject to this section 23. shall comply with the requirements in subsections 5.1. and 5.2.

§45-21-24. Leaks from Gasoline Tank Trucks.

24.1. Applicability. -- This section 24. applies to any gasoline tank truck equipped for gasoline vapor collection. No exemptions are allowable based on number of gasoline tank trucks or total quantity of volatile organic compound (VOC) emissions.

24.2. Standards. -- Each owner or operator of a gasoline tank truck subject to this section 24. shall ensure that the gasoline tank truck:

~~a24.2.1.~~ Is a vapor-tight gasoline tank truck as demonstrated by Method 27 of Appendix A of 40 CFR Part 60.

~~b24.2.2.~~ Displays a sticker near the Department of Transportation Certification plate required by 49 CFR 178.340-10b, that:

~~124.2.2.a.~~ Shows the date that the tank truck last passed the test required in ~~section 24.2.a.~~ subdivision 24.2.1.;

~~224.2.2.b.~~ Shows the identification number of the truck tank; and

~~324.2.2.c.~~ Expires not more than 1 year from the date of the leak tight test.

~~424.2.3.~~ Operates with hatches open only during measurement of product level or maintenance.

24.3. Monitoring for leaks from gasoline tank trucks.

~~a24.3.1.~~ The ~~Director~~ Secretary may, at any time, monitor a gasoline tank truck by the method referenced in ~~section 24.3.b.~~ subdivision 24.3.2. to confirm continuing compliance with this section 24.

~~b24.3.2.~~ Monitoring to confirm the continuing existence of leak tight conditions shall be consistent with the procedures described in Appendix B of the OAQPS Guideline Series document, "Control of Organic Compound Leaks from Gasoline Tank Trucks and Vapor Collection Systems," EPA-450/2-78-051.

24.4. Test methods and procedures. -- The test procedures to determine compliance with this section 24. shall be Method 27 of 40 CFR Part 60, Appendix A.

24.5. Recordkeeping and reporting requirements.

~~a24.5.1.~~ The owner or operator of a gasoline tank truck subject to this section 24. shall maintain records of all certification, testing, and repairs. The records shall identify the gasoline tank truck, the date of the tests or repair, and, if applicable, the type of repair and the date of retest. The records shall be maintained in a legible, readily available condition for at least 3 years after the date the testing or repair is completed. These records shall be made available to the ~~Director~~ Secretary upon written or verbal request.

~~b24.5.2.~~ The records of certification tests required by ~~section 24.5.a.~~ subdivision 24.5.1., shall, as a minimum, contain:

~~124.5.2.a.~~ The gasoline tank truck vessel tank identification number;

~~224.5.2.b.~~ The initial test pressure and the time of the reading;

~~324.5.2.c.~~ The final test pressure and the time of the reading;

~~424.5.2.d.~~ The initial test vacuum and the time of the reading;

~~524.5.2.e.~~ The final test vacuum and the time of the reading;

~~624.5.2.f.~~ At the top of each report page, the company name and the date and location of the tests on that page; and

~~724.5.2.g.~~ The name and the title of person conducting the test.

~~824.5.3.~~ The owner or operator of a gasoline tank truck subject to this section 24. shall certify and

report to the ~~Director~~ Secretary annually that the tank truck has been tested by an applicable method referenced in subsection 24.4. The certification shall include:

~~124.5.3.a.~~ 24.5.3.a. The name and address of the company and the name and telephone number of the responsible company representative under whose signature the certification is submitted; and

~~224.5.3.b.~~ 24.5.3.b. A copy of the information recorded to comply with ~~section 24.5.b~~ subdivision 24.5.2.

~~d24.5.4.~~ 24.5.4. Copies of all records and reports under this section 24. shall be made available to the ~~Director~~ Secretary upon verbal or written request.

§45-21-25. Petroleum Refinery Sources.

25.1. Applicability.

~~a25.1.1.~~ 25.1.1. This section 25. applies to any vacuum-producing system, wastewater separator, and process unit turnaround at petroleum refinery sources. No exemptions are allowable based on size or throughput of a facility.

~~b25.1.2.~~ 25.1.2. This section 25. does not apply to segregated storm water runoff drain systems or to non-contact cooling water systems.

25.2. Definitions. -- As used in this section 25., all terms not defined herein shall have the meaning given them in section 2.

~~a25.2.1.~~ 25.2.1. "Accumulator" means the reservoir of a condensing unit receiving the condensate from the condenser.

~~b25.2.2.~~ 25.2.2. "Firebox" means the chamber or compartment of a boiler or furnace in which materials are burned but does not mean the combustion chamber of an incinerator.

~~c25.2.3.~~ 25.2.3. "Forebays" means the primary sections of a wastewater separator.

~~d25.2.4.~~ 25.2.4. "Hot well" means the reservoir of a condensing unit receiving the warm condensate from the condenser.

~~e25.2.5.~~ 25.2.5. "Refinery fuel gas" means any gas that is generated by a petroleum refinery process unit and that is combusted, including any gaseous mixture of natural gas and fuel gas.

~~f25.2.6.~~ 25.2.6. "Turnaround" means the procedure of shutting a refinery unit down after a run to perform necessary maintenance and repair work and returning the unit to operation.

~~g25.2.7.~~ 25.2.7. "Vacuum producing system" means any reciprocating, rotary, or centrifugal blower or compressor, or any jet ejector or device that takes suction from a pressure below atmospheric and discharges against atmospheric pressure.

~~h25.2.8.~~ 25.2.8. "Wastewater (oil/water) separator" means any device or piece of equipment that utilizes the difference in density between oil and water to remove oil and associated chemicals from water, or any device, such as a flocculation tank, clarifier, etc., that removes petroleum-derived compounds from

wastewater.

25.3. Standards.

~~a~~25.3.1. Vacuum producing systems. -- No person shall permit the emission of any uncondensed volatile organic compound (VOC) from the condensers, hot wells, or accumulators of any vacuum producing system at a petroleum refinery. The standard shall be achieved by:

~~1~~25.3.1.a. Piping the uncondensed vapors to a firebox or incinerator; or

~~2~~25.3.1.b. Compressing the vapors and adding them to the refinery fuel gas.

~~b~~25.3.2. Wastewater separators. -- The owner or operator of any wastewater (oil/water) separator at a petroleum refinery shall:

~~1~~25.3.2.a. Provide covers and seals on all separators and forebays; and

~~2~~25.3.2.b. Equip all openings in covers, separators, and forebays with lids or seals and keep the lids or seals in the closed position at all times except when in actual use.

~~e~~25.3.3. Process unit turnarounds. -- The owner or operator of a petroleum refinery shall provide for the following during process unit turnaround:

~~1~~25.3.3.a. Depressurization venting of the process unit or vessel to a vapor recovery system, flare, or firebox;

~~2~~25.3.3.b. No emission of VOC from a process unit or vessel until its internal pressure is 136 kiloPascals (kPa) (19.7 pounds per square inch atmospheric [psia]) or less; and

~~3~~25.3.3.c. Recordkeeping of the following items:

~~A~~25.3.3.c.1. Date of every process unit or vessel turnaround;

~~B~~25.3.3.c.2. The internal pressure of the process unit or vessel immediately prior to venting to the atmosphere.

25.4. Recordkeeping. -- The owner or operator of a petroleum refinery shall maintain the records required by ~~section 25.3.c.3.~~ paragraph 25.3.3.c. in a readily accessible location for at least 3 years and shall make these records available to the ~~Director~~ Secretary upon verbal or written request.

25.5. Reporting. -- The owner or operator of any facility containing sources subject to this section 25. shall comply with the requirements in subsections 5.1. and 5.2.

§45-21-26. Leaks from Petroleum Refinery Equipment.

26.1. Applicability.

~~a~~26.1.1. This section 26. applies to all equipment in volatile organic compound (VOC) service in any process unit at a petroleum refinery, regardless of size or throughput.

~~h~~26.1.2. The requirements of subsections 26.4. through 26.8. do not apply to:

~~1~~26.1.2.a. Any equipment in vacuum service;

~~2~~26.1.2.b. Any pressure relief valve that is connected to an operating flare header or vapor recovery device;

~~3~~26.1.2.c. Any liquid pump that has a dual mechanical pump seal with a barrier fluid system;

~~4~~26.1.2.d. Any compressor with a degassing vent that is routed to an operating VOC control device; and

~~5~~26.1.2.e. Pumps and valves in heavy liquid service except that if evidence of a leak is found by visual, audible, olfactory, or other detection method, the owner or operator must confirm the presence of a leak using the methods specified in section 46. If a leak is confirmed, the owner or operator must repair the leak as specified in subsection 26.7.

26.2. Definitions. -- As used in this section 26., all terms not defined herein shall have the meaning given them in section 2.

~~a~~26.2.1. "[In] gas/vapor service" means that the piece of equipment in VOC service contains process fluid that is in the gaseous state at operating conditions.

~~b~~26.2.2. "[In] heavy liquid service" means that the piece of equipment in VOC service is not in gas/vapor service or in light liquid service.

~~c~~26.2.3. "[In] light liquid service" means that the piece of equipment in VOC service contains a liquid that meets the following conditions: (1) the vapor pressure of one or more of the components is greater than 0.3 kPa (0.09 in Hg) at 20EC (68EF) (standard reference texts or ASTM D2879 shall be used to determine the vapor pressures); (2) the total concentration of the pure components having a vapor pressure greater than 0.3 kPa (0.09 in Hg) at 20EC (68EF) is equal to or greater than 20 percent by weight; and (3) the fluid is a liquid at operating conditions.

~~d~~26.2.4. "[In] vacuum service" means that the equipment in VOC service is operating at an internal pressure which is at least 5 kPa below ambient pressure.

~~e~~26.2.5. "[In] VOC service" means that the piece of equipment contains or contacts a process fluid that is at least 10 percent VOC by weight. The provisions of ~~section 26.9.b.~~ subdivision 26.9.2. specify how to determine that a piece of equipment is not in VOC service.

26.3. Standards: General. -- The owner or operator of a petroleum refinery complex subject to this section 26. shall ensure that:

~~a~~26.3.1. Any open-ended line or valve is sealed with a second valve, blind flange, cap, or plug except during operations requiring process fluid flow through the open-ended line or valve.

~~b~~26.3.2. When a second valve is used, each open-ended line or valve equipped with a second valve is operated in such a manner that the valve on the process fluid end is closed before the second valve is closed.

~~e~~26.3.3. When a double block-and-bleed system is used, the bleed valve or line is open only during operations that require venting of the line between the block valves and is closed at all other times.

26.4. Standards: Equipment inspection program. -- The owner or operator of a petroleum refinery shall conduct the equipment inspection program described in ~~sections 26.4.a. through 26.4.e.~~ subdivisions 26.4.1. through 26.4.3. using the test methods specified in section 46.

~~a~~26.4.1. The owner or operator of a petroleum refinery shall conduct quarterly monitoring of each:

~~1~~26.4.1.a. Compressor;

~~2~~26.4.1.b. Pump in light liquid service;

~~3~~26.4.1.c. Valve in light liquid service, except as provided in subsections 26.5. and 26.6.;

~~4~~26.4.1.d. Valve in gas/vapor service, except as provided in subsections 26.5. and 26.6.; and

~~5~~26.4.1.e. Pressure relief valve in gas/vapor service, except as provided in subsections 26.5. and 26.6.

~~b~~26.4.2. The owner or operator of a petroleum refinery shall conduct a weekly visual inspection of each pump in light liquid service.

~~e~~26.4.3. The owner or operator of a petroleum refinery shall monitor each pressure relief valve after each overpressure relief to ensure that the valve has properly reseated and is not leaking.

~~d~~26.4.4. When an instrument reading of 10,000 parts per million (ppm) or greater is measured, it shall be determined that a leak has been detected.

~~e~~26.4.5. If there are indications of liquid dripping from the equipment, it shall be determined that a leak has been detected.

~~f~~26.4.6. When a leak is detected, the owner or operator shall affix a weatherproof, readily visible tag in a bright color such as red or yellow bearing the equipment identification number and the date on which the leak was detected. This tag shall remain in place until the leaking equipment is repaired. An alternative leak identifier system may be used if the owner or operator demonstrates to the ~~Director~~ Secretary that the system is equally as effective. The requirements of this ~~section 26.4.f.~~ subdivision 26.4.6. apply to any leak detected by the equipment inspection program and to any leak from any equipment that is detected on the basis of sight, sound, or smell.

26.5. Standards: Alternative standards for valves—skip period leak detection and repair.

~~a~~26.5.1. An owner or operator shall comply initially with the requirements for valves in gas/vapor service and valves in light liquid service, as described in subsection 26.4.

~~b~~26.5.2. After two consecutive quarterly leak detection periods with the percent of valves leaking equal or less than 2.0, an owner or operator may begin to skip one of the quarterly leak detection periods for the valves in gas/vapor and light liquid service.

~~e~~26.5.3. After five consecutive quarterly leak detection periods with the percent of valves leaking

equal to or less than 2.0, an owner or operator may begin to skip 3 (three) of the quarterly leak detection periods for the valves in gas/vapor and light liquid service.

~~d~~26.5.4. If the percent of valves leaking is greater than 2.0, the owner or operator shall comply with the requirements as described in subsection 26.4. but can again elect to use the requirements in subsection 26.5.

~~e~~26.5.5. The percent of valves leaking shall be determined by dividing the sum of valves found leaking during current monitoring and valves for which repair has been delayed by the total number of valves subject to the requirements of this section 26.

~~f~~26.5.6. An owner or operator shall keep a record of the percent of valves found leaking during each leak detection period.

26.6. Standards: Alternative standards for unsafe-to-monitor valves and difficult-to-monitor valves.

~~a~~26.6.1. Any valve that is designated, as described in ~~section 26.6.a.1.~~ paragraph 26.6.1.a., as an unsafe-to-monitor valve is exempt from the requirements of subsection 26.4. if:

~~1~~26.6.1.a. The owner or operator of the valve demonstrates that the valve is unsafe to monitor because monitoring personnel would be exposed to an immediate danger as a consequence of complying with ~~section 26.4.d.~~ subdivision 26.4.4.; and

~~2~~26.6.1.b. The owner or operator of the valve adheres to a written plan that requires monitoring of the valve as frequently as practicable during safe-to-monitor times.

~~b~~26.6.2. Any valve that is designated, as described in ~~section 26.6.b.1.~~ paragraph 26.6.2.a., as a difficult-to-monitor valve is exempt from the requirements of subsection 26.4. if:

~~1~~26.6.2.a. The owner or operator of the valve demonstrates that the valve cannot be monitored without elevating the monitoring personnel more than 2 meters (m) (6.6 feet [ft]) above a support surface; and

~~2~~26.6.2.b. The owner or operator of the valve follows a written plan that requires monitoring of the valve at least once per calendar year.

26.7. Standards: Equipment repair program. -- The owner or operator of a petroleum refinery shall:

~~a~~26.7.1. Make a first attempt at repair for any leak not later than 5 calendar days after the leak is detected; and

~~b~~26.7.2. Repair any leak as soon as practicable, but not later than 15 calendar days after it is detected except as provided in subsection 26.8.

26.8. Standards: Delay of repair.

~~a~~26.8.1. Delay of repair of equipment for which a leak has been detected will be allowed if the repair is technically infeasible without a process unit shutdown. Repair of such equipment shall occur before the end of the next process unit shutdown.

~~b~~26.8.2. Delay of repair of equipment will be allowed for equipment that is isolated from the process and that does not remain in VOC service.

~~e~~26.8.3. Delay of repair beyond a process unit shutdown will be allowed for a valve, if valve assembly replacement is necessary during the process unit shutdown, valve assembly supplies have been depleted, and valve assembly supplies had been sufficiently stocked before the supplies were depleted. Delay of repair beyond the next process unit shutdown will not be allowed unless the next process unit shutdown occurs sooner than 6 months after the first process unit shutdown.

26.9. Test methods and procedures.

~~a~~26.9.1. In conducting the tests required to comply with subsection 26.4., the owner or operator shall use the test methods specified in section 46.

~~b~~26.9.2. The owner or operator shall test each piece of equipment as required under subsection 26.4. unless it is demonstrated that a process unit is not in VOC service, i.e., that the VOC content would never be reasonably expected to exceed 10 percent by weight. For purposes of this demonstration, the following methods and procedures shall be used:

~~1~~26.9.2.a. Procedures that conform to the general methods in ASTM E260, E168 and E169 shall be used to determine the percent VOC content in the process fluid that is contained in or contacts a piece of equipment.

~~2~~26.9.2.b. Where the test methods in ~~section 26.9.b.1.~~ paragraph 26.9.2.a. also measure exempt compounds, these compounds may be excluded from the total quantity of organic compounds in determining the VOC content of the process fluid.

~~3~~26.9.3.b. Engineering judgment may be used to estimate the VOC content, if a piece of equipment had not been shown previously to be in VOC service. If the ~~Director~~ Secretary disagrees with the judgment, ~~sections 26.9.b.1. and 26.9.b.2.~~ paragraphs 26.9.2.a. and 26.9.2.b. shall be used to resolve the disagreement.

~~e~~26.9.3. The owner or operator shall demonstrate that a piece of equipment is in light liquid service by showing that:

~~1~~26.9.3.a. All of the following conditions apply:

~~A~~26.9.3.a.1. The vapor pressure of one or more of the components is greater than 0.3 kiloPascals (kPa) at 20EC (0.09 inches of Mercury [in Hg] at 68EF); standard reference texts or ASTM D2879 shall be used to determine the vapor pressures;

~~B~~26.9.3.a.2. The total concentration of the pure components having a vapor pressure greater than 0.3kPa at 20EC (0.09 in Hg at 68EF) is equal to or greater than 20 percent by weight; and

~~C~~26.9.3.a.3. The fluid is a liquid at operating conditions; or

~~2~~26.9.3.b. The percent VOC evaporated is greater than 10 percent at 150EC (302EF) as determined by ASTM D86.

~~d~~26.9.4. Samples used in conjunction with ~~sections 26.9.b. and 26.9.c.~~ subdivisions 26.9.2. and

26.9.3. shall be representative of the process fluid that is contained in or contacts the equipment.

26.10. Recordkeeping requirements.

~~a~~26.10.1. Each owner or operator subject to the provisions of this section 26. shall comply with the recordkeeping requirements of this section 26. Except as noted, these records shall be maintained in a readily accessible location for a minimum of 3 years and shall be made available to the ~~Director~~ Secretary upon verbal or written request.

~~b~~26.10.2. An owner or operator of more than one affected facility subject to the provisions of this section 26. may comply with the recordkeeping requirements for these facilities in one recordkeeping system if the system identifies each record by each facility.

~~c~~26.10.3. When each leak is detected as specified in subsection 26.4., the following information shall be recorded in a log and shall be kept for 3 years in a readily accessible location:

~~1~~26.10.3.a. The instrument and operator identification numbers and the equipment identification number;

~~2~~26.10.3.b. The date the leak was detected and the dates of each attempt to repair the leak;

~~3~~26.10.3.c. The repair methods employed in each attempt to repair the leak;

~~4~~26.10.3.d. The notation "Above 10,000" if the maximum instrument reading measured by the methods specified in section 46. after each repair attempt is equal to or greater than 10,000 ppm;

~~5~~26.10.3.e. The notation "Repair Delayed" and the reason for the delay if a leak is not repaired within 15 calendar days after discovery of the leak;

~~6~~26.10.3.f. The signature of the owner or operator (or designate) whose decision it was that repair could not be effected without a process unit shutdown;

~~7~~26.10.3.g. The expected date of successful repair of the leak if a leak is not repaired within 15 days;

~~8~~26.10.3.h. The dates of process unit shutdowns that occur while the equipment is unrepaired;
and

~~9~~26.10.3.i. The date of successful repair of the leak.

~~d~~26.10.4. A list of identification numbers of equipment in vacuum service shall be recorded in a log that is kept in a readily accessible location.

~~e~~26.10.5. The following information pertaining to all valves subject to the requirements of subsection 26.6. shall be recorded in a log that is kept for 3 years in a readily accessible location:

~~1~~26.10.5.a. A list of identification numbers for valves that are designated as unsafe to monitor, an explanation for each valve stating why the valve is unsafe to monitor, and the plan for monitoring each valve; and

~~226.10.5.b.~~ A list of identification numbers for valves that are designated as difficult to monitor, an explanation for each valve stating why the valve is difficult to monitor, and the schedule for monitoring each valve.

~~226.10.6.~~ The following information for valves complying with subsection 26.5. shall be recorded in a log that is kept for 3 years in a readily accessible location:

~~226.10.6.a.~~ A schedule of monitoring; and

~~226.10.6.b.~~ The percent of valves found leaking during each monitoring period as noted in ~~section 26.5-f~~ subdivision 26.5.6.

~~226.10.7.~~ Information and data used to demonstrate that a piece of equipment is not in VOC service shall be recorded in a log that is kept for 3 years in a readily accessible location for use in determining exemptions as provided in subsection 26.1.

26.11. Reporting. -- The owner or operator of any facility containing sources subject to this section 26. shall comply with the requirements in subsections 5.1. and 5.2.

§45-21-27. Petroleum Liquid Storage in External Floating Roof Tanks.

27.1. Applicability.

~~a27.1.1.~~ This section 27. applies to any petroleum liquid storage tank that is equipped with an external floating roof and that has a capacity greater than 150,000 liters (L) (40,000 gallons [gal]).

~~b27.1.2.~~ This section 27. does not apply to any petroleum liquid storage tank that:

~~227.1.2.a.~~ Is used to store waxy, heavy pour crude oil;

~~227.1.2.b.~~ Has a capacity less than 1,600,000 L (420,000 gal) and is used to store produced crude oil and condensate prior to lease custody transfer;

~~327.1.2.c.~~ Contains a petroleum liquid with a maximum true vapor pressure less than 10.5 kiloPascals (kPa) (1.5 pounds per square inch atmospheric [psia]) provided that records are kept consistent with ~~section 27.5.b.~~ subdivision 27.5.2.;

~~427.1.2.d.~~ Contains a petroleum liquid with a maximum true vapor pressure less than 27.6 kPa (4.0 psia); and

~~A27.1.2.d.1.~~ Is of welded construction; and

~~B27.1.2.d.2.~~ Presently possesses a metallic-type shoe seal, a liquid-mounted foam seal, a liquid-mounted liquid-filled type seal, or other closure device of demonstrated equivalence approved by the ~~Director~~ Secretary and the U.S. EPA; or

~~527.1.2.e.~~ Is of welded construction, equipped with a metallic-type shoe primary seal and has a secondary seal from the top of the shoe seal to the tank wall (shoe-mounted secondary seal).

27.2. Definitions. -- As used in this section 27., all terms not defined herein shall have the meaning

given them in section 2.

~~a~~27.2.1. "Liquid-mounted seal" means a primary seal mounted in continuous contact with the liquid between the tank wall and the floating roof around the circumference of the tank.

~~b~~27.2.2. "Vapor-mounted seal" means a primary seal mounted so there is an annular vapor space underneath the seal. The annular vapor space is bounded by the bottom of the primary seal, the tank wall, the liquid surface, and the floating roof.

~~e~~27.2.3. "Waxy, heavy-pour crude oil" means a crude oil with a pour point of 10EC (50EF) or higher as determined by the American Society for Testing and Materials Standard D97-66, "Test for Pour Point of Petroleum Oils."

27.3. Standards. -- No owner of a petroleum liquid storage vessel subject to this section 27. shall store a petroleum liquid in that tank unless:

~~a~~27.3.1. The tank has been fitted with:

~~+27.3.1.a.~~ A continuous secondary seal extending from the floating roof to the tank wall (rim-mounted secondary seal); or

~~227.3.1.b.~~ A closure or other device that controls VOC emissions with an effectiveness equal to or greater than a seal required under ~~section 27.3.a.1.~~ paragraph 27.3.1.a. and is approved by the ~~Director~~ Secretary and the U.S. EPA; and

~~b~~27.3.2. All seal closure devices meet the following requirements:

~~+27.3.2.a.~~ There are no visible holes, tears, or other openings in the seal(s) or seal fabric;

~~227.3.2.b.~~ The seal(s) are intact and uniformly in place around the circumference of the floating roof between the floating roof and the tank wall;

~~327.3.2.c.~~ For vapor-mounted primary seals, the accumulated area of gaps exceeding 0.32 centimeters (cm) (0.125 inches [in]) in width between the secondary seal and the tank wall shall not exceed 21.2 square centimeters per meter (cm²/m) (1.0 square inches per foot (in²/ft)) of tank diameter, as determined by the method in subsection 27.6.; and

~~e~~27.3.3. All openings in the external floating roof, except for automatic bleeder vents, rim space vents, and leg sleeves, are:

~~+27.3.3.a.~~ Equipped with covers, seals, or lids in the closed position except when the openings are in actual use;

~~227.3.3.b.~~ Equipped with projections into the tank that remain below the liquid surface at all times; and

~~d~~27.3.4. Automatic bleeder vents are closed at all times except when the roof is being floated off or being landed on the roof leg supports;

~~e~~27.3.5. Rim vents are set to open when the roof is being floated off the leg supports or at the

manufacturer's recommended setting; and

~~£~~27.3.6. Emergency roof drains are provided with slotted membrane fabric covers or equivalent covers which cover at least 90 percent of the area of the opening.

27.4. Inspections. -- The owner or operator of a petroleum liquid storage tank with an external floating roof subject to this section 27. shall:

~~a~~27.4.1. Perform routine inspections semi-annually in order to ensure compliance with subsection 27.3. (the inspections shall include a visual inspection of the secondary seal gap); and

~~b~~27.4.2. Measure the secondary seal gap annually in accordance with subsection 27.6. when the floating roof is equipped with a vapor-mounted primary seal.

27.5. Recordkeeping.

~~a~~27.5.1. The owner or operator of any petroleum liquid storage tank with an external floating roof subject to this section 27. shall maintain the following records in a readily accessible location for at least 3 years and shall make copies of the records available to the ~~Director~~ Secretary upon verbal or written request:

~~1~~27.5.1.a. Records of the types of petroleum liquids stored;

~~2~~27.5.1.b. Records of the maximum true vapor pressure of the liquid as stored; and

~~3~~27.5.1.c. Records of the results of the inspections performed in accordance with subsection 27.4.

~~b~~27.5.2. The owner or operator of a petroleum liquid storage vessel with an external floating roof exempted from this section 27. by ~~section 27.1.b.3.~~ paragraph 27.1.2.c., but containing a petroleum liquid with a true vapor pressure greater than 7.0 kPa (1.0 psi), shall maintain the following records in a readily accessible location for at least 3 years and shall make copies of the records available to the ~~Director~~ Secretary upon verbal or written request:

~~1~~27.5.2.a. Records of the average monthly storage temperature;

~~2~~27.5.2.b. Records of the type of liquid stored; and

~~3~~27.5.2.c. Records of the maximum true vapor pressure for all petroleum liquids with a true vapor pressure greater than 7.0 kPa (1.0 psia).

~~e~~27.5.3. The ~~Director~~ Secretary may, upon written notice, require more frequent inspections or modify the monitoring and recordkeeping requirements, when necessary to accomplish the purposes of this section 27.

27.6. Compliance provisions. -- Compliance with ~~section 27.3.b.3.~~ paragraph 27.3.2.c. shall be determined by:

~~a~~27.6.1. Physically measuring the length and width of all gaps around the entire circumference of the secondary seal in each place where a 0.32 cm (0.125 in) uniform diameter probe passes freely (without forcing or binding against the seal) between the seal and tank wall; and

~~b~~27.6.2. Summing the area of the individual gaps.

27.7. Reporting. -- The owner or operator of any facility containing sources subject to this section 27. shall comply with the requirements in subsections 5.1. and 5.2.

§45-21-28. Petroleum Liquid Storage in Fixed Roof Tanks.

28.1. Applicability.

~~a~~28.1.1. This section 28. applies to any fixed roof petroleum liquid storage tank with a capacity greater than 150,000 liters (L) (40,000 gallons [gal]).

~~b~~28.1.2. This section 28. does not apply to any petroleum liquid storage tank that:

~~±~~28.1.2.a. Has a capacity of less than 1,600,000 L (420,000 gal) and is used to store produced crude oil and condensate prior to lease custody transfer;

~~±~~28.1.2.b. Is a horizontal underground storage tank used to store JP-4 jet fuel; or

~~±~~28.1.2.c. Contains a petroleum liquid with a maximum true vapor pressure less than 10.5 kiloPascals (kPa) (1.5 pounds per square inch atmospheric [psia]), provided that records are maintained consistent with ~~section 28.5.b~~ subdivision 28.5.2.

28.2. Definitions. -- As used in this section 28., all terms not defined herein shall have the meaning given them in section 2.

28.2.1. "Internal floating roof" means a cover or roof in a fixed roof tank that rests upon or is floated upon the petroleum liquid being contained and is equipped with a closure seal or seals to close the space between the roof edge and tank shell.

28.3. Standards. -- No owner or operator of a petroleum liquid storage tank subject to this section 28. shall store petroleum liquid in that tank unless:

~~a~~28.3.1. The tank is equipped with:

~~±~~28.3.1.a. An internal floating roof equipped with a closure seal or seals to close the space between the roof edge and tank wall; or

~~±~~28.3.1.b. Equally effective alternative control, approved by the ~~Director~~ Secretary and the U.S. EPA;

~~b~~28.3.2. The tank is maintained such that there are no visible holes, tears, or other openings in the seal or any seal fabric or materials; and

~~e~~28.3.3. All openings, except stub drains, are equipped with covers, lids, or seals such that:

~~±~~28.3.3.a. The cover, lid, or seal is in the closed position at all times except when in actual use;

~~228.3.3.b.~~ Automatic bleeder vents are closed at all times except when the roof is being floated off or being landed on the roof leg supports; and

~~328.3.3.c.~~ Rim vents, if provided, are set to open when the roof is being floated off the roof leg supports or at the manufacturer's recommended setting.

28.4. Inspections. -- The owner or operator of a petroleum liquid storage tank with a fixed roof subject to this section 28. shall:

~~a28.4.1.~~ Perform routine, semi-annual, visual inspections of the internal floating roof and its closure seal or seals through roof hatches; and

~~b28.4.2.~~ Perform a complete inspection of cover and seal whenever the tank is emptied for non-operational reasons or at least every 5 years, whichever is more frequent.

28.5. Recordkeeping.

~~a28.5.1.~~ The owner or operator of a petroleum liquid storage tank with a fixed roof subject to this section 28. shall maintain the following records in a readily accessible location for at least 3 years and shall make copies of the records available to the ~~Director~~ Secretary upon verbal or written request;

~~128.5.1.a.~~ Records of the types of petroleum liquids stored in that tank;

~~228.5.1.b.~~ Records of the maximum true vapor pressure of the liquid as stored; and

~~328.5.1.c.~~ Records of the results of the inspections required in subsection 28.4.

~~b28.5.2.~~ The owner or operator of a petroleum liquid storage tank with a fixed roof exempted from this section 28. by ~~section 28.1.b.~~ subdivision 28.1.2., but containing a petroleum liquid with a true vapor pressure greater than 7.0 kPa (1.0 psia), shall maintain the following records in a readily accessible location for at least 3 years and shall make copies of the records available to the ~~Director~~ Secretary upon verbal or written request:

~~128.5.2.a.~~ Records of the average monthly storage temperature;

~~228.5.2.b.~~ Records of the type of liquid stored; and

~~328.5.2.c.~~ Records of the maximum true vapor pressure for any petroleum liquid with a true vapor pressure greater than 7.0 kPa (1.0 psia).

28.6. Reporting. -- The owner or operator of any facility containing sources subject to this section 28. shall comply with the requirements in subsections 5.1. and 5.2.

§45-21-29. Leaks from Natural Gas/Gasoline Processing Equipment.

29.1. Applicability.

~~a29.1.1.~~ This section 29. applies to all equipment in volatile organic compound (VOC) service in any process unit at any natural gas/gasoline processing facility.

~~b~~29.1.2. This section 29. does not apply to:

~~1~~29.1.2.a. Any equipment in vacuum service;

~~2~~29.1.2.b. Any equipment in heavy liquid service; or

~~3~~29.1.2.c. Wet gas reciprocating compressors in plants that do not have a VOC control device, such as a flare or a continuously burning process heater or boiler.

~~e~~29.1.3. The equipment inspection requirements in subsection 29.4. do not apply to:

~~1~~29.1.3.a. Any natural gas/gasoline processing facility with a design field gas capacity of less than 2.8×10^5 standard cubic meters (10×10^6 standard cubic feet) per day that does not fractionate natural gas liquids;

~~2~~29.1.3.b. Any pump with dual pump seals;

~~3~~29.1.3.c. Any pressure relief valve that is connected to an operating flare header or vapor recovery device; or

~~4~~29.1.3.d. Any compressor with a degassing vent that is routed to an operating VOC control device.

29.2. Definitions. -- As used in this section 29., all terms not defined herein shall have the meaning given them in section 2.

~~a~~29.2.1. "Equipment" means each pump, compressor, pressure relief device, sampling connection system, open-ended valve or line, valve, and flange or other connector in VOC service or in wet gas service and any devices or systems required by this section 29.

~~b~~29.2.2. "Field gas" means feedstock gas entering the natural gas processing plant.

~~e~~29.2.3. "[In] gas/vapor service" means that the piece of equipment in VOC service contains process fluid that is in the gaseous state at operating conditions.

~~d~~29.2.4. "[In] heavy liquid service" means that the piece of equipment in VOC service is not in gas/vapor service or in light liquid service.

~~e~~29.2.5. "[In] light liquid service" means that the piece of equipment in VOC service contains a liquid that meets the following conditions: (1) the vapor pressure of one or more of the components is greater than 0.3 kPa (0.09 in Hg) at 20EC (68EF) (standard reference texts or ASTM D2879 shall be used to determine the vapor pressures); (2) the total concentration of the pure components having a vapor pressure greater than 0.3 kPa (0.09 in Hg) at 20EC (68EF) is equal to or greater than 20 percent by weight; and (3) the fluid is a liquid at operating conditions.

~~f~~29.2.6. "Liquids dripping" means any visible leakage from a seal including spraying, misting, clouding, and ice formation.

~~g~~29.2.7. "Natural gas liquids" means the hydrocarbons, such as ethane, propane, butane, and pentane, that are extracted from field gas.

~~h~~29.2.8. "Natural gas processing plant" (gas plant) means any processing site engaged in the extraction of natural gas liquids from field gas, fractionation of mixed natural gas liquids to natural gas products, or both.

~~i~~29.2.9. "Nonfractionating plant" means any gas plant that does not fractionate mixed natural gas liquids into natural gas products.

~~j~~29.2.10. "Process unit" means equipment assembled for the extraction of natural gas liquids from field gas, the fractionation of the liquids into natural gas products, or other operations associated with the processing of natural gas products. A process unit can operate independently if supplied with sufficient feed or raw materials and sufficient storage facilities for the products.

~~k~~29.2.11. "Reciprocating compressor" means a piece of equipment that increases the pressure of a process gas by positive displacement, employing linear movement of the driveshaft.

~~l~~29.2.12. "[In] vacuum service" means that the equipment in VOC service is operating at an internal pressure which is at least 5 kPa below ambient pressure.

~~m~~29.2.13. "[In] VOC service" means that the piece of equipment contains or contacts a process fluid that is at least 10 percent VOC by weight. The provisions of ~~section 29.9.b.~~ subdivision 29.9.2. specify how to determine that a piece of equipment is not in VOC service.

~~n~~29.2.14. "[In] wet gas service" means that a piece of equipment contains or contacts the field gas before the extraction step in the process.

29.3. Standards: General. -- The owner or operator of a natural gas/gasoline processing facility subject to this section 29. shall ensure that:

~~a~~29.3.1. Any open-ended line or valve is sealed with a second valve, blind flange, cap, or plug except during operations requiring process fluid flow through the open-ended line or valve;

~~b~~29.3.2. When a second valve is used, each open-ended line or valve equipped with a second valve is operated in such a manner that the valve on the process fluid end is closed before the second valve is closed; and

~~c~~29.3.3. When a double block-and-bleed system is used, the bleed valve or line is open only during operations that require venting of the line between the block valves and is closed at all other times.

29.4. Standards: Equipment inspection program. -- The owner or operator of a natural gas/gasoline processing facility subject to this subsection 29.4. shall conduct the equipment inspection program described in ~~sections 29.4.a. through 29.4.c.~~ subdivisions 29.4.1. through 29.4.3. using the test methods specified in section 46.

~~a~~29.4.1. The owner or operator of a natural gas/gasoline processing facility subject to this section 29. shall conduct quarterly monitoring of each:

~~+~~29.4.1.a. Compressor;

~~2~~29.4.1.b. Pump in light liquid service;

~~3~~29.4.1.c. Valve in light liquid service, except as provided in subsections 29.5. and 29.6.;

~~4~~29.4.1.d. Valve in gas/vapor service, except as provided in subsections 29.5. and 29.6.; and

~~5~~29.4.1.e. Pressure relief valve in gas/vapor service, except as provided in subsections 29.5. and 29.6.

~~b~~29.4.2. The owner or operator of a natural gas/gasoline processing facility subject to this section 29. shall conduct a weekly visual inspection of each pump in light liquid service.

~~e~~29.4.3. The owner or operator of a natural gas/gasoline processing facility subject to this section 29. shall monitor each pressure relief valve within 5 days after each overpressure relief to ensure that the valve has properly reseated and is not leaking, except;

~~+~~29.4.3.a. Any pressure relief device that is located in a nonfractionating plant that is monitored only by non-plant personnel may be monitored after a pressure release the next time the monitoring personnel are on site, instead of within 5 days; and

~~2~~29.4.3.b. No pressure relief device described in ~~section 29.4.e.1.~~ paragraph 29.4.3.a. shall be allowed to operate for more than 30 days after a pressure release without monitoring.

~~d~~29.4.4. It shall be determined that a leak has been detected when:

~~+~~29.4.4.a. An instrument reading of 10,000 parts per million (ppm) or greater is measured; or

~~2~~29.4.4.b. There are indications of liquid dripping from the equipment.

~~e~~29.4.5. When a leak is detected, the owner or operator shall affix a weatherproof, readily visible tag in a bright color such as red or yellow, bearing the equipment identification number and the date on which the leak was detected. This tag shall remain in place until the leaking equipment is repaired. An alternative leak identifier system may be used if the owner or operator demonstrates to the ~~Director~~ Secretary that the system is equally as effective. The requirements of this ~~section 29.4.e.~~ subdivision 29.4.5. apply to any leak detected by the equipment inspection program and to any leak from any equipment that is detected on the basis of sight, sound, or smell.

29.5. Standards: Alternative standards for valves--skip period leak detection and repair.

~~a~~29.5.1. An owner or operator shall comply initially with the requirements for valves in gas/vapor service and valves in light liquid service, as described in subsection 29.4.

~~b~~29.5.2. After two consecutive quarterly leak detection periods with the percent of valves leaking equal or less than 2.0, an owner or operator may skip one of the quarterly leak detection periods for the valves in gas/vapor and light liquid service.

~~e~~29.5.3. After five consecutive quarterly leak detection periods with the percent of valves leaking equal to or less than 2.0, an owner or operator may begin to skip three of the quarterly leak detection periods for the valves in gas/vapor and light liquid service.

~~d~~29.5.4. If the percent of valves leaking is greater than 2.0, the owner or operator shall comply

with the requirements as described in subsection 29.4. but can again elect to use the requirements in subsection 29.5.

~~e~~29.5.5. The percent of valves leaking shall be determined by dividing the sum of valves found leaking during current monitoring and valves for which repair has been delayed by the total number of valves subject to the requirements of this section 29.

~~f~~29.5.6. An owner or operator shall keep a record of the percent of valves found leaking during each leak detection period.

29.6. Standards: Alternative standards for valves that are unsafe or difficult to monitor.

~~a~~29.6.1. Any valve that is designated, as described in ~~section 29.6.a.1.~~ paragraph 29.6.1.a., as an unsafe-to-monitor valve is exempt from the requirements of subsection 29.4. if:

~~1~~29.6.1.a. The owner or operator of the valve demonstrates that the valve is unsafe to monitor because monitoring personnel would be exposed to an immediate danger as a consequence of complying with subsection 29.4.; and

~~2~~29.6.1.b. The owner or operator of the valve adheres to a written plan that requires monitoring of the valve as frequently as practicable during safe-to-monitor times.

~~b~~29.6.2. Any valve that is designated, as described in ~~section 29.6.b.1.~~ paragraph 29.6.2.a., as a difficult-to-monitor valve is exempt from the requirements of subsection 29.4. if:

~~1~~29.6.2.a. The owner or operator of the valve demonstrates that the valve cannot be monitored without elevating the monitoring personnel more than 2 meters (m) (6.6 feet (ft)) above a support surface; and,

~~2~~29.6.2.b. The owner or operator of the valve follows a written plan that requires monitoring of the valve at least once per calendar year.

29.7. Standards: Equipment repair program. -- The owner or operator of a natural gas/gasoline processing facility shall:

~~a~~29.7.1. Make a first attempt at repair for any leak not later than 5 calendar days after the leak is detected; and

~~b~~29.7.2. Repair any leak as soon as practicable, but not later than 15 calendar days after it is detected except as provided in subsection 29.8.

29.8. Standards: Delay of repair.

~~a~~29.8.1. Delay of repair of equipment for which a leak has been detected will be allowed if the repair is technically infeasible without a process unit shutdown. Repair of such equipment shall occur before the end of the next process unit shutdown.

~~b~~29.8.2. Delay of repair of equipment will be allowed for equipment that is isolated from the process and that does not remain in VOC service.

~~e~~29.8.3. Delay of repair beyond a process unit shutdown will be allowed for a valve, if valve assembly replacement is necessary during the process unit shutdown, valve assembly supplies have been depleted, and valve assembly supplies had been sufficiently stocked before the supplies were depleted. Delay of repair beyond the next process unit shutdown will not be allowed unless the next process unit shutdown occurs sooner than 6 months after the first process unit shutdown.

29.9. Test methods and procedures.

~~a~~29.9.1. In conducting the tests required to comply with subsection 29.4., the owner or operator shall use the test methods specified in section 46.

~~b~~29.9.2. The owner or operator shall test each piece of equipment unless it is demonstrated that a process unit is not in VOC service, i.e., that the VOC content would never be reasonably expected to exceed 10 percent by weight. For purposes of this demonstration, the following methods and procedures shall be used:

~~+~~29.9.2.a. Procedures that conform to the general methods in ASTM E260, E168 and E169 shall be used to determine the percent VOC content in the process fluid that is contained in or contacts a piece of equipment;

~~2~~29.9.2.b. Where the test methods in ~~section 29.9.b.1.~~ paragraph 29.9.2.a. also measure exempt compounds, these compounds may be excluded from the total quantity of organic compounds in determining the VOC content of the process fluid; and

~~3~~29.9.2.c. Engineering judgment may be used to estimate the VOC content, if a piece of equipment had not been shown previously to be in VOC service. If the ~~Director~~ Secretary disagrees with the judgment, ~~sections 29.9.b.1. and 29.9.b.2.~~ paragraphs 29.9.2.a. and 29.9.2.b. shall be used to resolve the disagreement.

~~e~~29.9.3. The owner or operator shall demonstrate that a piece of equipment is in light liquid service by showing that all of the following conditions apply:

~~+~~29.9.3.a. The vapor pressure of one or more of the components is greater than 0.3 kiloPascal (kPa) at 20EC (0.09 inches of Mercury [in Hg] at 68EF). Standard reference texts or ASTM D2879 shall be used to determine the vapor pressures;

~~2~~29.9.3.b. The total concentration of the pure components having a vapor pressure greater than 0.3 kPa at 20EC (0.09 in Hg at 68EF) is equal to or greater than 20 percent by weight; and

~~3~~29.9.3.c. The fluid is a liquid at operating conditions.

~~d~~29.9.4. Samples used in conjunction with ~~sections 29.9.b. and 29.9.c.~~ subdivisions 29.9.2. and 29.9.3. shall be representative of the process fluid that is contained in or contacts the equipment.

29.10. Recordkeeping requirements.

~~a~~29.10.1. Each owner or operator subject to the provisions of this section 29. shall comply with the recordkeeping requirements of this section 29.

~~b~~29.10.2. An owner or operator of more than one affected facility subject to the provisions of this

section 29. may comply with the recordkeeping requirements for these facilities in one recordkeeping system if the system identifies each record by each facility.

~~e~~29.10.3. When each leak is detected as specified in subsection 29.4., the following information shall be recorded in a log and shall be kept for 3 years in a readily accessible location:

~~1~~29.10.3.a. The instrument and operator identification numbers and the equipment identification number;

~~2~~29.10.3.b. The date the leak was detected and the dates of each attempt to repair the leak;

~~3~~29.10.3.c. The repair methods employed in each attempt to repair the leak;

~~4~~29.10.3.d. The notation "Above 10,000" if the maximum instrument reading measured by the methods specified in section 46. after each repair attempt is equal to or greater than 10,000 ppm;

~~5~~29.10.3.e. The notation "Repair Delayed" and the reason for the delay if a leak is not repaired within 15 calendar days after discovery of the leak;

~~6~~29.10.3.f. The signature of the owner or operator (or designate) whose decision it was that repair could not be effected without a process unit shutdown;

~~7~~29.10.3.g. The expected date of successful repair of the leak if a leak is not repaired within 15 days;

~~8~~29.10.3.h. The dates of process unit shutdowns that occur while the equipment is unrepaired;
and

~~9~~29.10.3.i. The date of successful repair of the leak.

~~d~~29.10.4. A list of identification numbers of equipment in vacuum service shall be recorded in a log that is kept in a readily accessible location.

~~e~~29.10.5. The following information pertaining to all valves subject to the requirements of subsection 29.6. shall be recorded in a log that is kept for 3 years in a readily accessible location:

~~1~~29.10.5.a. A list of identification numbers for valves that are designated as unsafe to monitor, an explanation for each valve stating why the valve is unsafe to monitor, and the plan for monitoring each valve; and

~~2~~29.10.5.b. A list of identification numbers for valves that are designated as difficult to monitor, an explanation for each valve stating why the valve is difficult to monitor, and the schedule for monitoring each valve.

~~f~~29.10.6. The following information pertaining to all valves complying with subsection 29.5. shall be recorded in a log that is kept for 3 years in a readily accessible location:

~~1~~29.10.6.a. A schedule of monitoring; and

~~2~~29.10.6.b. The percent of valves found leaking during each monitoring period.

~~e~~29.10.7. The following information shall be recorded in a log that is kept for 3 years in a readily accessible location for use in determining exemptions as provided in subsection 29.1.:

~~4~~29.10.7.a. An analysis demonstrating the design capacity of the affected facility;

~~2~~29.10.7.b. Information and data used to demonstrate that a piece of equipment is not in VOC service; and

~~3~~29.10.7.c. Information and data used to demonstrate that a reciprocating compressor is in wet gas service.

29.11. Reporting. -- The owner or operator of any facility containing sources subject to this section 29. shall comply with the requirements in subsections 5.1. and 5.2.

§45-21-30. Solvent Metal Cleaning.

30.1. Applicability. -- This section 30. applies to all solvent metal cleaning sources with the following exemptions:

~~a~~30.1.1. Any open top vapor degreasing operation with an open area smaller than 1 square meter (m^2) (10.8 square feet (ft^2)) is exempt from ~~sections 30.3.b.3.B. and 30.3.b.3.D.~~ subparagraphs 30.3.2.c.2. and 30.3.2.c.4.; and,

~~b~~30.1.2. Any conveyorized degreaser with an air/vapor interface smaller than 2.0 m^2 (21.5 ft^2) is exempt from ~~section 30.3.e.2.~~ paragraph 30.3.3.b..

30.2. Definitions. -- As used in this section 30., all terms not defined herein shall have the meaning given them in section 2.

~~a~~30.2.1. "Cold cleaning" means the batch process of cleaning and removing soils from a metal surface by spraying, brushing, flushing, or immersion while maintaining the solvent below its boiling point. Wipe cleaning is not included in this definition.

~~b~~30.2.2. "Conveyorized degreasing" means the process of cleaning and removing soils from a continuous stream of metal parts using either cold or vaporized solvents.

~~e~~30.2.3. "Freeboard height" means, for a cold cleaner, the distance from the liquid solvent level in the degreaser tank to the lip of the tank. For an open-top vapor degreaser, it is the distance from the vapor level in the tank during idling to the lip of the tank. For a vapor-conveyorized degreaser, it is the distance from the vapor level to the bottom of the entrance or exit opening, whichever is lower. For a cold-conveyorized degreaser, it is the distance from the liquid solvent level to the bottom of the entrance or exit opening, whichever is lower.

~~d~~30.2.4. "Freeboard ratio" means the freeboard height divided by the smaller interior dimension (length, width, or diameter) of the degreaser tank.

~~e~~30.2.5. "Open-top vapor degreasing" means the process using condensation of hot solvent vapor to clean and remove soils from a batch of metal parts.

~~§~~30.2.6. "Refrigerator chiller" means a device mounted above both the water jacket and the primary condenser coils which carries a refrigerant that provides a chilled air blanket above the solvent vapor, thereby reducing emissions from the degreaser bath.

~~§~~30.2.7. "Solvent metal cleaning" means the process of cleaning soils from metal surfaces by cold cleaning, open-top vapor degreasing, or conveyORIZED degreasing.

30.3. Standards.

~~a~~30.3.1. Cold cleaning facilities. -- The owner or operator of a cold cleaning facility shall:

~~1~~30.3.1.a. Equip the cleaner with a cover that is easily operated with one hand, if:

~~A~~30.3.1.a.1. The solvent true vapor pressure is greater than 2 kiloPascals (kPa) (15 millimeters of Mercury [mm Hg] or 0.3 pounds per square inch [psi]) measured at 38EC (100EF) by ASTM D323-72;

~~B~~30.3.1.a.2. The solvent is agitated; or

~~C~~30.3.1.a.3. The solvent is heated;

~~2~~30.3.1.b. Equip the cleaner with an internal drainage facility so that parts are enclosed under the cover while draining if the solvent true vapor pressure is greater than 4.3 kPa (32 mm Hg or 0.6 psi) measured at 38EC (100EF) by ASTM D323-72, except that the drainage facility may be external for applications where an internal type cannot fit into the cleaning system;

~~3~~30.3.1.c. Implement one of the following control measures if the solvent true vapor pressure is greater than 4.3 kPa (32 mm of mercury or 0.6 psi) measured at 38EC (100EF) by ASTM D323-72, or if the solvent is heated above 50EC (120EF):

~~A~~30.3.1.c.1. Freeboard that gives a freeboard ratio greater than or equal to 0.7; or

~~B~~30.3.1.c.2. Water cover at least 2.54 centimeters (1 inch) in depth (solvent shall be insoluble in and heavier than water); or

~~C~~30.3.1.c.3. Another system of equivalent control, such as a refrigerated chiller or a carbon adsorber, approved by the ~~Director~~ Secretary;

~~4~~30.3.1.d. Provide a permanent, legible, conspicuous label, summarizing the operating requirements;

~~5~~30.3.1.e. Store waste solvent in covered containers;

~~6~~30.3.1.f. Close the cover whenever parts are not being handled in the cleaner;

~~7~~30.3.1.g. Drain the cleaned parts until dripping ceases;

~~8~~30.3.1.h. If used, supply a solvent spray that is a solid fluid stream (not a fine, atomized, or shower-type spray) at a pressure that does not exceed 10 pounds per square inch gauge (psig); and

930.3.1.i. Degrease only materials that are neither porous nor absorbent.

~~b30.3.2.~~ Open top vapor degreasers. -- Except as provided under ~~section 30.1.a.~~ subdivision 30.1.1., the owner or operator of an open top vapor degreaser shall:

~~430.3.2.a.~~ Equip the vapor degreaser with a cover that can be opened and closed easily without disturbing the vapor zone;

~~230.3.2.b.~~ Provide the following safety switches:

~~A30.3.2.b.1.~~ A vapor level thermostat that shuts off the pump heat if the condenser coolant is either not circulating or too warm; and

~~B30.3.2.b.2.~~ A spray safety switch that shuts off the spray pump if the vapor level drops more than 10 centimeters (cm) (4 inches [in]); and

~~330.3.2.c.~~ Implement one of the following control measures:

~~A30.3.2.c.1.~~ Freeboard ratio greater than or equal to 0.75 and, if the degreaser opening is greater than 1 m² (10.8 ft²), a powered cover;

~~B30.3.2.c.2.~~ Refrigerated chiller;

~~C30.3.2.c.3.~~ Enclosed design (cover or door opens only when the dry part is actually entering or exiting the degreaser);

~~D30.3.2.c.4.~~ Carbon adsorption system, with ventilation greater than or equal to 15 cubic meters per minute per square meter (m³/min/m²) (50 cubic feet per minute per square foot [ft³/min/ft²]) of air/vapor area (when cover is open), and exhausting less than 25 parts per million (ppm) of solvent averaged over one complete adsorption cycle, or 24 hours, whichever is less; or

~~E30.3.2.c.5.~~ A control system, demonstrated to have a capture efficiency equivalent to or greater than any of the above and approved by the ~~Director~~ Secretary and the U.S. EPA;

~~430.3.2.d.~~ Keep the cover closed at all times except when processing work loads through the degreaser;

~~530.3.2.e.~~ Minimize solvent carryout by:

~~A30.3.2.e.1.~~ Racking parts so that solvent will drain freely and not be trapped;

~~B30.3.2.e.2.~~ Moving parts in and out of the degreaser at less than 3.3 meters per minute (m/min) (11 feet per minute [ft/min]);

~~C30.3.2.e.3.~~ Holding the parts in the vapor zone at least 30 seconds or until condensation ceases, whichever is longer;

~~D30.3.2.e.4.~~ Tipping out any pools of solvent on the cleaned parts before removal from the vapor zone; and

~~E~~30.3.2.e.5. Allowing parts to dry within the degreaser for at least 15 seconds or until visually dry, whichever is longer;

~~F~~30.3.2.f. Degrease only materials that are neither porous nor absorbent;

~~G~~30.3.2.g. Occupy no more than one-half of the degreaser's open top area with a workload;

~~H~~30.3.2.h. Always spray within the vapor level;

~~I~~30.3.2.i. Repair solvent leaks immediately, or shut down the degreaser;

~~J~~30.3.2.j. Store waste solvent only in covered containers;

~~K~~30.3.2.k. Operate the cleaner such that water cannot be visually detected in solvent exiting the water separator;

~~L~~30.3.2.l. Use no ventilation fans near the degreaser opening, and ensure that room exhaust ventilation does not exceed 20 m³/min/m² (65 ft³/min/ft²) of degreaser open area, unless a higher rate is necessary to meet OSHA requirements; and

~~M~~30.3.2.m. Provide a permanent, conspicuous label, summarizing the operating procedures of ~~sections 30.3.b.4. through 30.3.b.12~~ paragraphs 30.3.2.d. through 30.3.2.l..

~~e~~30.3.3. Conveyorized degreasers. -- Except as provided under ~~section 30.1.b. subdivision 30.1.2.~~, the owner or operator of a conveyorized degreaser shall:

~~1~~30.3.3.a. Use no workplace fans near the degreaser opening, and ensure that exhaust ventilation does not exceed 20 m³/min/m² (65 ft³/min/ft²) of degreaser opening, unless a higher rate is necessary to meet OSHA requirements;

~~2~~30.3.3.b. Install one of the following control devices:

~~A~~30.3.3.b.1. Refrigerated chiller;

~~B~~30.3.3.b.2. Carbon adsorption system, with ventilation greater than or equal to 15 m³/min/m² (50 ft³/min/ft²) of air/vapor area (when downtime covers are open), and exhausting less than 25 ppm of solvent by volume averaged over a complete adsorption cycle; or

~~C~~30.3.3.b.3. A system demonstrated to have a capture efficiency equivalent to or greater than the devices listed in ~~section 30.3.e.2.A. subparagraph 30.3.3.b.1. or section 30.3.e.2.B. 30.3.3.b.2.~~ and approved by the ~~Director~~ Secretary and the U.S. EPA.

~~3~~30.3.3.c. Equip the cleaner with equipment, such as a drying tunnel or rotating (tumbling) basket, sufficient to prevent cleaned parts from carrying out solvent liquid or vapor;

~~4~~30.3.3.d. Provide the following safety switches:

~~A~~30.3.3.d.1. A condenser flow switch and thermostat that shut off the pump heat if the condenser coolant is either not circulating or too warm;

~~B~~30.3.3.d.2. A spray safety switch which shuts off the spray pump or the conveyor if the vapor level drops more than 10 cm (4 in); and

~~E~~30.3.3.d.3. A vapor level control thermostat that shuts off the pump heat when the vapor level rises too high;

~~S~~30.3.3.e. Minimize openings during operation so that entrances and exits will silhouette workloads with an average clearance between the parts and the edge of the degreaser opening of less than 10 cm (4 in) or less than 10 percent of the width of the opening;

~~6~~30.3.3.f. Provide downtime covers for closing off the entrance and exit during shutdown hours;

~~7~~30.3.3.g. Minimize carryout emissions by:

~~A~~30.3.3.g.1. Racking parts so that solvent will drain freely from parts and not be trapped; and

~~B~~30.3.3.g.2. Maintaining the vertical conveyor speed at less than 3.3 m/min (11 ft/min);

~~8~~30.3.3.h. Store waste solvent only in covered containers;

~~9~~30.3.3.i. Repair solvent leaks immediately, or shut down the degreaser;

~~10~~30.3.3.j. Operate the cleaner such that water cannot be visually detected in solvent exiting the water separator;

~~11~~30.3.3.k. Place downtime covers over entrances and exits of the conveyORIZED degreaser at all times when the conveyors and exhausts are not being operated; and

~~12~~30.3.3.l. Degrease only materials that are neither porous nor absorbent.

30.4. Test methods. -- Compliance with ~~sections 30.3.a.1. through 30.3.a.3.~~ paragraphs 30.3.1.a. through 30.3.1.c., 30.3.b.3.D. subparagraph 30.3.2.c.4., 30.3.b.12., 30.3.e.1. paragraphs 30.3.2.1. and 30.3.3.a., and 30.3.e.2.B. subparagraph 30.3.3.b.2. shall be determined by applying the following test methods, which are found at 40 CFR Part 60, Appendix A, as appropriate:

~~a~~30.4.1. Methods 1-4 for determining flow rates;

~~b~~30.4.2. Method 18 for determining gaseous organic compound emissions by gas chromatography;

~~e~~30.4.3. Method 25 for determining total gaseous non-methane organic emissions as carbon;

~~d~~30.4.4. Method 25A or 25B for determining total gaseous organic concentrations using flame ionization or non-dispersive infrared analysis; and

~~e~~30.4.5. ASTM D323-72 for measuring solvent true vapor pressure.

30.5. Recordkeeping. -- Each owner or operator of a solvent metal cleaning source subject to this section 30. shall maintain the following records in a readily accessible location for at least 3 years and shall

make these records available to the ~~Director~~ Secretary upon verbal or written request:

~~a~~30.5.1. A record of central equipment maintenance, such as replacement of the carbon in a carbon adsorption unit.

~~b~~30.5.2. The results of all tests conducted in accordance with the requirements in subsection 30.4.

30.6. Reporting. -- The owner or operator of any facility containing sources subject to this section 30. shall:

~~a~~30.6.1. Comply with the initial compliance certification requirements of subsection 5.1.;

~~b~~30.6.2. Comply with the requirements of subsection 5.2. regarding reports of excess emissions; and

~~c~~30.6.3. Comply with the requirements of subsection 5.3. for excess emissions related to any control devices used to comply with ~~sections 30.3.a.3.C., 30.3.b.3.D. or 30.3.b.3.E., and 30.3.e.2.B. or 30.3.e.2.C.~~ subparagraphs 30.3.1.c.3., 30.3.2.c.4. or 30.3.2.c.5., and 30.3.3.b.2. or 30.3.3.b.3..

§45-21-31. Cutback and Emulsified Asphalt.

31.1. Applicability. -- This section 31. applies to the manufacture, mixing, storage, use, and application of cutback and emulsified asphalts. No exemptions are allowable based on the size or throughput of an operation.

31.2. Definitions. -- As used in this section 31., all terms not defined herein shall have the meaning given them in section 2.

~~a~~31.2.1. "Asphalt" means a dark-brown to black cementitious material (solid, semisolid, or liquid in consistency) of which the main constituents are bitumens that occur naturally or are a residue of petroleum refining.

~~b~~31.2.2. "Cutback asphalt" means asphalt cement that has been liquefied by blending with petroleum solvents (diluent). Upon exposure to atmospheric conditions, the diluents evaporate, leaving the asphalt cement to perform its function.

~~c~~31.2.3. "Emulsified asphalt" means an emulsion of asphalt cement and water that contains a small amount of an emulsifying agent; it is a heterogeneous system containing two normally immiscible phases (asphalt and water) in which the water forms the continuous phase of the emulsion, and minute globules of asphalt form the discontinuous phase.

~~d~~31.2.4. "Ozone season" means the calendar period beginning April 1 and ending October 31.

~~e~~31.2.5. "Penetrating prime coat" means an application of low-viscosity liquid asphalt to an absorbent surface. It is used to prepare an untreated base for an asphalt surface. The prime coat penetrates the base, plugs the voids, and hardens and helps bind the top to the overlying asphalt course. The penetrating prime coat also reduces the necessity of maintaining an untreated base course prior to placing the asphalt pavement.

31.3. Standards.

~~a~~31.3.1. No person shall cause, allow, or permit the manufacture, mixing, storage, use, or application of cutback asphalts during the ozone season without approval of the ~~Director~~ Secretary as provided in ~~section 31.3.b~~ subdivision 31.3.2.

~~b~~31.3.2. The ~~Director~~ Secretary may approve the manufacture, mixing, storage, use or application of cutback asphalts where:

~~+31.3.2.a.~~ Long-life stockpile storage is necessary; or

~~2~~31.3.2.b. The cutback asphalt is to be used solely as a penetrating prime coat.

~~3~~31.3.2.c. During the ozone season, no person shall cause, allow, or permit the manufacturing, mixing, storage, or use of emulsified asphalt that contains any volatile organic compound (VOC).

31.4. Recordkeeping. -- The owner or operator of any facility subject to this section 31. shall maintain records of the manufacture, mixing, storage, use, or application of any asphalt containing VOC during the ozone season. These records shall be maintained in a readily accessible location for a minimum of 3 years and shall be made available to the ~~Director~~ Secretary upon verbal or written request.

§45-21-32. Manufacture of Synthesized Pharmaceutical Products.

32.1. Applicability. -- This section 32. applies to the following sources of volatile organic compounds (VOC) at all synthesized pharmaceutical manufacturing facilities:

~~a~~32.1.1. Reactors;

~~b~~32.1.2. Distillation operations;

~~c~~32.1.3. Crystallizers;

~~d~~32.1.4. Centrifuges;

~~e~~32.1.5. Vacuum dryers;

~~f~~32.1.6. Air dryers;

~~g~~32.1.7. Production equipment exhaust systems;

~~h~~32.1.8. Rotary vacuum filters and other filters;

~~i~~32.1.9. In-process tanks; and

~~j~~32.1.10. Leaks.

32.2. Definitions. -- As used in this section 32., all terms not defined herein shall have the meaning given them in section 2.

~~a~~32.2.1. "Production equipment exhaust system" means a device for collecting and directing out of the work area VOC fugitive emissions from reactor openings, centrifuge openings, and other vessel

openings for the purpose of protecting workers from excessive VOC exposure.

~~b~~32.2.2. "Reactor" means a vat or vessel, which may be jacketed to permit temperature control, designed to contain chemical reactions.

~~e~~32.2.3. "Separation operation" means a process that separates a mixture of compounds and solvents into two or more components. Specific mechanisms include extraction, centrifugation, filtration, and crystallization.

~~d~~32.2.4. "Synthesized pharmaceutical manufacturing" means manufacture of pharmaceutical products and intermediates by chemical synthesis. The production and recovery of materials produced via fermentation, extraction of organic chemicals from vegetative materials or animal tissues, and formulation and packaging of the product are not considered synthesized pharmaceutical manufacturing.

32.3. Standards.

~~a~~32.3.1. Reactors, distillation operations, crystallizers, centrifuges, and vacuum dryers. -- The owner or operator of a synthesized pharmaceutical manufacturing facility subject to this section 32. shall control the VOC emissions from all vents from reactors, distillation operations, crystallizers, centrifuges, and vacuum dryers at the facility that emit 6.8 kilograms per day (kg/day) (15 pounds per day [lb/day]) or more of VOC as determined by the procedure in "Control of Volatile Organic Emissions from Manufacture of Synthesized Pharmaceutical Products," Appendix B, EPA-450/2-78-029, December 1978. Surface condensers or equivalent controls shall be used, provided that:

~~1~~32.3.1.a. If surface condensers are used, the condenser outlet gas temperature shall not exceed the allowable temperature limit described for each associated vapor pressure in the ~~following table; or Table 45-21D~~

Allowable condenser outlet gas temperature, EC	VOC vapor pressure at 20EC, kPa (psi)
-25	>40.01 (5.8)
-15	>20.0 (2.9)
0	>10.0 (1.5)
10	>7.0 (1.0)
25	>3.5 (0.5)

Table 45-21D

Allowable condenser outlet gas temperature, °C	VOC vapor pressure at 20° C (kPa)	VOC vapor pressure at 20° C (psi)
<u>-25</u>	<u>>40.01</u>	<u>5.8</u>
<u>-15</u>	<u>>20.0</u>	<u>2.9</u>
<u>0</u>	<u>>10.0</u>	<u>1.5</u>
<u>10</u>	<u>>7.0</u>	<u>1.0</u>
<u>25</u>	<u>>3.5</u>	<u>0.5</u>

~~2~~32.3.1.b. If equivalent controls such as carbon absorption or incineration are used, the VOC emissions shall be reduced by at least as much as they would be by using a surface condenser. The owner or operator shall calculate the efficiency equivalent to a condenser in accordance with the procedures

specified on pages 4-2 through 4-6 in "Control of Volatile Organic Emissions from Manufacture of Synthesized Pharmaceutical Products," Appendix B, EPA-450/2-78-029, December 1978.

~~b~~32.3.2. Air dryers and production equipment exhaust systems. -- The owner or operator of a synthesized pharmaceutical manufacturing facility subject to this section 32. shall reduce the VOC emissions from all air dryers and production equipment exhaust systems:

~~+32.3.2.a.~~ By at least 90 percent if emissions are 150 kg/day (330 lb/day) or more of VOC; or

~~232.3.2.b.~~ To 15.0 kg/day (33 lb/day) or less if emissions are less than 150 kg/day (330 lb/day) of VOC.

~~e~~32.3.3. Storage tanks. -- The owner or operator of a synthesized pharmaceutical manufacturing facility subject to this section 32. shall reduce the VOC emissions from storage tanks by:

~~+32.3.3.a.~~ Providing a vapor balance system or equivalent control that is at least 90 percent effective in reducing emissions from truck or railcar deliveries to storage tanks with capacities greater than 7,500 liters (L) (2,000 gallons [gal]) that store VOC with vapor pressures greater than 28.0 kiloPascals (kPa) (4.1 pounds per square inch [psi]) at 20EC (68EF); and

~~232.3.3.b.~~ Installing pressure/vacuum conservation vents set at 0.2 kPa (0.03 pounds per square inch atmospheric [psia]) on all storage tanks that store VOC with vapor pressures greater than 10.0 kPa (1.5 psi) at 20EC (68EF).

~~d~~32.3.4. Centrifuges, rotary vacuum filters, and other filters. -- The owner or operator of a synthesized pharmaceutical facility subject to this section 32. shall enclose all centrifuges, rotary vacuum filters, and other filters having an exposed liquid surface where the liquid contains VOC and exerts a total VOC vapor pressure of 3.50 kPa (0.5 psi) or more at 20EC (68EF).

~~e~~32.3.5. In-process tanks. -- The owner or operator of a synthesized pharmaceutical facility subject to this section 32. shall install covers on all in-process tanks that contain VOC at any time. These covers shall remain closed, unless production, sampling, maintenance, or inspection procedures require operator access.

~~f~~32.3.6. Leaks. -- The owner or operator of a synthesized pharmaceutical manufacturing facility subject to this section 32. shall repair all leaks from which a liquid containing VOC can be observed running or dripping. The repair shall be completed as soon as practicable but no later than 15 calendar days after the leak is found. If the leaking component cannot be repaired until the process is shut down, the leaking component shall then be repaired before the process is restarted.

32.4. Testing. -- The owner or operator of any facility containing sources subject to this section 32. shall comply with the testing requirements in section 45.

32.5. Monitoring requirements for air pollution control equipment.

~~a~~32.5.1. At a minimum, continuous monitors for the following parameters shall be installed on air pollution control equipment used to control sources subject to this section 32.:

~~132.5.1.a.~~ Destruction device combustion temperature;

232.5.1.b. Temperature rise across a catalytic incinerator bed;

332.5.1.c. VOC concentration on a carbon adsorption unit to determine breakthrough;

432.5.1.d. Outlet gas temperature of a refrigerated condenser; and

532.5.1.e. Temperature of a non-refrigerated condenser coolant supply system.

~~b~~32.5.2. Each monitor shall be equipped with a recording device.

~~e~~32.5.3. Each monitor shall be calibrated quarterly.

~~d~~32.5.4. Each monitor shall operate at all times while the associated control equipment is operating.

32.6. Recordkeeping.

~~a~~32.6.1. The owner or operator of a pharmaceutical manufacturing facility subject to this section 32. shall maintain the following records:

~~+~~32.6.1.a. Parameters listed in subsection 32.5. shall be recorded; and

232.6.1.b. For sources subject to this section 32., the solvent true vapor pressure as determined by ASTM D323-72 shall be recorded for every process.

~~b~~32.6.2. For any leak subject to ~~section 32.3.f.~~ subdivision 32.3.6., which cannot be readily repaired within 1 hour after detection, the following records shall be kept:

~~+~~32.6.2.a. The name of the leaking equipment;

~~2~~32.6.2.b. The date and time the leak is detected;

~~3~~32.6.2.c. The action taken to repair the leak; and

432.6.2.d. The date and time the leak is repaired.

32.7. Reporting. -- The owner or operator of any facility containing sources subject to this section 32. shall comply with the requirements in subsections 5.1. and 5.2.

§45-21-33. [RESERVED]

§45-21-34. Graphic Arts Systems.

34.1. Applicability.

~~a~~34.1.1. This section 34. applies to any packaging rotogravure, publication rotogravure, or flexographic printing press at any facility whose maximum theoretical emissions of volatile organic compound (VOC) without control devices from all printing presses are greater than or equal to 90.7 megagrams (Mg) (100 tons) per year. An owner or operator of a facility whose emissions are below this applicability threshold shall comply with the certification, recordkeeping, and reporting requirements of ~~section 34.7.a~~ subdivision 34.7.1.

34.2. Definitions. -- As used in this section 34., all terms not defined herein shall have the meaning given them in section 2.

~~a~~34.2.1. "Flexographic printing press" means a printing press that uses a roll printing technique in which the pattern to be applied is raised above the printing roll and the image carrier is made of rubber or other elastomeric materials.

~~b~~34.2.2. "Packaging rotogravure printing press" means a rotogravure printing press used to print on paper, paper board, metal foil, plastic film, and other substrates that are, in subsequent operations, formed into packaging products and labels, and other nonpublication products.

~~c~~34.2.3. "Printing press" means equipment used to apply words, pictures, or graphic designs to either a continuous substrate or a sheet. A continuous substrate consists of paper, plastic, or other material that is unwound from a roll, passed through coating or ink applicators and any associated drying areas. The press includes all coating and ink applicators and drying areas between unwind and rewind of the continuous substrate. A sheet consists of paper, plastic, or other material that is carried through the process on a moving belt. The press includes all coating and ink applicators and drying operations between the time that the sheet is put on the moving belt until it is taken off.

~~d~~34.2.4. "Publication rotogravure printing press" means a rotogravure printing press on which the following paper products are printed:

~~1~~34.2.4.a. Catalogues, including mail order and premium;

~~2~~34.2.4.b. Direct mail advertisements, including circulars, letters, pamphlets, cards, and printed envelopes;

~~3~~34.2.4.c. Display advertisements, including general posters, outdoor advertisements, car cards, window posters; counter and floor displays; point-of-purchase, and other printed display material;

~~4~~34.2.4.d. Magazines, ~~B~~ books;

~~5~~34.2.4.e. Miscellaneous advertisements, including brochures, pamphlets, catalogue sheets, circular folders, announcements, package inserts, book jackets, market circulars magazine inserts, and shopping news;

~~6~~34.2.4.f. Newspapers, magazine and comic supplements for newspapers, and pre-printed newspaper inserts, including hi-fi and spectacolor rolls and sections;

~~7~~34.2.4.g. Periodicals; or

~~8~~34.2.4.h. Telephone and other directories, including business reference services.

~~e~~34.2.5. "Roll printing" means the application of words, designs, and pictures to a substrate, usually by means of a series of rolls each with only partial coverage.

~~f~~34.2.6. "Rotogravure printing press" means any printing press designed to print on a substrate using a gravure cylinder.

34.3. Standards.

~~a~~34.3.1. No owner or operator of a packaging rotogravure or flexographic printing press subject to this section 34. shall apply any coating or ink unless the VOC content is equal to or less than one of the following:

~~1~~34.3.1.a. 40 percent VOC by volume of the coating or ink, minus water, as applied;

~~2~~34.3.1.b. 25 percent VOC by volume of the volatile content in the coating or ink, as applied;
or

~~3~~34.3.1.c. 0.5 kilogram (kg) VOC per kg (0.5 pound [lb] VOC per lb) coating solids, as applied.

~~b~~34.3.2. No owner or operator of a publication rotogravure printing press subject to this section 34. shall apply any coating or ink unless the VOC content is equal to or less than one of the following:

~~1~~34.3.2.a. 40 percent VOC by volume of the coating or ink, minus water, as applied; or

~~2~~34.3.2.b. 25 percent VOC by volume of the volatile content in the coating or ink, as applied.

~~e~~34.3.3. As an alternative to compliance with the limits in ~~section 34.3.a.~~ subdivision 34.3.1. or section 34.3.b. subdivision 34.3.2., an owner or operator of a packaging rotogravure, publication rotogravure, or flexographic printing press may comply with the requirements of this section 34. by meeting the requirements of subsection 34.4. or subsection 34.5.

34.4. Daily-weighted average limitations.

~~a~~34.4.1. No owner or operator of a packaging rotogravure, publication rotogravure, or flexographic printing press shall apply coatings or inks on the subject printing press unless the daily-weighted average, by volume, VOC content of all coatings and inks, as applied, each day on the subject printing press does not exceed the limitation specified in either ~~section 34.3.a.1. or section 34.3.b.1. paragraph 34.3.1.a. or 34.3.2.a. {(as determined by section 34.4.d. subdivision 34.4.4.)}; section 34.3.a.2. or section 34.3.b.2. paragraph 34.3.1.b. or 34.3.2.b. {(as determined by section 34.4.e. subdivision 34.4.5.)}; or, in the case of packaging rotogravure or flexographic printing, section 34.3.a.3. paragraph 34.3.1.c. {(as determined by section 34.4.f. subdivision 34.4.6.)}~~ of this section 34.

~~b~~34.4.2. An owner or operator may comply with the daily-weighted average limitation by grouping coatings or inks used on a printing press into two categories that meet the conditions in ~~sections 34.4.b.1. and 34.4.b.2. paragraphs 34.4.2.a. and 34.4.2.b. of this section.~~ Any use of averaging between the two categories of coating or inks used on a packaging rotogravure press or on a flexographic press requires compliance with the emission standard in ~~section 4.3.a.3. paragraph 4.3.1.c., as determined by the equation in section 34.4.f. subdivision 34.4.6.~~

~~1~~34.4.2.a. The daily-weighted average VOC content for the first category must comply with ~~section 34.3.a.1. or section 34.3.b.1. paragraph 34.3.1.a. or 34.3.2.a., as determined by applying the equation in section 34.4.d. subdivision 34.4.4. to the coatings or inks in this first category.~~

~~2~~34.4.2.b. The daily weighted-average VOC content for the second category must comply with ~~section 34.3.a.2. or section 34.3.b.2. paragraph 34.3.1.b. or 34.3.2.b., as determined by applying the equation in section 34.4.e. subdivision 34.4.5. to the coatings or inks in this second category.~~

~~e~~34.4.3. Compliance with this subsection 34.4. shall be demonstrated through the applicable coating or ink analysis test methods and procedures specified in section 42. and the recordkeeping and reporting requirements specified in ~~section 34.7.e~~ subdivision 34.7.3.

~~d~~34.4.4. The following equation shall be used to determine if the weighted average VOC content of all coatings and inks, as applied, each day on the subject printing press exceeds the limitation specified in ~~section 34.3.a.1. or section 34.3.b.1.~~ paragraph 34.3.1.a. or 34.3.2.a.:

$$VOC_{(i)(A)} = \frac{\sum_{i=1}^n L_i V_{VOCI}}{\sum_{i=1}^n L_i (V_{si} + V_{VOCI})} \times 100$$

~~w~~ Where:

VOC_{(i)(A)} = The weighted average VOC content in units of percent VOC by volume of the volatile content of all coatings and inks (minus water and exempt compounds) used each day;

i = Subscript denoting a specific coating or ink, as applied;

n = The number of different coatings and/or inks, as applied, each day on a printing press;

L_i = The liquid volume of each coating or ink, as applied, used that day in units of liters (L) (gallons [gal]);

V_{si} = The volume fraction of solids in each coating or ink, as applied; and

V_{VOCI} = The volume fraction of VOC in each coating or ink, as applied.

~~e~~34.4.5. The following equation shall be used to determine if the weighted average VOC content of all coatings and inks, as applied, each day on the subject printing press exceeds the limitation specified in ~~section 34.3.a.2. or section 34.3.b.2.~~ paragraph 34.3.1.b. or 34.3.2.b.:

$$VOC_{(i)(A)} = \frac{\sum_{i=1}^n L_i V_{VOCI}}{\sum_{i=1}^n L_i (V_{si} + V_{VOCI})} \times 100$$

~~w~~Where:

VOC_{(i)(B)} = The weighted average VOC content in units of percent VOC by volume of the volatile content of all coatings and inks used each day;

i = Subscript denoting a specific coating or ink, as applied;

n = The number of different coatings and/or inks, as applied, each day on each printing press;

L_i = The liquid volume of each coating or ink, as applied, in units of L (gal);

V_{VOCI} = The volume fraction of VOC in each coating or ink, as applied; and

V_{VCi} = The volume fraction of volatile matter in each coating or ink, as applied.

~~f~~34.4.6. The following equation shall be used to determine if the weighted average VOC content of all coatings and inks, as applied, each day on the subject printing press exceeds the limitation specified in ~~section 34.3.a.3.~~ paragraph 34.3.1.c.:

$$VOC_{(i)(c)} = \frac{\sum_{i=1}^n L_i D_i W_{VOCI}}{\sum_{i=1}^n L_i D_i W_{si}}$$

Where:

$VOC_{(i)(c)}$ = The weighted average VOC content in units of mass of VOC per mass of coating solids;

i = Subscript denoting a specific coating or ink, as applied;

n = The number of different coatings and/or inks, as applied, each day on a printing press;

L_i = The liquid volume of each coating or ink, as applied, used on the day in units of L (gal);

D_i = The density of each coating or ink, as applied, in units of mass of coating or ink per unit volume of coating or ink;

W_{VOCI} = The weight fraction of VOC in each coating or ink, as applied; and

W_{si} = The weight fraction of solids in each coating or ink, as applied.

34.5. Control devices. -- No owner or operator of a packaging rotogravure, publication rotogravure, or flexographic printing press equipped with a control system shall operate the printing press unless the owner or operator meets the following requirements:

~~a~~34.5.1. A carbon adsorption control device is used that reduces the VOC emissions delivered from the capture system to the control device by at least 90 percent by weight;

~~b~~34.5.2. An incineration control device is used to reduce VOC emissions delivered from the capture system to the control device by at least 90 percent, by weight;

~~c~~34.5.3. Any other VOC emission control device is used to reduce the VOC emissions delivered from the capture system to the control device by at least 90 percent; and

~~d~~34.5.4. The printing press is equipped with a capture system and control device that provides an overall emission reduction efficiency of at least:

~~1~~34.5.4.a. 75 percent for a publication rotogravure printing press;

~~2~~34.5.4.b. 65 percent for a packaging rotogravure printing press; or

~~3~~34.5.4.c. 60 percent for a flexographic printing press.

34.6. Test methods. -- The VOC content of each coating and ink and the efficiency of each capture system and control device shall be determined by the applicable test methods and procedures specified in sections 42. and 44. to establish the records required under subsection 34.7.

34.7. Recordkeeping and reporting.

~~a~~34.7.1. Requirements for exempt sources. -- ~~By one year from May 31, 1993, a~~Any owner or operator of a printing press that is exempted from this section 34. because of the criteria in subsection 34.1. shall comply with the following:

~~434.7.1.a.~~ Initial certification. -- The owner or operator shall certify to the ~~Director~~ Secretary that the facility is exempt under the provisions of subsection 34.1. Such certification shall include:

~~A34.7.1.a.1.~~ The name and location of the facility;

~~B34.7.1.a.2.~~ The address and telephone number of the person responsible for the facility;

~~C34.7.1.a.3.~~ A declaration that the facility is exempt from this section 34. because of the criteria in subsection 34.1.; and

~~D34.7.1.a.4.~~ Calculations demonstrating that total potential emissions of VOC from all flexographic and rotogravure printing presses at the facility are and will be less than 90.7 Mg (100 tons) per calendar year before the application of capture systems and control devices. Total potential emissions of VOC for a flexographic or rotogravure printing facility is the sum of potential emissions of VOC from each flexographic and rotogravure printing press at the facility. The following equation shall be used to calculate total potential emissions of VOC per calendar year before the application of capture systems and control devices for each flexographic and rotogravure printing press at the facility:

$$E_p = A \times B$$

~~w~~ Where:

E_p = Total potential emissions of VOC from one flexographic or rotogravure printing press in units of kilograms per year (kg/yr) (pounds per year [lb/yr]).

A = Weight of VOC per volume of solids of the coating or ink with the highest VOC content, as applied, each year on the printing press in units of kilograms VOC per liter (kg VOC/L) (pounds of VOC per gallon [lb VOC/gal]) of coating or ink solids.

B = Total volume of solids for all coatings and inks that can potentially be applied each year on the printing press in units of liters per year (L/yr) (gallons per year [gal/yr]). The instrument and/or method by which the owner or operator accurately measured or calculated the volume of coating and ink solids applied and the amount that can potentially be applied each year on the printing press shall be described in the certification to the ~~Director~~ Secretary.

~~234.7.1.b.~~ Recordkeeping. -- The owner or operator shall collect and record all of the following information each year for each printing press and maintain the information at the facility for a period of 3 years.

~~A34.7.1.b.1.~~ The name and identification number of each coating and ink, as applied, on each printing press;

~~B34.7.1.b.2.~~ The weight of VOC per volume of coating solids and the volume of solids of each coating and ink, as applied, each year on each printing press; and

~~C34.7.1.b.3.~~ The total potential emissions as calculated in ~~section 34.7.a.1.B~~; subparagraph 34.7.1.a.2, using VOC content for that year.

~~334.7.1.c.~~ Reporting. -- Any record showing that total potential emissions of VOC from all printing presses exceed 90.7 Mg (100 tons) in any calendar year before the application of capture systems and control devices shall be reported by sending a copy of such record to the ~~Director~~ Secretary within 30 days after the exceedance occurs.

~~b~~34.7.2. Requirements for sources using complying coatings or inks. -- Any owner or operator of a printing press subject to this section 34. and complying by means of use of complying coatings or inks, shall comply with the following:

~~1~~34.7.2.a. Initial certification. -- ~~By one year from May 31, 1993, or a~~ Upon initial startup of a new printing press, or upon changing the method of compliance for an existing subject printing press from daily-weighted averaging or control devices to use of complying coatings or inks, the owner or operator of a subject printing press shall certify to the ~~Director~~ Secretary that the printing press will be in compliance with ~~section 34.3.a. or section 34.3.b. subdivision 34.3.1. or 34.3.2.~~ on and after ~~one year from May 31, 1993, or on and after~~ the initial startup date. Such certification shall include:

~~A~~34.7.2.a.1. The name and location of the facility;

~~B~~34.7.2.a.2. The address and telephone number of the person responsible for the facility;

~~C~~34.7.2.a.3. Identification of subject sources;

~~D~~34.7.2.a.4. The name and identification number of each coating and ink, as applied; and

~~E~~34.7.2.a.5. The VOC content of all coatings and inks, as applied.

~~2~~34.7.2.b. Recordkeeping. -- ~~By one year after May 31, 1993, or o~~ On and after the initial startup date, the owner or operator of a printing press subject to the limitations of this section 34. and complying by means of ~~section 34.3.a.1. or section 34.3.b.1. paragraph 34.3.1.a. or 34.3.2.a.~~ shall collect and record all of the following information each day for each coating line and maintain the information at the facility for a period of 3 years:

~~A~~34.7.2.b.1. The name and identification number of each coating and ink, as applied; and

~~B~~34.7.2.b.2. The VOC content of each coating and ink, as applied, expressed in units necessary to determine compliance.

~~3~~34.7.2.c. Reporting.

~~A~~34.7.2.c.1. Any record showing an exceedance of the VOC contents of ~~section 34.3.a. or section 34.3.b. subdivision 34.3.1. or 34.3.2.~~ shall be reported by the owner or operator of the subject printing press to the ~~Director~~ Secretary within 30 days following the exceedance; and

~~B~~34.7.2.c.2. At least 30 calendar days before changing the method of compliance with this section 34. from the use of complying coatings to daily-weighted averaging or control devices, the owner or operator shall comply with all requirements of ~~section 34.7.e.1. or section 34.7.d.1. paragraph 34.7.c.a. or 34.7.4.a.,~~ respectively. Upon changing the method of compliance with this section 34. from the use of complying coatings to daily-weighted averaging or control devices, the owner or operator shall comply with all requirements of ~~section 34.7.e. or section 34.7.d. subdivision 34.7.3. or 34.7.4.,~~ respectively.

~~e~~34.7.3. Requirements for sources using daily-weighted averaging. -- Any owner or operator of a printing press subject to the limitations of this section 34. and complying by means of daily-weighted averaging shall comply with the following:

~~434.7.3.a.~~ Initial certification. -- ~~By one year after May 31, 1993, or u~~ Upon initial startup of a new printing press, or upon changing the method of compliance for an existing subject press from use of complying coating or control devices to daily-weighted averaging, the owner or operator of the subject printing press shall certify to the ~~Director~~ Secretary that the printing press will be in compliance with subsection 34.4. ~~on and after one year after May 31, 1993, or on and after the initial startup date.~~ Such certification shall include:

~~A34.7.3.a.1.~~ The name and location of the facility;

~~B34.7.3.a.2.~~ The address and telephone number of the person responsible for the facility;

~~C34.7.3.a.3.~~ The name and identification of each printing press which will comply by means of subsection 34.4.;

~~D34.7.3.a.4.~~ The name and identification number of each coating and ink available for use on each printing press;

~~E34.7.3.a.5.~~ The VOC content of each coating and ink, as applied, each day on each printing press, expressed in units necessary to determine compliance;

~~F34.7.3.a.6.~~ The instrument or method by which the owner or operator will accurately measure or calculate the volume of each coating and ink, as applied, each day on each printing press;

~~G34.7.3.a.7.~~ The method by which the owner or operator will create and maintain records each day as required in ~~section 34.7.e.2.~~ paragraph 34.7.3.b.; and

~~H34.7.3.a.8.~~ An example of the format in which the records required in ~~section 34.7.e.2.~~ paragraph 34.7.c.b. will be kept.

~~234.7.3.b.~~ Recordkeeping. -- On and after ~~one year after May 31, 1993, or on and after the~~ initial startup date, the owner or operator of a printing press subject to the limitations of this section 34. and complying by means of daily-weighted averaging shall collect and record all of the following information each day for each printing press and maintain the information at the facility for a period of 3 years:

~~A34.7.3.b.1.~~ The name and identification number of each coating and ink, as applied, on each printing press;

~~B34.7.3.b.2.~~ The VOC content and the volume of each coating and ink, as applied, each day on each printing press, expressed in units necessary to determine compliance; and

~~C34.7.3.b.3.~~ The daily-weighted average VOC content of all coatings and inks, as applied, on each printing press.

~~334.7.3.c.~~ Reporting. -- ~~On and after one year after May 31, 1993, t~~ The owner or operator of a subject printing press shall notify the ~~Director~~ Secretary in the following instances:

~~A34.7.3.c.1.~~ Except as provided in subsection 9.3., any record showing non-compliance with subsection 34.4. shall be reported by sending a copy of such record to the ~~Director~~ Secretary within 30 days following the occurrence; and

~~B~~34.7.3.c.2. At least 30 calendar days before changing the method of compliance with this section 34. from daily-weighted averaging to use of complying coatings or control devices, the owner or operator shall comply with all requirements of ~~section 34.7.b.1. or section 34.7.d.1.~~ paragraph 34.7.2.a. or 34.7.4.a., respectively. Upon changing the method of compliance with this section 34. from daily-weighted averaging to use of complying coatings or control devices, the owner or operator shall comply with all requirements of ~~section 34.7.b. or section 34.7.e.~~ subdivision 34.7.2. or 34.7.3., respectively.

~~d~~34.7.4. Requirements for sources using control devices. -- Any owner or operator of a printing press subject to this section 34. and complying by means of control devices shall comply with subsection 4.5. and the following:

~~1~~34.7.4.a. Initial certification. -- ~~By one year from May 31, 1993, or a~~ Upon initial startup of a new printing press, or upon changing the method of compliance for an existing printing press from use of complying coatings or daily-weighted averaging to control devices, the owner or operator of the subject printing press shall perform all tests and submit to the ~~Director~~ Secretary the results of all tests and calculations necessary to demonstrate that the subject printing press will be in compliance with subsection 34.5., ~~on and after one year from May 31, 1993, or~~ on and after the initial startup date.

~~2~~34.7.4.b. Recordkeeping. -- On and after ~~one year from May 31, 1993, or on and after~~ the initial startup date, the owner or operator of a printing press subject to the limitations of this section 34. and complying by means of control devices shall collect and record all of the following information each day for each printing press and maintain the information at the facility for a period of 3 years:

~~A~~34.7.4.b.1. Control device monitoring data;

~~B~~34.7.4.b.2. A log of operating time for the capture system, control device, monitoring equipment and the associated printing press; and

~~C~~34.7.4.b.3. A maintenance log for the capture system, control device, and monitoring equipment detailing all routine and non-routine maintenance performed including dates and duration of any outages.

~~3~~34.7.4.c. Reporting. -- ~~On and after one year from May 31, 1993, t~~ The owner or operator of a subject printing press shall notify the ~~Director~~ Secretary in the following instances:

~~A~~34.7.4.c.1. Except as provided in subsection 9.3., any record showing non-compliance with subsection 34.5. shall be reported by sending a copy of such record to the ~~Director~~ Secretary within 30 days following the occurrence; and

~~B~~34.7.4.c.2. At least 30 calendar days before changing the method of compliance with this section 34. from control devices to use of complying coatings or daily-weighted averaging, the owner or operator shall comply with all requirements of ~~section 34.7.b.1. or section 34.7.e.1.~~ paragraph 34.7.2.a. or 34.7.3.a., respectively. Upon changing the method of compliance with this section 34. from control devices to use of complying coatings or daily-weighted averaging, the owner or operator shall comply with all requirements of ~~section 34.7.b. or section 34.7.e.~~ subdivision 34.7.2. or 34.7.3., respectively.

§45-21-35. Petroleum Solvent Dry Cleaners.

35.1. Applicability.

~~a~~35.1.1. This section 35. applies to petroleum solvent dry cleaning facilities.

~~b~~35.1.2. Any petroleum solvent dry cleaning facility that consumes less than 123,000 liters (L) (32,500 gallons [gal]) of petroleum solvent per year is subject only to the requirements of ~~section 35.5-a~~ subdivision 35.5.1.

~~e~~35.1.3. This section does not apply to facilities that use only perchloroethylene.

35.2. Definitions. -- As used in this section 35., all terms not defined herein shall have the meaning given them in section 2.

~~a~~35.2.1. "Filter cartridge" means a replaceable filter unit containing filtration paper and carbon or carbon only.

~~b~~35.2.2. "Perceptible leaks" means any petroleum solvent vapor or liquid leaks that are conspicuous from visual observation or that bubble after application of a soap solution, such as pools or droplets of liquid, open containers of solvent, or solvent-laden waste standing open to the atmosphere.

~~e~~35.2.3. "Petroleum solvent cartridge filtration system" means a process in which soil-laden solvent is pumped under pressure from a washer through a sealed vessel containing filter cartridges that remove entrained solids and impurities from the solvent.

~~d~~35.2.4. "Petroleum solvent dry cleaning facility" means a facility engaged in the cleaning of fabrics, clothing, and other articles in a petroleum solvent by means of one or more washes in the solvent, extraction of excess solvent by spinning, and drying by tumbling in an airstream. Equipment at the facility includes, but is not limited to, any petroleum solvent washer, dryer, solvent filter system, settling tank, vacuum still, and any other container or conveyor of petroleum solvent.

~~e~~35.2.5. "Settling tank" means a container, and any associated piping and ductwork, that gravimetrically separates oils, grease, and dirt from petroleum solvent.

~~f~~35.2.6. "Solvent filter" means a discrete solvent filter unit containing a porous medium that traps and removes contaminants from petroleum solvent, together with the piping and ductwork used in the installation of this device.

~~g~~35.2.7. "Solvent recovery dryer" means a class of dry cleaning dryers that employs a condenser to condense and recover solvent vapors evaporated in a closed-loop stream of heated air, together with the piping and ductwork used in the installation of this device.

~~h~~35.2.8. "Standard dryer" means a device that dries dry-cleaned articles by tumbling in a heated airstream.

~~i~~35.2.9. "Still" means a device used to volatilize, separate, and recover petroleum solvent from contaminated solvent, together with the piping and ductwork used in the installation of this device.

~~j~~35.2.10. "Washer" means a machine which agitates fabric articles in a petroleum solvent bath and spins the articles to remove the solvent, together with the piping and ductwork used in the installation of this device.

35.3. Standards.

a35.3.1. Fugitive emissions. -- The owner or operator of a petroleum solvent dry cleaning facility subject to this section 35. shall ensure that:

435.3.1.a. There are no perceptible leaks from any portion of the equipment; and

235.3.1.b. All washer lint traps, button traps, access doors, and other parts of the equipment where solvent may be exposed to the atmosphere are kept closed at all times except when opening is required for proper operation or maintenance.

b35.3.2. Leak repair. -- The owner or operator of a petroleum solvent dry cleaning facility subject to this section 35. shall repair any perceptible leaks in any portion of the dry cleaning equipment within 3 working days after the leak is detected. If necessary repair parts are not on hand, the owner or operator shall order these parts within 3 working days and repair the leaks no later than 3 working days after the parts arrive.

e35.3.3. Dryers. -- The owner or operator of a petroleum solvent dry cleaning facility subject to this section 35. shall:

435.3.3.a. Limit the volatile organic compound (VOC) emissions from each standard dryer to 1.6 kilograms (kg) (3.5 pounds [lb]) VOC per 45 kg (100 lb) dry weight of articles dry cleaned; or

235.3.3.b. Install, maintain, and operate a solvent-recovery dryer such that the dryer remains closed and the recovery phase continues until a final recovered solvent flow rate of no greater than 50 milliliters per minute (ml/min) (0.013 gallons per minute [gal/min]) is attained.

d35.3.4. Filtration systems. -- The owner or operator of a petroleum solvent filtration system subject to this section 35. shall:

435.3.4.a. Reduce the VOC content in filtration waste to 1 kg (2.2 lb) VOC per 100 kg (220 lb) dry weight of articles dry cleaned; or

235.3.4.b. Install, maintain, and operate a cartridge filtration system according to the manufacturer's instructions, and drain all filter cartridges in their sealed housings for 8 hours or more before their removal.

35.4. Test methods and procedures.

a35.4.1. To be in compliance with ~~section 35.3.e.1.~~ paragraph 35.3.3.a., each owner or operator of a petroleum solvent dry cleaning facility subject to this section 35. shall:

435.4.1.a. Calculate the weight of VOCs vented from the dryer emission control device calculated by using Methods 1, 2, and 25A of 40 CFR Part 60, Appendix A with the following specifications:

A35.4.1.a.1. Field calibration of the flame ionization analyzer with propane standards;

B35.4.1.a.2. Laboratory determination of the ratio of the flame ionization analyzer response to a given parts per million (ppm) by volume concentration of propane to the response to the same ppm concentration of the VOCs to be measured; and

~~€35.4.1.a.3.~~ Determination of the weight of VOCs vented to the atmosphere by:

~~‡35.4.1.a.3.A.~~ Multiplying the ratio determined in ~~section 35.4.a.1.B.~~ subparagraph 35.4.1.a.2. by the measured concentration of VOC gas (as propane) as indicated by the flame ionization analyzer response output record;

~~‡35.4.1.a.3.B.~~ Converting the ppm by volume value calculated in ~~section part 35.4.a.1.C.‡1.~~ into a mass concentration value for the VOCs present; and

~~‡35.4.1.a.3.C.~~ Multiplying the mass concentration value calculated in ~~section part 35.4.a.1.C.‡2.~~ by the exhaust flow rate determined by using Methods 1 and 2 of 40 CFR Part 60, Appendix A;

~~‡35.4.1.b.~~ Calculate the dry weight of articles dry cleaned; and

~~‡35.4.1.c.~~ Repeat ~~sections 35.4.a.1. and 35.4.a.2.~~ paragraphs 35.4.1.a. and 35.4.1.b. for normal operating conditions that encompass at least 30 dryer loads, which total not less than 1,800 kg (4,000 lb) dry weight and represent a normal range of variations in fabrics, solvents, load weights, temperatures, flow rates, and process deviations.

~~‡35.4.2.~~ To determine initial compliance with ~~section 35.3.e.2.~~ paragraph 35.3.3.b., the owner or operator of a petroleum solvent dry cleaning facility subject to this section 35. shall:

~~‡35.4.2.a.~~ Verify that the flow rate of recovered solvent from the solvent-recovery dryer at the termination of the recovery phase is no greater than 50 ml/min (0.013 gal/min) by using the following procedure:

~~A35.4.2.a.1.~~ Determine the appropriate location for measuring the flow rate of recovered solvent; the suggested point is at the outlet of the solvent-water separator;

~~B35.4. 2.a.2.~~ Near the end of the recovery cycle, divert the flow of recovered solvent to a graduated cylinder;

~~€35.4. 2.a.3.~~ Continue the cycle until a flow rate of 50 ml/min (0.013 gal/min) is reached; and

~~‡35.4. 2.a.4.~~ Record the type of articles dry cleaned and the length of the cycle.

~~‡35.4.2.b.~~ To determine initial compliance with ~~section 35.3.e.2.~~ paragraph 35.3.3.b., conduct the procedure in ~~section 35.4.b.1.~~ paragraph 35.4.2.a. for at least 50 percent of the dryer loads over a period of no less than 2 consecutive weeks.

~~€35.4.3.~~ To be in compliance with ~~section 35.3.d.~~ subdivision 35.3.4., the owner or operator of a petroleum solvent dry cleaning facility subject to this section 35. shall:

~~‡35.4.3.a.~~ Calculate the weight of volatile organic compounds contained in each of at least five 1 kg (2.2 lb) samples of filtration waste material taken at intervals of at least 1 week, by employing ASTM D322-80 (Standard Test Method for Gasoline Diluent in Used Gasoline Engine Oils by Distillation);

~~235.4.3.b.~~ Calculate the total dry weight of articles dry cleaned during the intervals between removal of filtration waste samples, as well as the total mass of filtration waste produced in the same period; and

~~335.4.3.c.~~ Calculate the weight of VOCs contained in filtration waste material per 100 kg (220 lb) dry weight of articles dry cleaned.

~~435.4.4.~~ Compliance with subsection 35.3. requires that each owner or operator of a petroleum solvent dry cleaning facility subject to this section 35. make weekly inspections of washers, dryers, solvent filters, settling tanks, vacuum stills, and all containers and conveyors of petroleum solvent to identify perceptible VOC vapor or liquid leaks.

35.5. Recordkeeping requirements.

~~a35.5.1.~~ The owner or operator of a petroleum solvent dry cleaning facility claiming exemption from this section 35. shall maintain records of annual solvent consumption in a readily accessible location for at least 3 years to document whether the applicability threshold in ~~section 35.1.b.~~ subdivision 35.1.2. has been exceeded.

~~b35.5.2.~~ The owner or operator of a petroleum solvent dry cleaning facility subject to this section 35. shall maintain the following records in a readily accessible location for at least 3 years:

~~+35.5.2.a.~~ Records of the weight of VOCs vented from the dryer emission control device calculated according to ~~section 35.4.a.1.~~ paragraph 35.4.1.a.;

~~235.5.2.b.~~ Records of the dry weight of articles dry cleaned for use in the calculations required in ~~sections 35.4.a., 35.4.b., and 35.4.e.~~ subdivisions 35.4.1., 35.4.2., and 35.4.3.;

~~335.5.2.c.~~ Records of the weight of VOCs contained in the filtration waste samples required by ~~section 35.4.e.1.~~ paragraph 35.4.3.a.; and

~~435.5.2.d.~~ Records of the weight of VOCs in filtration waste material per 100 kg (220 lb) dry weight of articles dry cleaned.

35.6. Reporting requirements. -- The owner or operator of any facility containing sources subject to this section 35. shall:

~~a35.6.1.~~ Comply with the initial compliance certification requirements of subsection 5.1.; and

~~b35.6.2.~~ Comply with the requirements of subsection 5.2. for excess emissions related to the control devices required to comply with ~~sections 35.3.b.~~ subdivision 35.3.2., 35.3.e.2. and 35.3.d.2. paragraph 35.3.3.b. and 35.3.4.b.

§45-21-36. [RESERVED]

§45-21-37. Leaks from Synthetic Organic Chemical, Polymer, and Resin Manufacturing Equipment.

37.1. Applicability.

~~a37.1.1.~~ This section 37. applies to all equipment in volatile organic compound (VOC) service in

any process unit at a synthetic organic chemical, polymer, and resin manufacturing facility.

~~1~~37.1.1.a. A piece of equipment is not in VOC service if the VOC content of the process fluid can never be reasonably expected to exceed 10 percent by weight. For purposes of this demonstration, the following methods and procedures shall be used:

~~A~~37.1.1.a.1. Procedures that conform to the general methods in ASTM E260, E168, and E169 shall be used to determine the percent VOC content in the process fluid that is contained in or contacts a piece of equipment;

~~B~~37.1.1.a.2. Organic compounds that are considered by the U.S. EPA to have negligible photochemical reactivity may be excluded from the total quantity of organic compounds in determining the VOC content of the process fluid; and

~~C~~37.1.1.a.3. Engineering judgment may be used to estimate the VOC content, if a piece of equipment had not been shown previously to be in VOC service. If the ~~Director~~ Secretary disagrees with the judgment, ~~sections 37.1.a.1.A. and 37.1.a.1.B.~~ subparagraphs 37.1.1.a.1. and 37.1.1.a.2. shall be used to resolve the disagreement.

~~b~~37.1.2. This section 37. does not apply to any synthetic organic chemical, polymer, or resin manufacturing process unit whose annual design production capacity is less than 1,000 megagrams (Mg) (1,100 tons) of product.

~~e~~37.1.3. To the extent that implementation of the requirements of 40 CFR Part 60, 40 CFR Part 61, or 40 CFR Part 63 results in monitoring and repair, consistent with this section, of all components in VOC service in any synthetic organic chemical, polymer, or resin manufacturing process unit, compliance with these federally enforceable standards will satisfy the requirements of this section.

~~d~~37.1.4. The requirements of subsection 37.4. do not apply to:

~~1~~37.1.4.a. Any equipment in vacuum service;

~~2~~37.1.4.b. Any pressure-relief valve that is connected to an operating flare header or vapor recovery device;

~~3~~37.1.4.c. Any liquid pump that has a dual mechanical pump seal with a barrier fluid system;

~~4~~37.1.4.d. Any compressor with a degassing vent that is routed to an operating VOC control device; or

~~5~~37.1.4.e. Pumps and valves in heavy liquid service except that if evidence of a leak is found by visual, audible, olfactory, or other detection method, the owner or operator must confirm the presence of a leak using methods specified in section 46. If a leak is confirmed, the owner or operator must repair the leak as specified in subsection 37.7.

37.2. Definitions. -- As used in this section 37., all terms not defined herein shall have the meaning given them in section 2.

~~a~~37.2.1. "[In] gas/vapor service" means that the piece of equipment in VOC service contains process fluid that is in the gaseous state at operating conditions.

~~b~~37.2.2. "[In] heavy liquid service" means that the piece of equipment in VOC service is not in gas/vapor service or in light liquid service.

~~e~~37.2.3. "[In] light liquid service" means that the piece of equipment in VOC service contains a liquid that meets the following conditions: (1) the vapor pressure of one or more of the components is greater than 0.3 kPa (0.09 in Hg) at 20EC (68EF) (standard reference texts or ASTM D2879 shall be used to determine the vapor pressures); (2) the total concentration of the pure components having a vapor pressure greater than 0.3 kPa (0.09 in Hg) at 20EC (68EF) is equal to or greater than 20 percent by weight; and (3) the fluid is a liquid at operating conditions.

~~d~~37.2.4. "Process unit" means components assembled to produce, as intermediate or final products, one or more of the chemicals listed in 40 CFR 60.489. A process unit can operate independently if supplied with sufficient feed or raw materials and sufficient storage facilities for product.

~~e~~37.2.5. "[In] vacuum service" means that the equipment in VOC service is operating at an internal pressure which is at least 5 kPa below ambient pressure.

~~f~~37.2.6. "[In] VOC service" means that the piece of equipment contains or contacts a process fluid that is at least 10 percent VOC by weight. The provisions of ~~section 37.1.a.1.~~ paragraph 37.1.1.a. specify how to determine that a piece of equipment is not in VOC service.

37.3. Standards: General. -- The owner or operator of a synthetic organic chemical, polymer, or resin manufacturing facility subject to this section 37. shall ensure that:

~~a~~37.3.1. Any open-ended line or valve is sealed with a second valve, blind flange, cap, or plug except during operations requiring process fluid flow through the open-ended line or valve;

~~b~~37.3.2. When a second valve is used, each open-ended line or valve equipped with a second valve is operated in such a manner that the valve on the process fluid end is closed before the second valve is closed; and

~~e~~37.3.3. When a double block-and-bleed system is used, the bleed valve or line is open only during operations that require venting of the line between the block valves and is closed at all other times.

37.4. Standards: Equipment inspection program. -- The owner or operator of a synthetic organic chemical, polymer, or resin manufacturing facility shall conduct the equipment inspection program described in ~~sections 37.4.a. through 37.4.e.~~ subdivisions 37.4.1. through 37.4.3. using the test methods specified in section 46.

~~a~~37.4.1. The owner or operator of a synthetic organic chemical, polymer, or resin manufacturing facility shall conduct quarterly monitoring of each:

~~+~~37.4.1.a. Compressor;

~~2~~37.4.1.b. Pump in light liquid service;

~~3~~37.4.1.c. Valve in light liquid service, except as provided in subsections 37.5. and 37.6.;

~~4~~37.4.1.d. Valve in gas/vapor service, except as provided in subsections 37.5. and 37.6.; and

537.4.1.e. Pressure relief valve in gas/vapor service, except as provided in subsections 37.5. and 37.6.

b37.4.2. The owner or operator of a synthetic organic chemical or resin manufacturing facility shall conduct a weekly visual inspection of each pump in light liquid service.

e37.4.3. The owner or operator of a synthetic organic chemical, polymer, or resin manufacturing facility shall monitor each pressure relief valve after each overpressure relief to ensure that the valve has properly reseated and is not leaking.

d37.4.4. It shall be determined that a leak has been detected when:

+37.4.4.a. When an instrument reading of 10,000 parts per million (ppm) or greater is measured; or

237.4.4.b. If there are indications of liquid dripping from the equipment.

e37.4.5. When a leak is detected, the owner or operator shall affix a weatherproof, readily visible tag in a bright color such as red or yellow, bearing the equipment identification number and the date on which the leak was detected. This tag shall remain in place until the leaking equipment is repaired. An alternative leak identifier system may be used if the owner or operator demonstrates to the ~~Director~~ Secretary that the alternative system is equally as effective. The requirements of this ~~section 37.4.e.~~ subdivision 37.4.5. apply to any leak detected by the equipment inspection program and to any leak from any equipment that is detected on the basis of sight, sound, or smell.

37.5. Standards: Alternative standards for valves -- skip period leak detection and repair.

a37.5.1. An owner or operator shall comply initially with the requirements for valves in gas/vapor service and valves in light liquid service as described in subsection 37.3.

b37.5.2. If the percent of valves leaking is equal or less than 2.0 for two consecutive quarters, an owner or operator may skip alternate quarterly leak detection periods for the valves in gas/vapor and light liquid service.

e37.5.3. If the percent of valves leaking is equal to or less than 2.0 for five consecutive quarters, an owner or operator may skip three of the quarterly leak detection periods per year for the valves in gas/vapor and light liquid service, provided that each valve shall be monitored once each year.

d37.5.4. If at any time the percent of valves leaking is greater than 2.0, the owner or operator shall resume compliance with the requirements in subsection 37.4. but may again elect to comply with the alternative standards in subsection 37.5.

e37.5.5. The percent of valves leaking shall be determined by dividing the sum of valves found leaking during current monitoring and previously leaking valves for which repair has been delayed by the total number of valves subject to the requirements of this section 37.

f37.5.6. An owner or operator shall keep a record of the percent of valves found leaking during each leak detection period.

37.6. Standards: Alternative standards for unsafe-to-monitor valves and difficult-to-monitor valves.

~~a~~37.6.1. Any valve is exempt from the requirements of subsection 37.4. as an unsafe-to-monitor valve if:

~~1~~37.6.1.a. The owner or operator of the valve demonstrates that the valve is unsafe to monitor because monitoring personnel would be exposed to an immediate danger as a consequence of complying with subsection 37.4.; and

~~2~~37.6.1.b. The owner or operator of the valve adheres to a written plan that requires monitoring of the valve as frequently as practicable during safe-to-monitor times.

~~b~~37.6.2. Any valve is exempt from the requirements of subsection 37.4. as a difficult-to-monitor valve if:

~~1~~37.6.2.a. The owner or operator of the valve demonstrates that the valve cannot be monitored without elevating the monitoring personnel more than 2 meters (m) (6.6 feet [ft]) above a support surface; and

~~2~~37.6.2.b. The owner or operator of the valve follows a written plan that requires monitoring of the valve at least once per calendar year.

~~e~~37.6.3. The alternative standards of subsection 37.5. are not available to valves subject to the requirements of subsection 37.6.

37.7. Standards: Equipment repair program. -- The owner or operator of a synthetic organic chemical, polymer, or resin manufacturing facility refinery shall:

~~a~~37.7.1. Make a first attempt at repair for any leak not later than 5 calendar days after the leak is detected; and

~~b~~37.7.2. Repair any leak as soon as practicable, but not later than 15 calendar days after it is detected except as provided in subsection 37.8.

37.8. Standards: Delay of repair.

~~a~~37.8.1. Delay of repair of equipment for which a leak has been detected will be allowed if repair is technically infeasible without a process unit shutdown. Repair of such equipment shall occur before the end of the first process unit shutdown after detection of the leak.

~~b~~37.8.2. Delay of repair of equipment will also be allowed for equipment that is isolated from the process and that does not remain in VOC service after detection of the leak.

~~e~~37.8.3. Delay of repair beyond a process unit shutdown will be allowed for a valve, if valve assembly replacement is necessary during the process unit shutdown, and if valve assembly supplies have been depleted, where valve assembly supplies had been sufficiently stocked before the supplies were depleted. Delay of repair beyond the first process unit shutdown will not be allowed unless the next process unit shutdown occurs sooner than 6 months after the first process unit shutdown.

37.9. Test methods and procedures.

~~a~~37.9.1. In conducting the monitoring required to comply with subsection 37.4., the owner or operator shall use the test methods specified in section 46.

~~b~~37.9.2. The owner or operator shall demonstrate that a piece of equipment is in light liquid service by showing that all of the following conditions apply:

~~1~~37.9.2.a. The vapor pressure of one or more of the components is greater than 0.3 kiloPascal (kPa) (0.09 inches of Mercury [in Hg]) at 20EC (68EF). Standard reference texts or ASTM D2879 shall be used to determine the vapor pressures;

~~2~~37.9.2.b. The total concentration of the pure components having a vapor pressure greater than 0.3 kPa (0.09 in Hg) at 20EC (68EF) is equal to or greater than 20 percent by weight; and

~~3~~37.9.2.c. The fluid is a liquid at operating conditions;

~~e~~37.9.3. Samples used in conjunction with ~~section 37.9.b.~~ subdivision 37.9.2. shall be representative of the process fluid that is contained in or contacts the equipment.

37.10. Recordkeeping requirements.

~~a~~37.10.1. Each owner or operator subject to the provisions of this section 37. shall comply with the recordkeeping requirements of this section 37.

~~b~~37.10.2. An owner or operator of more than one facility subject to the provisions of this section 37. may comply with the recordkeeping requirements for these facilities in one recordkeeping system if the system identifies each record by each facility.

~~e~~37.10.3. When each leak is detected as specified in subsection 37.4., the following information shall be recorded in a log and shall be kept for 3 years in a readily accessible location:

~~1~~37.10.3.a. The instrument and operator identification numbers and the equipment identification number;

~~2~~37.10.3.b. The date the leak was detected and the dates of each attempt to repair the leak;

~~3~~37.10.3.c. The repair methods employed in each attempt to repair the leak;

~~4~~37.10.3.d. The notation "Above 10,000" if the maximum instrument reading measured by the methods specified in section 46. after each repair attempt is equal to or greater than 10,000 ppm;

~~5~~37.10.3.e. The notation "Repair Delayed" and the reason for the delay if a leak is not repaired within 15 calendar days after discovery of the leak;

~~6~~37.10.3.f. The signature of the owner or operator (or designate) whose decision it was that repair could not be effected without a process unit shutdown;

~~7~~37.10.3.g. The expected date of successful repair of the leak if a leak is not repaired within 15 days;

~~§~~37.10.3.h. The dates of process unit shutdowns that occur while the equipment is unrepaired;
and

~~9~~37.10.3.i. The date of successful repair of the leak.

~~d~~37.10.4. A list of identification numbers of equipment in vacuum service shall be recorded in a log that is kept in a readily accessible location.

~~e~~37.10.5. The following information for valves complying with subsection 37.5. shall be recorded in a log that is kept for 3 years in a readily accessible location:

~~+3~~7.10.5.a. A schedule of monitoring; and

~~2~~37.10.5.b. The percent of valves found leaking during each monitoring period.

~~f~~37.10.6. The following information pertaining to all valves subject to the requirements of subsection 37.6. shall be recorded in a log that is kept for 3 years in a readily accessible location:

~~+3~~7.10.6.a. A list of identification numbers for valves that are designated as unsafe to monitor, an explanation for each valve stating why the valve is unsafe to monitor, and the plan for monitoring each valve; and

~~2~~37.10.6.b. A list of identification numbers for valves that are designated as difficult to monitor, an explanation for each valve stating why the valve is difficult to monitor, and the schedule for monitoring each valve.

~~e~~37.10.7. The following information shall be recorded in a log that is kept for 3 years in a readily accessible location for use in determining exemptions as provided in subsection 37.1.:

~~+3~~7.10.7.a. An analysis demonstrating the design capacity of the affected facility; and

~~2~~37.10.7.b. Information and data used to demonstrate that a piece of equipment is not in VOC service.

37.11. Reporting. -- The owner or operator of any facility containing sources subject to this section 37. shall comply with the requirements in subsections 5.1. and 5.2.

§45-21-38. Manufacture of High-Density Polyethylene, Polypropylene, and Polystyrene Resins.

38.1. Applicability.

~~a~~38.1.1. This section 38. applies to the following process sections at facilities engaged in the manufacture of high-density polyethylene, polypropylene, and polystyrene:

~~+3~~8.1.1.a. For the manufacture of high-density polyethylene using a liquid-phase slurry process: each material recovery section and each product finishing section;

~~2~~38.1.1.b. For the manufacture of polypropylene using a liquid-phase process: each polymerization reaction section, each material recovery section, and each product finishing section; and

~~338.1.1.c.~~ For the manufacture of polystyrene using a continuous process: each material recovery section.

~~b38.1.2.~~ Facilities having all process sections with uncontrolled emission rates at or below those identified in ~~sections 38.1.b.1. through 38.1.b.6.~~ Table 45-21E are exempt from the requirements of this section 38. except that owners or operators seeking to comply with this section 38. by complying with the uncontrolled emission rates in ~~sections 38.1.b.1. through 38.1.b.6.~~ are still required to comply with the initial certification requirements of subsection 5.1.

	Production Process	Process Section	Uncontrolled Emission Rate, megagram of product per year (Mg/yr)
1.	High density polyethylene, liquid-phase slurry process.	material recovery section	7
2.	High density polyethylene, liquid-phase slurry process	product finishing section	19
3.	Polypropylene, liquid-phase process	polymerization reaction section	7
4.	Polypropylene, liquid-phase process	material recovery section	8
5.	Polypropylene, liquid-phase process	product finishing section	36
6.	Polystyrene, continuous process	material recovery section	7

Table 45-21E.

<u>Production Process</u>	<u>Process Section</u>	<u>Uncontrolled Emission Rate, megagram of product per year (Mg/yr)</u>
<u>High density polyethylene, liquid-phase slurry process.</u>	<u>material recovery section</u>	<u>7</u>
<u>High density polyethylene, liquid-phase slurry process</u>	<u>product finishing section</u>	<u>19</u>
<u>Polypropylene, liquid-phase process</u>	<u>polymerization reaction section</u>	<u>7</u>
<u>Polypropylene, liquid-phase process</u>	<u>material recovery section</u>	<u>8</u>
<u>Polypropylene, liquid-phase process</u>	<u>product finishing section</u>	<u>36</u>
<u>Polystyrene, continuous process</u>	<u>material recovery section</u>	<u>7</u>

38.2. Definitions. -- As used in this section 38., all terms not defined herein shall have the meaning given them in section 2.

~~a38.2.1.~~ "Continuous process" means a polymerization process in which reactants are introduced in a continuous manner and products are removed either continuously or intermittently at regular intervals so that the process can be operated and polymers produced essentially continuously.

~~b38.2.2.~~ "Flame zone" means that portion of the combustion chamber in a boiler occupied by the flame envelope.

~~e38.2.3.~~ "High-density polyethylene" means a linear, thermoplastic polymer comprised of at least

50 percent ethylene by weight and having a density greater than 0.94 grams per cubic centimeter (g/cm³) (59 pounds per cubic foot [lb/ft³]).

~~4~~38.2.4. "Liquid-phase process" means a polymerization process in which the polymerization reaction is carried out in the liquid phase; i.e., the monomer(s) and any catalyst are dissolved or suspended in a liquid solvent.

~~e~~38.2.5. "Liquid-phase slurry process" means a liquid-phase polymerization process in which the monomer(s) are in solution (completely dissolved) in a liquid solvent, but the polymer is in the form of solid particles suspended in the liquid reaction mixture during the polymerization reaction, sometimes called a particle-form process.

~~f~~38.2.6. "Polypropylene" means a polymer comprised of at least 50 percent propylene by weight.

~~g~~38.2.7. "Polystyrene" means a thermoplastic polymer comprised of at least 80 percent styrene or para-methylstyrene by weight.

~~h~~38.2.8. "Process line" means a group of equipment assembled that can operate independently if supplied with sufficient raw materials to produce polypropylene, high-density polyethylene, or polystyrene. A process line consists of the equipment in the following process sections (to the extent that these process sections are present at a plant): raw materials preparation, polymerization reaction, product finishing, product storage, and material recovery.

~~i~~38.2.9. "Process section" means the equipment designed to accomplish a general but well-defined task in polymer production. Process sections include raw materials preparation, polymerization reaction, material recovery, product finishing, and product storage and may be dedicated to a single process line or common to more than one process line.

~~j~~38.2.10. "Product finishing section" means the equipment that treats, shapes, or modifies the polymer or resin to produce the finished end product of the particular facility. Product finishing equipment may accomplish extruding and pelletizing, cooling and drying, blending, additives introduction, curing, or annealing. Product finishing does not include polymerization or shaping such as fiber spinning, molding, or fabricating or modification such as fiber stretching and crimping.

38.3. Standards: High-density polyethylene and polypropylene.

~~a~~38.3.1. The owner or operator of a high-density polyethylene or polypropylene process line containing a process section subject to this section 38. shall comply with the following:

~~1~~38.3.1.a. Reduce emissions of total volatile organic compounds (VOCs) by 98 weight percent, determined according to the procedure specified in ~~section 38.5.a.~~ subdivision 38.5.1., or to a VOC concentration of 20 parts per million volumetric (ppmv), as determined by the procedure specified in ~~section 38.5.b.~~ subdivision 38.5.2., on a dry basis, whichever is less stringent. Total VOC is expressed as the sum of the actual compounds, not carbon equivalents. If an owner or operator elects to comply with the 20 ppmv concentration standard, the concentration shall include a correction to 3 percent oxygen only when supplemental combustion air is used to combust the vent stream. The procedure in ~~section 38.5.c.~~ subdivision 38.5.3. shall be used to correct the concentration to 3 percent oxygen;

~~2~~38.3.1.b. Combust the emissions in a boiler or process heater with a design heat input capacity

of 150 million British thermal units per hour (Btu/hr) or greater by introducing the vent stream into the flame zone of the boiler or process heater; or

338.3.1.c. Combust the emissions in a flare as follows:

A38.3.1.c.1. Flares shall be designed for and operated with no visible emissions as determined by the method specified in ~~section 38.5.d.1.~~ paragraph 38.5.4.a., except for periods not to exceed a total of 5 minutes during any 2 consecutive hours;

B38.3.1.c.2. Flares shall be operated with a flame present at all times, as determined by the method specified in ~~section 38.5.d.2.~~ paragraph 38.5.4.b.;

C38.3.1.c.3. Flares used to comply with provisions of this section 38. shall be steam-assisted, air-assisted, or non-assisted;

D38.3.1.c.4. Flares shall be used only with the net heating value of the gas being combusted being 11.2 megaJoules per standard cubic meter (MJ/scm) (300 Btu per standard cubic foot [Btu/scf]) or greater if the flare is steam-assisted or air-assisted; or with the net heating value of the gas being combusted being 7.45 MJ/scm (200 Btu/scf) or greater if the flare is non-assisted. The net heating value of the gas being combusted shall be determined by the method specified in ~~section 38.5.e.7~~ paragraph 38.5.5.g..

E38.3.1.c.5. Steam-assisted and non-assisted flares shall be designed for and operated with an exit velocity, as determined by the method specified in ~~section 38.5.e.4.~~ paragraph 38.5.5.d., less than 18.3 meters per second (m/s) (60 feet per second [ft/s]), except as provided in ~~sections 38.3.a.3.F. and 38.3.a.3.G.~~ subparagraphs 38.3.a.c.6. and 38.3.1.c.7.;

F38.3.1.c.6. Steam-assisted and non-assisted flares designed for and operated with an exit velocity, as determined by the methods specified in ~~section 38.5.e.4.~~ paragraph 38.5.5.d. equal to or greater than 18.3 m/s (60 ft/s) but less than 122 m/s (400 ft/s) are allowed if the net heating value of the gas being combusted is greater than 37.3 MJ/scm (1,000 Btu/scf); and

G38.3.1.c.7. Steam-assisted and non-assisted flares designed for and operated with an exit velocity, as determined by the methods specified in ~~section 38.5.e.4.~~ paragraph 38.5.5.d., less than the velocity, V_{\max} as determined by the method specified in ~~section 38.5.e.5.~~ paragraph 38.5.5.e. and less than 122 m/s (400 ft/s) are allowed; and

H38.3.1.c.8. Air-assisted flares shall be designed and operated with an exit velocity less than the ~~V_{velocity}~~ velocity, V_{\max} , as determined by the method specified in ~~section 38.5.e.6~~ paragraph 38.5.5.f..

38.4. Standards: Polystyrene. -- The owner or operator of a polystyrene process line containing process sections subject to this section 38. shall comply with the following:

a38.4.1. Not allow continuous VOC emissions from the material recovery section to be greater than 0.12 kg (kilograms) VOC per 1,000 kg of product (0.12 pounds [lb] VOC per 1,000 lb of product); or

b38.4.2. Not allow the outlet gas stream from each final condenser in the material recovery section to exceed -25EC (-13EF).

38.5. Test methods and procedures.

~~a~~38.5.1. The owner or operator shall determine compliance with the percent emission reduction standard in ~~section 38.3.a.1, paragraph 38.3.1.a.~~ as follows:

~~4~~38.5.1.a. The emission reduction of total VOC shall be determined using the following equation:

$$P = \frac{E_{inlet} - E_{outlet}}{E_{inlet}} \times 100$$

~~w~~Where:

P = Percent emission reduction, by weight.

E_{inlet} = Mass rate of total VOC entering the control device, kg VOC/hr.

E_{outlet} = Mass rate of total VOC discharged to the atmosphere, kg VOC/hr

38.5.1.b. The mass rates of total VOC (E_i , E_o) shall be computed using the following equations:

$$E_i = K_1 \left(\sum_{j=1}^n C_{ij} M_{ij} \right) Q_i$$

$$E_o = K_1 \left(\sum_{j=1}^n C_{oj} M_{oj} \right) Q_o$$

~~w~~Where:

C_{ij} , C_{oj} = Concentration of sample component "j" of the gas stream at the inlet and outlet of the control device, respectively, dry basis, ppmv

M_{ij} , M_{oj} = Molecular weight of sample component "j" of the gas stream at the inlet and outlet of the control device respectively, g/gmole (lb/lb-mole).

Q_i , Q_o = Flow rate of the gas stream at the inlet and outlet of the control device, respectively, dscm/hr (dscf/hr).

$K_1 = 4.157 \times 10^{-8} [(kg)/(g-mole)]/[(g)(ppm)(dscm)] \{5.711 \times 10^{-15} [(lb)/(lb-mole)]/[(lb)(ppm)(dscf)]\}$.

~~3~~38.5.1.c. Method 18 of 40 CFR Part 60, Appendix A shall be used to determine the concentration of each individual organic component (C_{ij} , C_{oj}) in the gas stream. Method 1 or 1A of 40 CFR Part 60, Appendix A, as appropriate, shall be used to determine the inlet and outlet sampling sites. The inlet site shall be before the inlet of the control device and after all product recovery units.

438.5.1.d. Method 2, 2A, 2C, or 2D of 40 CFR Part 60, Appendix A, as appropriate, shall be used to determine the volumetric flow rates (Q_i , Q_o). If necessary, Method 4 of 40 CFR Part 60, Appendix A shall be used to determine the moisture content. Both determinations shall be compatible with the Method 18 determinations.

~~5~~38.5.1.e. Inlet and outlet samples shall be taken simultaneously. The sampling time for each run shall be 1 hour in which either an integrated sample or four grab samples shall be taken. If grab sampling is used, then the samples shall be taken at 15 minute intervals.

~~b~~38.5.2. The owner or operator shall determine compliance with the emission concentration standard in ~~section 38.3.a.1. paragraph 38.3.1.a.~~ as follows:

~~4~~38.5.2.a. The total VOC concentration is the sum of the individual components and shall be computed for each run using the following equation:

$$C_{VOC} = \sum_{j=1}^n C_j$$

~~w~~Where:

C_{VOC} = Concentration of total VOC, dry basis, ppmv;

C_j = Concentration of sample component j, ppm; and

n = Number of components in the sample.

~~2~~38.5.2.b. Method 18 of 40 CFR Part 60, Appendix A shall be used to determine the concentration of each individual organic component (C_j) in the gas stream. Method 1 or 1A of 40 CFR Part 60, Appendix A, as appropriate, shall be used to determine the sampling site at the outlet of the control device. Method 4 of 40 CFR Part 60, Appendix A shall be used to determine the moisture content, if necessary.

~~3~~38.5.2.c. The sampling time for each run shall be 1 hour in which either an integrated sample or four grab samples shall be taken. If grab sampling is used, then the samples shall be taken at 15 minute intervals.

~~e~~38.5.3. Supplemental combustion.

~~4~~38.5.3.a. If supplemental combustion air is used, the total VOC concentration shall be corrected to 3 percent oxygen and shall be computed using the following equation:

$$C_{CORR} = C_{MEAS} \left(\frac{17.9}{20.9 - \%O_{2d}} \right)$$

~~w~~Where:

C_{CORR} = Concentration of total VOC corrected to 3 percent oxygen, dry basis, ppmv;

C_{MEAS} = Concentration of total VOC, dry basis, ppmv, as calculated in ~~section 38.5.b.1. paragraph 38.5.2.a.~~ above; and

% O_{2d} = Concentration of O_2 , dry basis, percent by volume.

~~2~~38.5.3.b. The emission rate correction factor, integrated sampling and analysis procedure of Method 3 of 40 CFR Part 60, Appendix A shall be used to determine the oxygen concentration (% O_{2d}). The sampling site shall be the same as that of the total VOC sample and the samples shall be taken during the same time that the total VOC samples are taken.

~~d~~38.5.4. When a flare is used to comply with ~~section 38.3.a.3. paragraph 38.3.1.c.:~~

~~4~~38.5.4.a. Method 22 of 40 CFR Part 60, Appendix A shall be used to determine the compliance of flares with the visible emission requirement in ~~section 38.3.a.3.A subparagraph 38.3.1.c.1..~~

The observation period is 2 hours and shall be used according to Method 22; and

~~238.5.4.b.~~ The presence of a flare pilot flame shall be monitored using a thermocouple or other equivalent monitoring device to detect the presence of a flame.

~~38.5.5.~~ The test methods in 40 CFR Part 60, Appendix A, shall be used as reference methods for determining the VOC emission rate in terms of kg emission per megagram (Mg) of product, exit velocities, or net heating value of the gas combusted to determine compliance under subsections 38.3. and 38.4. as follows:

~~438.5.5.a.~~ Method 1 or 1A, as appropriate, for selection of the sampling site. The sampling site for the molar composition and vent stream flow rate determination prescribed in ~~sections 38.5.e.2. and 38.5.e.3.~~ paragraphs 38.5.5.b. and 38.5.5.c. shall be prior to the inlet of any combustion device and prior to any dilution of the stream with air;

~~238.5.5.b.~~ The composition of the process vent stream shall be determined as follows:

~~A38.5.5.b.1.~~ Method 18 and ASTM D2504-67 (reapproved 1977) to measure the concentration of VOC and the concentration of all other compounds present except water vapor and carbon monoxide; and

~~B38.5.5.b.2.~~ Method 4 to measure the content of water vapor;

~~338.5.5.c.~~ The volumetric flow rate shall be determined using Method 2, 2A, 2C, or 2D, as appropriate;

~~438.5.5.d.~~ The actual exit velocity of a flare shall be determined by dividing the volumetric flow rate (in units of standard temperature and pressure), as determined by Method 2, 2A, 2C, or 2D as appropriate, by the unobstructed (free) cross-sectional area of the flare tip;

~~538.5.5.e.~~ The maximum permitted velocity, V_{\max} , for flares complying with ~~section 38.3.a.3.E.~~ subparagraph 38.3.1.c.5. shall be determined using the following equation:

$$\text{Log}_{10}(V_{\max}) = (H_T + 28.8) / 31.7$$

~~W~~Where:

V_{\max} = Maximum permitted velocity, m/s;

28.8 = Constant;

31.7 = Constant; and

H_T = The net heating value as determined in ~~section 38.5.e.7~~ paragraph 38.5.5.g..

~~638.5.5.f.~~ The V_{\max} for air-assisted flares shall be determined by the following equation:

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

~~W~~Where:

V_{\max} = maximum permitted velocity, m/s;

8.706 = constant;

0.7084 = constant; and

H_T = The net heating value as determined in ~~section 38.5.e.7~~ paragraph 38.5.5.g..

~~738.5.5.g.~~ The net heating value of the process vent stream being combusted in a flare shall be calculated using the following equation:

$$H_T = K \sum_{i=1}^n C_i H_i$$

~~w~~Where:

H_T = Net heating value of the sample, MJ/scm, where the net enthalpy per mole of offgas is based on combustion at 25EC and 760 millimeters of Mercury (mm Hg) (77EF and 29.92 inches of Mercury [in Hg]), but the standard temperature for determining the volume corresponding to one mole is 20EC (68EF);

K = Constant:

$$K = 1.740 \times 10^{-7} \frac{(1)}{\text{ppm}} \frac{(\text{g mole})}{\text{scm}} \frac{(\text{MJ})}{\text{kcal}}$$

~~w~~Where:

~~s~~Standard temperature for (g mole)/scm is 20°C;

C_i = Concentration of sample components i in ppm on a wet basis, as measured for organics by Method 18 and measured for hydrogen and carbon monoxide by ASTM D1946-82; and

H_i = Net heat of combustion of sample component i, kcal/g-mole at 25°C (77°F) and 760 mm Hg (29.92 in Hg). The heats of combustion of process vent stream components may be determined using ASTM D2382-76 (reapproved 1977) if published values are not available or cannot be calculated;

~~838.5.5.h.~~ The emission rate of VOC in the process vent stream shall be calculated using the following equation:

$$E_{\text{VOC}} = K \left(\sum_{i=1}^n C_i M_i \right) Q_s$$

~~w~~Where:

E_{VOC} = Emission rate of total organic compounds in the sample, kilogram per hour (kg/h);

K = Constant, 2.494×10^{-6} (1/ppm)(g-mole/scm)(kg/g)(min/h), where standard temperature for (g-mole/scm) is 20EC (68EF);

C_i = Concentration of sample component i, ppm;

M_i = Molecular weight of sample component i, g/g-mole; and

Q_s = Vent stream flow rate (scm/min), at a standard temperature of 20°C (68°F);

~~938.5.5.i.~~ The rate of polymer produced, P_P (kg/h), shall be determined by dividing the weight of polymer pulled in kg from the process line during the performance test by the number of hours (h) taken to perform the performance test. The polymer pulled, in kg, shall be determined by direct measurement or, subject to prior approval by the ~~Director~~ Secretary and the U.S. EPA, computed from materials balance by good engineering practice; and

~~1038.5.5.j.~~ The emission rate of VOC in terms of kilograms of emissions per megagram of production shall be calculated using the following equation:

$$ER_{\text{VOC}} = E_{\text{VOC}} / (P_P \times (1\text{Mg}/1,000 \text{ kg}))$$

Where:

ER_{VOC} = Emission rate of VOC, kg VOC/Mg product;

E_{VOC} = Emission rate of VOC in the sample, kg/h; and

P_P = The rate of polymer produced, kg/h.

38.6. Recordkeeping. -- The owner or operator of a facility subject to this section 38. shall maintain the following records in a readily accessible location for at least 3 years and shall make these records available to the ~~Director~~ Secretary upon verbal or written request:

~~a~~38.6.1. For facilities complying with the standards listed in ~~section 38.3.a.1,~~ paragraph 38.3.1.a., parameters listed in ~~sections 38.5.a., 38.5.b.,~~ subdivisions 38.5.1., 38.5.2., and, where applicable, ~~section 38.5.e. subdivision 38.5.5.;~~

~~b~~38.6.2. For facilities complying with the standards listed in ~~section 38.3.a.2,~~ paragraph 38.3.1.b., parameters listed in ~~sections 38.5.e. subdivisions 38.5.3. and, where applicable, 38.5.e. 38.5.5.;~~

~~c~~38.6.3. For facilities complying with the standards listed in ~~section 38.3.a.3,~~ paragraph 38.3.1.c., parameters listed in ~~sections 38.5.d. subdivision 38.5.4. and, where applicable, section 38.5.e.;~~ subdivision 38.5.5.

~~d~~38.6.4. For facilities complying with the standards listed in subsection 38.4., parameters listed in ~~section 38.5.e. subdivision 38.5.5.~~ where applicable; and

~~e~~38.6.5. For all facilities containing sources subject to this section 38., the following records shall be kept:

~~1~~38.6.5.a. The time, date, and duration of any excess emissions;

~~2~~38.6.5.b. The subject source of any excess emissions;

~~3~~38.6.5.c. The cause of any excess emissions;

~~4~~38.6.5.d. The estimated rate of emissions (expressed in the units of the applicable emission limitation) and the operating data and calculations used in determining the magnitude of any excess emissions; and

~~5~~38.6.5.e. Any corrective actions and schedules utilized to correct the conditions causing any excess emissions.

38.7. Reporting requirements. -- The owner or operator of any facility containing sources subject to this section 38. shall:

~~a~~38.7.1. Comply with the initial compliance certification requirements of subsection 5.1.; and

~~b~~38.7.2. Comply with the requirements of subsection 5.2. for excess emissions related to the control devices required to comply with ~~section 38.3.a.2., section 38.3.a.3., or section 38.4.a~~ paragraph 38.3.1.b., 38.3.1.c. or subdivision 38.4.1.

§45-21-39. Air Oxidation Processes in the Synthetic Organic Chemical Manufacturing Industry.

39.1. Applicability.

~~a~~39.1.1. This section 39. applies to the following air oxidation facilities in the synthetic organic chemical manufacturing industry:

~~1~~39.1.1.a. Each air oxidation reactor not discharging its vent stream into a recovery system;

~~2~~39.1.1.b. Each combination of an air oxidation reactor and the recovery system into which its vent stream is discharged; and

~~3~~39.1.1.c. Each combination of two or more air oxidation reactors and the common recovery system into which their vent streams are discharged.

~~b~~39.1.2. Any air oxidation reactor vent stream that has a total resource effectiveness (TRE) index value greater than 1.0 is exempt from all provisions of this section 39. except the requirements in subsections 39.3., 39.5.b., and 39.6.j subdivision 39.5.2., and subdivision 39.6.10.

39.2. Definitions. -- As used in this section 39., all terms not defined herein shall have the meaning given them in section 2.

~~a~~39.2.1. "Air oxidation facility" means a product recovery system and all associated air oxidation process reactors discharging directly into that system or any such reactors discharging directly into the atmosphere.

~~b~~39.2.2. "Air oxidation process" means a reactor in which air is used as an oxidizing agent to produce an organic chemical.

~~e~~39.2.3. "Air oxidation reactor" means any device or process vessel in which one or more organic reactants are combined with air or a combination of air and oxygen to produce one or more organic compounds. Ammoxidation and oxychlorination are included in this definition.

~~d~~39.2.4. "Air oxidation reactor recovery train" means an individual recovery system receiving the vent stream from at least one air oxidation reactor, along with all air oxidation reactors feeding vent streams into this system.

~~e~~39.2.5. "Product recovery system" means any equipment used to collect volatile organic compound (VOC) for use, reuse, or sale. Such equipment includes, but is not limited to, absorbers, adsorbers, condensers, and devices that recover non-VOCs such as ammonia and HCl.

~~f~~39.2.6. "Synthetic organic chemical manufacturing industry" means the industry that produces, as intermediates or final products, one or more of the chemicals listed at 40 CFR 60.489.

~~g~~39.2.7. "Total resource effectiveness index value," or "TRE index value", means a measure of the supplemental total resource requirement per unit of VOC emission reduction associated with an individual air oxidation vent stream, based on vent stream flow rate, emission rate of VOC, net heating value, and corrosive properties, as quantified by the equation given under ~~section 39.5.a~~ subdivision 39.5.1.

~~h~~39.2.8. "Vent stream" means any gas stream containing nitrogen that was introduced as air to the air oxidation reactor, released to the atmosphere directly from any air oxidation reactor recovery train or indirectly, after diversion through other process equipment.

39.3. Standards. -- For each vent stream from an air oxidation reactor or combination air oxidation reactor and recovery train subject to this section 39., the owner or operator shall comply with ~~section 39.3.a., section 39.3.b. or section 39.3.c~~ subdivision 39.3.1., 39.3.2., or 39.3.3.

~~a~~39.3.1. Reduce total VOC emissions by 98 weight percent or to 20 parts per million volumetric (ppmv) on a dry basis corrected to 3 percent oxygen, whichever is less stringent. If a boiler or process heater is used to comply with this ~~section 39.3.a.~~ subdivision 39.3.1., the vent stream shall be introduced into the flame zone of the boiler or process heater;

~~b~~39.3.2. Combust the emissions in a flare that meets the requirements of 40 CFR 60.18; or

~~e~~39.3.3. Maintain a TRE index value greater than 1.0 without the use of VOC emission control devices.

39.4. Monitoring requirements.

~~a~~39.4.1. The owner or operator of an air oxidation facility that uses an incinerator to seek to comply with the VOC emission limit specified under ~~section~~ subdivision 39.3.a., shall install, calibrate, maintain, and operate according to manufacturer's specifications the following equipment:

~~1~~39.4.1.a. A temperature monitoring device equipped with a continuous recorder and having an accuracy of $\nabla 1$ percent of the temperature being monitored expressed in degrees Celsius or $\nabla 0.5$ EC, whichever is greater.

~~A~~39.4.1.a.1. Where an incinerator other than a catalytic incinerator is used, a temperature monitoring device shall be installed in the firebox.

~~B~~39.4.1.a.2. Where a catalytic incinerator is used, temperature monitoring devices shall be installed in the gas stream immediately before and after the catalyst bed.

~~2~~39.4.1.b. A flow indicator that provides a record of vent stream flow to the incinerator at least once every hour for each air oxidation facility. The flow indicator shall be installed in the vent stream from each air oxidation facility at a point closest to the inlet of each incinerator and before being joined with any other vent stream.

~~b~~39.4.2. The owner or operator of an air oxidation facility that uses a flare to seek to comply with ~~section 39.3.b.~~ subdivision 39.3.2. shall install, calibrate, maintain, and operate according to manufacturer's specifications the following equipment:

~~1~~39.4.2.a. A heat sensing device, such as an ultra-violet sensor or thermocouple, at the pilot light to indicate the continuous presence of a flame.

~~2~~39.4.2.b. A flow indicator that provides a record of vent stream flow to the flare at least once every hour for each air oxidation facility. The flow indicator shall be installed in the vent stream from each air oxidation facility at a point closest to the flare and before being joined with any other vent stream.

~~e~~39.4.3. The owner or operator of an air oxidation facility that uses a boiler or process heater to seek to comply with ~~section 39.3.a.~~ subdivision 39.3.1. shall install, calibrate, maintain, and operate according to the manufacturer's specifications the following equipment:

~~139.4.3.a.~~ A flow indicator that provides a record of vent stream flow to the boiler or process heater at least once every hour for each air oxidation facility. The flow indicator shall be installed in the vent stream from each air oxidation reactor within a facility at a point closest to the inlet of each boiler or process heater and before being joined with any other vent stream.

~~239.4.3.b.~~ A temperature monitoring device in the firebox equipped with a continuous recorder and having an accuracy of ± 1 percent of the temperature being measured expressed in degrees Celsius or ± 0.5 EC, whichever is greater, for boilers or process heaters of less than 44 MW (150 million Btu/hr) heat input design capacity.

~~339.4.3.c.~~ Monitor and record the periods of operation of the boiler or process heater if the design input capacity of the boiler or process heater is 44 MW (150 million Btu/hr) or greater. The records shall be readily available for inspection.

~~439.4.4.~~ The owner or operator of an air oxidation facility that seeks to demonstrate compliance with the TRE index value limit specified under ~~section 34.3.c.~~ subdivision 34.3.3. shall install, calibrate, maintain, and operate according to manufacturer's specifications the following equipment:

~~139.4.4.a.~~ Where an absorber is the final recovery device in a recovery system:

~~A39.4.4.a.1.~~ A scrubbing liquid temperature monitoring device having an accuracy of ± 1 percent of the temperature being monitored, expressed in degrees Celsius or ± 0.5 EC, whichever is greater, and a specific gravity monitoring device having an accuracy of ± 0.02 specific gravity unit, each equipped with a continuous recorder; and

~~B39.4.4.a.2.~~ An organic monitoring device used to indicate the concentration level of organic compounds exiting the recovery device based on a detection principle such as infrared, photoionization, or thermal conductivity, each equipped with a continuous recorder.

~~239.4.4.b.~~ Where a condenser is the final recovery device in a recovery system:

~~A39.4.4.b.1.~~ A condenser exit (product side) temperature monitoring device equipped with a continuous recorder and having an accuracy of ± 1 percent of the temperature being monitored expressed in degrees Celsius or ± 0.5 EC, whichever is greater; and

~~B39.4.4.b.2.~~ An organic monitoring device used to indicate the concentration level of organic compounds exiting the recovery device based on a detection principle such as infrared, photoionization, or thermal conductivity, each equipped with a continuous recorder.

~~339.4.4.c.~~ Where a carbon adsorber is the final recovery device in a recovery system:

~~A39.4.4.c.1.~~ An integrating steam flow monitoring device having an accuracy of ± 10 percent, and a carbon bed temperature monitoring device having an accuracy of ± 1 percent of the temperature being monitored expressed in degrees Celsius or ± 0.5 EC, whichever is greater, both equipped with a continuous recorder; and

~~B39.4.4.c.2.~~ An organic monitoring device used to indicate the concentration level of organic compounds exiting the recovery device based on a detection principle such as infrared,

photoionization, or thermal conductivity, each equipped with a continuous recorder.

39.5. Test methods and procedures. -- The following methods shall be used as reference methods to demonstrate compliance with subsection 39.3.

a39.5.1. The following equation shall be used to calculate the TRE index for a given vent stream:

$$TRE = (1/E) * [a+b(FL)^{0.88} + c(FL) + d(FL)H_T + e(FL)^{0.88}(H_T)^{0.88} + f(FL)^0]$$

~~w~~Where:

TRE = the total resource effectiveness index value.

E = the measured hourly emissions in units of kilograms/hour (kg/h).

FL = the vent stream flow rate in scm/min, at a standard temperature of 20EC. For a Category E stream (see Table ~~±~~ 45-21F), the factor $f(FL)^{0.5}$ shall be replaced with:

$$f \left[(FL) \frac{(H_T)^{0.5}}{3.6} \right]$$

H_T = vent stream net heating value in units of MJ/scm, where the net enthalpy per mole of offgas is based on combustion at 25°C (68°F) and 760 millimeters of Mercury (mm Hg), but the standard temperature for determining the volume corresponding to one mole is 20°C, as in the definition of FL.

a, b, c, d, e, and f = specific coefficients for six different general categories of process vent streams. The set of coefficients that apply to a given air oxidation process vent stream are specified in Table ~~±~~ 45-21F at the end of this rule.

~~b39.5.2~~. Each owner or operator of an air oxidation facility seeking to comply with ~~section 39.1.b, or section 39.3.c, subdivision 39.1.2. or 39.3.3.~~ shall recalculate the TRE index value for that air oxidation facility whenever process changes are made. Some examples of process changes are changes in production capacity, feedstock type, or catalyst type, or whenever there is replacement, removal, or addition of recovery equipment. The TRE index value shall be recalculated based on test data, or on best engineering estimates of the effects of the change to the recovery system.

~~c39.5.3~~. Method 1 or 1A of 40 CFR Part 60, Appendix A, as appropriate, for selection of the sampling sites. The control device inlet sampling site for determination of vent stream molar composition or VOC reduction efficiency shall be prior to the inlet of the control device and after the recovery system.

~~d39.5.4~~. Method 2, 2A, 2C, or 2D of 40 CFR Part 60, Appendix A, as appropriate, for determination of the volumetric flow rates.

~~e39.5.5~~. The emission rate correction factor, integrated sampling and analysis procedure of Method 3 of 40 CFR Part 60, Appendix A shall be used to determine the oxygen concentration (%O_{2d}) for the purposes of determining compliance with the 20 ppmv limit. The sampling site shall be the same as that of the VOC samples and the samples shall be taken during the same time that the VOC samples are taken. The VOC concentration corrected to 3 percent O₂ (C_c) shall be computed using the following equation:

$$C_c = C_{VOC} * ((17.9/(20.9 - \%O_{2d}))$$

~~w~~Where:

C_c = Concentration of VOC corrected to 3 percent O_2 , dry basis, ppm by volume.

C_{VOC} = Concentration of VOC, dry basis, ppm by volume.

$\%O_{2d}$ = Concentration of O_2 , dry basis, percent by volume.

39.5.6. Method 18 of 40 CFR Part 60, Appendix A to determine concentration of VOC in the control device outlet and the concentration of VOC in the inlet when the reduction efficiency of the control device is to be determined.

39.5.6.a. The sampling time for each run shall be 1 hour in which either an integrated sample or four grab samples shall be taken. If grab sampling is used, then the samples shall be taken at 15-minute intervals.

39.5.6.b. The emission reduction (R) of VOC shall be determined using the following equation:

$$R = ((E_i - E_o) / E_i) * 100$$

Where:

R = Emission reduction, percent by weight.

E_i = Mass rate of VOC entering the control device, kg VOC/hr.

E_o = Mass rate of VOC discharged to the atmosphere, kg VOC/hr.

39.5.6.c. The mass rates of VOC (E_i , E_o) shall be computed using the following equations:

$$E_i = K_2 \left(\sum_{j=1}^n C_{ij} M_{ij} \right) Q_i$$

$$E_o = K_2 \left(\sum_{j=1}^n C_{oj} M_{oj} \right) Q_o$$

Where:

C_{ij} , C_{oj} = Concentration of sample component "j" of the gas stream at the inlet and outlet of the control device, respectively.

M_{ij} , M_{oj} = Molecular weight of sample component "j" of the gas stream at the inlet and outlet of the control device, respectively, g/g-mole (lb/lb-mole).

Q_i , Q_o = Flow rate of gas stream at the inlet and outlet of the control device, respectively, dscm/min (dscf/hr).

K_2 = Constant, 2.494×10^{-6} (1/ppm) (g-mole/scm) (kg/g) (min/hr), where standard temperature for (g-mole/scm) is 20EC.

39.5.6.d. The VOC concentration (C_{VOC}) is the sum of the individual components and shall be computed for each run using the following equation:

$$C_{VOC} = \sum_{j=1}^n C_j$$

Where:

C_{VOC} = Concentration of VOC, dry basis, ppm by volume,

C_j = Concentration of sample components in the sample.

n = Number of components in the sample.

~~g~~39.5.7. When a flare is used to seek to comply with ~~section 39.3.b.~~ subdivision 39.3.2., the flare shall comply with the requirements of 40 CFR 60.18.

~~h~~39.5.8. The following test methods in Appendix A to 40 CFR Part 60, except as provided under 40 CFR 60.18, shall be used for determining the net heating value of the gas combusted to determine compliance under ~~section 39.3.b.~~ subdivision 39.3.2., and for determining the process vent stream TRE index value to determine compliance under ~~section 39.3.c.~~ subdivision 39.3.3.

~~i~~39.5.9. Method 1 or 1A, as appropriate, for selection of the sampling site. The sampling site for the vent stream flow rate and molar composition determination prescribed in ~~sections 39.5.j. and 39.5.k.~~ subdivisions 39.5.10. and 39.5.11. shall be, except for the situations outlined in ~~section 39.5.i.1.~~ paragraph 39.5.9.a., prior to the inlet of any control device, prior to any post-reactor dilution of the stream with air, and prior to any post-reactor introduction of halogenated compounds into the vent stream. No transverse site selection method is needed for vents smaller than 4 inches in diameter.

~~l~~39.5.9.a. If any gas stream other than the air oxidation vent stream is normally conducted through the final recovery device:

~~A~~39.5.9.a.1. The sampling site for vent stream flow rate and molar composition shall be prior to the final recovery device and prior to the point at which the nonair oxidation stream is introduced.

~~B~~39.5.9.a.2. The efficiency of the final recovery device is determined by measuring the VOC concentration using Method 18 at the inlet to the final recovery device after the introduction of any nonair oxidation vent stream and at the outlet of the final recovery device.

~~C~~39.5.9.a.3. This efficiency is applied to the VOC concentration measured prior to the final recovery device and prior to the introduction of the nonair oxidation stream to determine the concentration of VOC in the air oxidation stream from the final recovery device. This concentration of VOC is then used to perform the calculations outlined in ~~sections 39.5.1. and 39.5.m.~~ subdivisions 39.5.12. and 39.5.13.

~~j~~39.5.10. The molar composition of the process vent stream shall be determined as follows:

~~l~~39.5.10.a. Method 18 to measure the concentration of VOC including those containing halogens.

~~z~~39.5.10.b. ASTM D1946-77 to measure the concentration of carbon monoxide and hydrogen.

~~z~~39.5.10.c. Method 4 to measure the content of water vapor.

~~k~~39.5.11. The volumetric flow rate shall be determined using Method 2, 2A, 2C, or 2D, as appropriate.

~~l~~39.5.12. The net heating value of the vent stream shall be calculated using the following equation:

$$H_T = K_1 \left(\sum_{j=1}^n C_j H_j \right)$$

Where:

H_T = Net heating value of the sample, MJ/scm, where the net enthalpy per mole of offgas is based on combustion at 25EC and 760 mm Hg, but the standard temperature for determining the volume corresponding to one mole is 20EC, as in the definition of Q_s (offgas flow rate).

K_1 = Constant, 1.740×10^{-7} (1/ppm)((g-mole)/scm))(MJ/kcal) where standard temperature for (g-mole)/(scm) is 20°C.

C_j = Concentration of compound j in ppm, as measured for organics by Method 18 and measured for hydrogen and carbon monoxide by ASTM D1946-77 as indicated in ~~section 39.5.j~~ subdivision 39.5.10.

H_j = Net heat of combustion of compound j, kcal/g-mole, based on combustion at 25°C and 760 mm Hg. The heats of combustion of vent stream components would be required to be determined using ASTM D2382-76 if published values are not available or cannot be calculated.

~~39.5.13.~~ The emission rate of VOC in the process vent stream shall be calculated using the following equation:

$$E_{\text{voc}} = K_2 \left[\sum_{j=1}^n C_j M_j \right] Q_s$$

Where:

E_{voc} = Emission rate of VOC in the sample, kg/hr

K_2 = Constant, 2.494×10^{-6} (1/ppm) (g-mole/scm) (kg/g) (min/hr), where standard temperature for (g-mole/scm) is 20°C.

C_j = Concentration on a dry basis of compound j in ppm as measured by Method 18 as indicated in ~~section 39.5.j~~ subdivision 39.5.10.

M_j = Molecular weight of sample j, g/g-mole

Q_s = Vent stream flow rate (scm/min) at a standard temperature of 20°C.

39.6. Recordkeeping. -- The owner or operator of a facility subject to this section 39. shall keep the records specified in this subsection 39.6. in a readily accessible location for at least 3 years. These records shall be made available to the ~~Director~~ Secretary upon verbal or written request.

~~a39.6.1.~~ Where an owner or operator subject to this section 39. seeks to demonstrate compliance with ~~section 39.3.a. subdivision 39.3.1.~~ through the use of either a thermal or catalytic incinerator:

~~139.6.1.a.~~ The average firebox temperature of the incinerator (or the average temperature upstream and downstream of the catalyst bed for a catalytic incinerator), measured at least every 15 minutes and averaged over the same time period as the compliance test; and

~~239.6.1.b.~~ The percent reduction of VOC determined as specified in ~~section 39.3.a. subdivision 39.3.1.~~ that is achieved by the incinerator, or the concentration of VOC determined as specified in ~~section 39.3.a. subdivision 39.3.1.~~ at the outlet of the control device on a dry basis corrected to 3 percent oxygen.

~~b39.6.2.~~ Where an owner or operator subject to the provisions of this section 39. seeks to demonstrate compliance with ~~section 39.3.a. subdivision 39.3.1.~~ through the use of a boiler or process

heater:

439.6.2.a. A description of the location at which the vent stream is introduced into the boiler or process heater, and

239.6.2.b. The average combustion temperature of the boiler or process heater with a design heat input capacity of less than 44 MW (150 million Btu/hr) measured at least every 15 minutes and averaged over the same time period of the compliance testing.

e39.6.3. Where an owner or operator subject to the provisions of this section 39. seeks to comply with ~~section 39.3.b.~~ subdivision 39.3.2. through the use of a smokeless flare, flare design (i.e., steam-assisted, air-assisted, or non-assisted), all visible emission readings, heat content determinations, flow rate measurements, and exit velocity determinations made during the compliance test, continuous records of the flare pilot flame monitoring, and records of all periods of operation during which the pilot flame is absent.

d39.6.4. Where an owner or operator seeks to demonstrate compliance with ~~with section 39.3.e.~~ subdivision 39.3.3:

139.6.4.a. Where an absorber is the final recovery device in a recovery system, the exit specific gravity and average exit temperature of the absorbing liquid, measured at least every 15 minutes and averaged over the same time period of the compliance testing (both measured while the vent stream is normally routed and constituted); or

b39.6.4.b. Where a condenser is the final recovery device in a recovery system, the average exit (product side) temperature, measured at least every 15 minutes and averaged over the same time period of the compliance testing while the vent stream is normally routed and constituted; or

e39.6.4.c. Where a carbon adsorber is the final recovery device in a recovery system, the total steam mass flow measured at least every 15 minutes and averaged over the same time period of the compliance test (full carbon bed cycle), temperature of the carbon bed after regeneration (and within 15 minutes of completion of any cooling cycle(s), and duration of the carbon bed steaming cycle (all measured while the vent stream is normally routed and constituted); or

d39.6.4.d. As an alternative to ~~section 39.6.d.1., section 39.6.d.2., or section 39.6.d.3.~~ paragraph 39.6.4.a., 39.6.4.b. or 39.6.4.c., the concentration level or reading indicated by the organic monitoring device at the outlet of the absorber, condenser, or carbon adsorber measured at least every 15 minutes and averaged over the same time period of the compliance testing while the vent stream is normally routed and constituted.

e39.6.4.e. All measurements and calculations performed to determine the TRE index value of the vent stream.

e39.6.5. Each owner or operator subject to the provisions of this section 39. shall keep up-to-date, readily accessible continuous records of the equipment operating parameters specified to be monitored under ~~sections 39.4.a. and 39.4.e.~~ subdivisions 39.4.1. and 39.4.3. as well as up-to-date, readily accessible records of periods of operation during which the parameter boundaries established during the most recent compliance test are exceeded. The ~~Director~~ Secretary may at any time require a report of these data. Where a combustion device is used by an owner or operator seeking to demonstrate compliance with ~~section 39.3.a. or section 39.3.e.~~ subdivision 39.3.1. or 39.3.3., periods of operation during which the parameter boundaries established during the most recent performance tests are exceeded are defined as follows:

~~139.6.5.a.~~ For thermal incinerators, all 3-hour periods of operation during which the average combustion temperature was more than 28°C (50°F) below the average combustion temperature during the most recent test at which compliance with ~~section 39.3.a.~~ subdivision 39.3.1. was determined.

~~239.6.5.b.~~ For catalytic incinerators, all 3-hour periods of operation during which the average temperature of the vent stream immediately before the catalyst bed is more than 28EC (50EF) below the average temperature of the vent stream during the most recent test at which compliance with ~~section 39.3.a.~~ subdivision 39.3.1. was determined. The owner or operator also shall record all 3-hour periods of operation during which the average temperature difference across the catalyst bed is less than 80 percent of the average temperature difference of the device during the most recent test at which compliance with ~~section 39.3.a.~~ subdivision 39.3.1. was determined.

~~339.6.5.c.~~ All 3-hour periods of operation during which the average combustion temperature was more than 28°C (50°F) below the average combustion temperature during the most recent test at which compliance with ~~section 39.3.a.~~ subdivision 39.3.1. was determined for boilers or process heaters with a design heat input capacity of less than 44 MW (150 million Btu/hr).

~~439.6.5.d.~~ For boilers or process heaters, whenever there is a change in the location at which the vent stream is introduced into the flame zone as required under ~~section 39.3.a.~~ subdivision 39.3.1.

~~£39.6.6.~~ Each owner or operator subject to the provisions of this section 39. shall keep up-to-date, readily accessible continuous records of the flow indication specified under ~~sections 39.4.a.2., 39.4.b.2., and 39.4.e.1.~~ paragraphs 39.4.1.b., 39.4.2.b. and 39.4.3.a., as well as up-to-date, readily accessible records of all periods when the vent stream is diverted from the control device or has no flow rate.

~~g39.6.7.~~ Each owner or operator subject to the provisions of this section 39. who uses a boiler or process heater with a design heat input capacity of 44 MW or greater to comply with ~~section 39.3.a.~~ subdivision 39.3.1. shall keep an up-to-date, readily accessible record of all periods of operation of the boiler or process heater. (Examples of such records could include records of steam use, fuel use, or monitoring data collected pursuant to other State or Federal regulatory requirements.)

~~h39.6.8.~~ Each owner or operator subject to the provisions of this section 39. shall keep up-to-date, readily accessible, continuous records of the flare pilot flame monitoring specified in ~~section 39.4.b.~~ subdivision 39.4.2. as well as up-to-date, readily accessible records of all periods of operations in which the pilot flame is absent.

~~i39.6.9.~~ Each owner or operator subject to the provisions of this section 39. shall keep up-to-date, readily accessible, continuous records of the equipment operating parameters specified to be monitored under ~~section 39.4.e.~~ subdivision 39.4.3. as well as up-to-date, readily accessible records of periods of operation during which the parameter boundaries established during the most recent compliance test are exceeded. The ~~Director~~ Secretary may at any time require a report of these data. Where the owner or operator seeks to demonstrate compliance with ~~section 39.3.e.~~ subdivision 39.3.3., periods of operation during which the parameter boundaries established during the most recent compliance tests are exceeded are defined as follows:

~~139.6.9.a.~~ Where an absorber is the final recovery device in a recovery system, and where an organic monitoring device is not used:

~~A39.6.9.a.1.~~ All 3-hour periods of operation during which the average absorbing liquid

temperature was more than 11EC (20EF) above the average absorbing liquid temperature during the most recent compliance test; or

~~B~~39.6.9.a.2. All 3-hour periods of operation during which the average absorbing liquid specific gravity was more than 0.1 unit above, or more than 0.1 unit below, the average absorbing liquid specific gravity during the most recent compliance test.

~~2~~39.6.9.b. Where a condenser is the final recovery device in a recovery system, and where an organic monitoring device is not used, all 3-hour periods of operation during which the average exit (product side) condenser operating temperature was more than 6EC (11EF) above the average exit (product side) operating temperature during the most recent compliance test.

~~3~~39.6.9.c. Where a carbon adsorber is the final recovery device in a recovery system and where an organic monitoring device is not used:

~~A~~39.6.9.c.1. All carbon bed regeneration cycles during which the total mass steam flow was more than 10 percent below the total mass steam flow during the most recent compliance test; or

~~B~~39.6.9.c.2. All carbon bed regeneration cycles during which the temperature of the carbon bed after regeneration [and after completion of any cooling cycle(s)] was more than 10 percent greater than the carbon bed temperature (in degrees Celsius) during the most recent compliance test.

~~4~~39.6.9.d. Where an absorber, condenser, or carbon adsorber is the final recovery device in the recovery system and an organic monitoring device approved by the ~~Director~~ Secretary is used, all 3-hour periods of operation during which the average concentration level or reading of organic compounds in the exhaust gases is more than 20 percent greater than the exhaust gas organic compound concentration level or reading measured by the monitoring device during the most recent compliance test.

~~j~~39.6.10. Each owner or operator subject to the provisions of this section 39. and seeking to demonstrate compliance with ~~section 39.3.e.~~ subdivision 39.3.3. shall keep up-to-date, readily accessible records of:

~~1~~39.6.10.a. Any changes in production capacity, feedstock type, or catalyst type, or of any replacement, removal, or addition of recovery equipment or air oxidation reactors;

~~2~~39.6.10.b. Any recalculation of the TRE index value performed pursuant to ~~section 39.5.b~~ subdivision 39.5.2.; and

~~3~~39.6.10.c. The results of any test performed pursuant to the methods and procedures required by ~~section 39.4.d~~ subdivision 39.4.4.

39.7. Reporting requirements. -- The owner or operator of any facility containing sources subject to this section 39. shall:

~~a~~39.7.1. Comply with the initial compliance certification requirements of subsection 5.1; and

~~b~~39.7.2. Comply with the requirements of subsection 5.2. for excess emissions related to the control devices required to comply with this section.

§45-21-40. Other Facilities that Emit Volatile Organic Compound (VOC).

40.1. Applicability.

~~a~~40.1.1. This section 40. applies to any facility that has aggregate maximum theoretical emissions of 90.7 megagrams (mg) (100 tons) or more of volatile organic compounds (VOCs) per calendar year in the absence of control devices; provided that this section 40. applies to any source or sources within such facility other than those sources subject to regulation under sections 11. through 39. VOC emissions from sources regulated under sections 11. through 39., but which fall below the applicability thresholds of these sections, and thus are not subject to the emissions control standards of these sections, shall be included in the determination of maximum theoretical emissions for a facility but shall not be subject to the requirements of this section 40. Emissions from sources listed in ~~section 40.1.d.~~ subdivision 40.1.4. shall not be included in the determination of maximum theoretical emissions for a facility.

~~b~~40.1.2. The owner or operator of a coating line or operation, whose emissions are below this applicability threshold, shall comply with the certification, recordkeeping, and reporting requirements of ~~section 40.6.a~~ subdivision 40.6.1.

~~e~~40.1.3. The owner or operator of a non-coating source, whose emissions are below this applicability threshold, shall comply with the certification, recordkeeping, and reporting requirements of ~~section 40.6.b~~ subdivision 40.6.2.

~~d~~40.1.4. The requirements of this section 40. shall not apply to coke ovens (including by-product recovery plants), fuel combustion sources, barge loading facilities, jet engine test cells, vegetable oil processing facilities, wastewater treatment facilities, iron and steel production, surface impoundments, pits; and boilers, industrial furnaces, and incinerators having a destruction efficiency of 95 percent or greater.

~~e~~40.1.5. The requirements of this section 40. shall not apply to any facility bound by an order or permit, enforceable by the ~~Director~~ Secretary, which limits the facility's emissions to less than 100 tons of VOC per calendar year without the application of control devices.

40.2. Definitions. -- As used in this section 40., all terms not defined herein shall have the meaning given them in section 2.

~~a~~40.2.1. "Reasonably available control measures" (also denoted as RACM) means an emission limit or limits that reflect the application of control technology and/or abatement techniques or measures that are reasonably available, considering technological and economic feasibility. Such emission limits may be considered on a plant-wide basis to achieve emission reduction requirements in the most cost effective manner.

~~b~~40.2.2. "Fugitive emissions" means those emissions which could not reasonably pass through a stack, chimney, vent, or other functionally equivalent opening.

40.3. Standards. -- The owner or operator of a facility subject to this section 40. shall:

~~a~~40.3.1. Except as provided in ~~section 40.3.b~~ subdivision 40.3.2.,

~~1~~40.3.1.a. With respect to any existing non-fugitive emission source which has maximum theoretical emissions of 6 pounds per hour or more, comply with an emission control plan established on a case-by-case basis approved by the ~~Director~~ Secretary that meets the definition of reasonably available control measures (RACM) and achieves at least a 90 percent reduction in emissions below the total

(aggregate) maximum theoretical emissions from all such non-fugitive emission sources subject to RACM requirements; and

240.3.1.b. With respect to each process unit producing a product or products, intermediate or final, in excess of 1000 megagrams (Mg) (1,100 tons) per year, regardless of whether such product or products are listed in 40 CFR 60.489, comply with an emission control plan for fugitive sources using the methods and criteria of section 37., or alternative methods and criteria approved by the ~~Director~~ Secretary. The ~~Director~~ Secretary may exempt a process unit from fugitive emission control requirements upon satisfactory demonstration that emissions are of minor significance.

b40.3.2. With respect to such sources as described in ~~sections 40.3.a.1. and 40.3.a.2.~~ paragraphs 40.3.1.a. and 40.3.1.b., comply with emission limits and measures based upon an alternative emissions reduction plan approved by the ~~Director~~ Secretary considering technical, economic and air quality benefit considerations that, at a minimum, maintains emission control measures incorporated as part of any federally approved maintenance plan for the county or area in which the source is located.

e40.3.3. With respect to any source at a facility subject to this section 40., which source has maximum theoretical emissions of 6 pounds per hour or more and is constructed, modified or begins operating after ~~the effective date of this rule~~ May 1, 1996, comply with a control plan developed on a case-by-case basis approved by the ~~Director~~ Secretary that meets the definition of reasonably available control technology (RACT) in subsection 2.60. for both fugitive and non-fugitive emission sources.

40.4. Submissions and Approval of Control Plans

a40.4.1. ~~Within 90 days after the effective date of this rule,~~ The owner or operator of a facility subject to this section 40. shall submit any required amendments to the case-by-case RACT control plans previously submitted to the ~~Director~~ Secretary, that revise such control plans to meet the definition of reasonably available control measures (RACM).

b40.4.2. ~~Notwithstanding the provisions of section 9.2., the owner or operator of a facility subject to this rule solely due to this section 40., that requires a major process change and/or major capital investment to comply with RACM requirements, may petition the Director for an additional extension beyond December 31, 1996, for compliance certification, and the Director may grant such extension when warranted. Provided however, such compliance certification date shall be no later July 31, 1997~~ Reserved.

e40.4.3. The ~~Director~~ Secretary shall not approve a RACM plan or an alternative emissions reduction plan under this section 40. unless such plan includes:

140.4.3.a. A commitment to develop and submit a complete RACT plan to the ~~Director~~ Secretary within 180 days of a finding by the ~~Director~~ Secretary that a violation of the National Ambient Air Quality Standard for ozone has occurred within the county or maintenance area in which the source is located; and

240.4.3.b. A commitment to achieving full implementation of RACT within 2 years of approval of the RACT plan by the ~~Director~~ Secretary.

d40.4.4. A finding by the ~~Director~~ Secretary that a violation of the National Ambient Air Quality Standard for ozone has occurred shall be made based upon verification of a monitored ozone standard violation in the county or maintenance area in which the source is located. The three maintenance areas (the Huntington area, comprising Cabell and Wayne counties; the Charleston area, comprising Kanawha

and Putnam counties; and the Parkersburg area, comprising Wood county) shall be treated separately and independently for any such finding(s).

~~e~~40.4.5. All RACM control plans, RACT control plans, and alternative emissions reduction plans approved by the ~~Director~~ Secretary pursuant to this section 40. shall be embodied in a consent order or permit in accordance with 45CSR13 or 45CSR30, as required. A facility owner or operator may at any time petition the ~~Director~~ Secretary to approve revisions to these plans. The decision concerning said petition shall be issued by the ~~Director~~ Secretary in accordance with 45CSR13 or 45CSR30, as required, or a consent order. Any such revisions shall be subject to the public participation requirements of 45CSR13 or 45CSR30.

~~f~~40.4.6. The owner or operator of a facility subject to this section 40. may submit for approval by the ~~Director~~ Secretary an emission control plan that meets the definition of reasonably available control technology (RACT) in subsection 2.60.

40.5. Test methods and procedures. -- The owner or operator of any source subject to this section 40. shall demonstrate compliance with subsection 40.3. by using the applicable test methods specified in sections 41. through 46 or by other means approved by the ~~Director~~ Secretary. Notwithstanding the requirements of subsection 41.1., EPA approval for alternate test methods to demonstrate compliance shall not be required for sources which are subject solely to emission control requirements specified in subsection 40.3.

40.6. Reporting and Recordkeeping Requirements for Exempt Non-Control Technique Guideline (CTG) Sources.

~~a~~40.6.1. An owner or operator of a coating line or operation that is exempt from the emission limitations in subsection 40.3. shall comply with the certification, recordkeeping, and reporting requirements in subsection 4.2.

~~b~~40.6.2. An owner or operator of a non-coating source that is exempt from the emission limitations in subsection 40.3. shall submit, upon request by the ~~Director~~ Secretary, records that document that the source is exempt from these requirements.

~~1~~40.6.2.a. These records shall be submitted to the ~~Director~~ Secretary within 30 days from the date of request.

~~2~~40.6.2.b. If such records are not made available, the source will be considered subject to the limits in subsection 40.3.

40.7. Reporting and Recordkeeping Requirements for Subject Non-CTG Coating Sources. -- An owner or operator of a coating line or operation subject to this section 40. and complying with subsection 40.3. shall comply with the certification, recordkeeping, and reporting requirements in section 4.

40.8. Reporting and Recordkeeping Requirements for Subject Non-CTG, Non-Coating Sources.

~~a~~40.8.1. The owner or operator of the subject VOC sources shall perform all testing and maintain the results of all tests and calculations required under subsections 40.3. and 40.5. to demonstrate that the subject source is in compliance.

~~b~~40.8.2. The owner or operator of the subject VOC source shall maintain these records in a readily

accessible location for a minimum of 3 years, and shall make these records available to the ~~Director~~ Secretary upon verbal or written request.

~~40.8.3.~~ The owner or operator of any facility containing sources subject to this section 40. shall comply with the requirements in section 5. except that such requirements, as they apply to sources solely subject to this section 40., may be modified by the ~~Director~~ Secretary upon petition by the owner or operator. Any such modified requirements shall be embodied in the facility's control plan (RACM, RACT or alternative plan) and reflected in the associated consent order or permit issued pursuant to 45CSR13 or 45CSR30.

§45-21-41. Test Methods and Compliance Procedures: General Provisions.

41.1. Test methods. -- The owner or operator of any volatile organic compound (VOC) source required to comply with sections 11. through 40. shall, at the owner's or operator's expense, demonstrate compliance by using the methods of sections 41. through 47. or alternative methods that are approved by the ~~Director~~ Secretary and the U.S. EPA and shall meet all the requirements of this section 41.

41.2. Preparation of test plan and quality assurance program. -- At least 30 days before the initiation of a required test under section 44., the owner or operator shall submit a test plan that shall be approved by the ~~Director~~ Secretary before the results of the test will be considered acceptable. This test plan shall include the following minimum information:

~~41.2.1.~~ The purpose of the proposed test and the applicable section of sections 11. through 40. of this regulation;

~~41.2.2.~~ A detailed description of the facility to be tested, including a line diagram of the facility, locations of test sites, and facility operation conditions for the test;

~~41.2.3.~~ A detailed description of the test methods and procedures, equipment, and sampling sites, i.e., a test plan;

~~41.2.4.~~ A time table for the following:

~~41.2.4.a.~~ Date for the compliance test;

~~41.2.4.b.~~ Date of submittal of preliminary results to the ~~Director~~ Secretary (not later than 30 days after sample collection); and

~~41.2.4.c.~~ Date of submittal of final test report (not later than 60 days after completion of on-site sampling); and

~~41.2.5.~~ Proposed corrective actions should the test results show noncompliance.

~~41.2.6.~~ Internal QA program. -- The internal QA program shall include, at a minimum, the activities planned by routine operators and analysts to provide an assessment of test data precision. An example of internal QA is the sampling and analysis of replicable samples.

~~41.2.7.~~ External QA program.

~~41.2.7.a.~~ The external QA program shall include, at a minimum, application of plans for a

test method performance audit (PA) during the performance test.

~~241.2.7.b.~~ The external QA program may also include systems audits, which include the opportunity for on-site evaluation by the ~~Director~~ Secretary of instrument calibration, data validation, sample logging, and documentation of quality control data and field maintenance activities.

~~341.2.7.c.~~ The PA's shall consist of blind audit samples provided by the ~~Director~~ Secretary and analyzed during the performance test to provide a measure of test data bias.

~~A41.2.7.c.1.~~ The ~~Director~~ Secretary shall require the owner or operator to analyze PA samples during each performance test when audit samples are available.

~~B41.2.7.c.2.~~ Information concerning the availability of audit materials for a specific performance test may be obtained by contacting the Emission Measurement Technical Information Center at (919) 541-2237.

~~C41.2.7.c.3.~~ If the ~~Director~~ Secretary has prior knowledge that an audit material is available, he or she may contact the Atmospheric Research and Exposure Assessment Laboratory directly at (919)541-4531.

~~D41.2.7.c.4.~~ All other audit materials may be obtained by calling (919) 541-7834.

~~E41.2.7.c.5.~~ The evaluation criteria applied to the interpretation of the PA results and the subsequent remedial actions required of the owner or operator are the sole responsibility of the ~~Director~~ Secretary.

41.3. Process operation. -- The owner or operator shall be responsible for providing:

~~a41.3.1.~~ Sampling ports, pipes, lines, or appurtenances for the collection of samples and data required by the test methods and procedures;

~~b41.3.2.~~ Safe access to the sample and data collection locations; and

~~e41.3.3.~~ Light, electricity, and the utilities required for sample and data collection.

41.4. Summary of results. -- No later than 30 days after the sample collection, the owner or operator shall submit preliminary results to the ~~Director~~ Secretary.

41.5. Final report. -- No later than 60 days after completion of the on-site sampling, the owner or operator shall submit a test report to the ~~Director~~ Secretary. The test report shall include the following minimum information:

~~a41.5.1.~~ Process description;

~~b41.5.2.~~ Air pollution capture system and control device description;

~~e41.5.3.~~ Process conditions during testing;

~~d41.5.4.~~ Test results and example calculations;

~~e~~41.5.5. Description of sampling locations and test methods;

~~f~~41.5.6. Quality assurance measures; and

~~g~~41.5.7. Field and analytical data.

§45-21-42. Test Methods and Compliance Procedures: Determining the Volatile Organic Compound (VOC) Content of Coatings and Inks.

42.1. Sampling procedures shall follow the guidelines presented in:

~~a~~42.1.1. ASTM D3925: Standard practice for sampling liquid paints and related pigment coatings;
or

~~b~~42.1.2. ASTM E300: Standard practice for sampling industrial chemicals.

42.2. The analytical methods specified below shall be used to determine the VOC content of each coating, as applied:

~~a~~42.2.1. Method 24 of 40 CFR Part 60, Appendix A, shall be used in the determination of total volatile content, water content, and density of coatings. For the determination of total volatile content, all samples shall be oven-dried at 100EC for 1 hour.

~~b~~42.2.2. To determine the total volatile content, water content, and density of multi-component coatings, the following procedures shall be used in addition to Method 24 of 40 CFR Part 60, Appendix A:

~~1~~42.2.2.a. The components shall be mixed in a storage container in proportions the same as those in the coating, as applied. The mixing shall be accomplished by weighing the components in the proper proportion into a container which is closed between additions and during mixing. Approximately 100 ml of coating shall be prepared in a container just large enough to hold the mixture prior to withdrawing a sample.

~~2~~42.2.2.b. For determination of volatile content, a sample shall be withdrawn from the mixed coating, and then transferred to a dish where the sample shall stand for at least 1 hour, but no more than 24 hours prior to being oven dried at 110EC for 1 hour.

~~3~~42.2.2.c. For determination of the water content and density of multicomponent coatings, samples shall be taken from the same 100 ml mixture of coating and shall be analyzed by the appropriate ASTM method referenced in Method 24 of 40 CFR Part 60, Appendix A.

~~e~~42.2.3. Method 24A of 40 CFR Part 60, Appendix A, shall be used in the determination of total volatile content, water content, and density of any publication rotogravure printing ink and related coatings.

~~4~~42.2.4. The following ASTM method may be used as an additional procedure related to determining VOC: ASTM D4457-85 - Standard test method for determination of dichloromethane and 1,1,1, trichloroethane in paints and coatings by direct injection into a gas chromatograph (the procedure delineated above may be used to develop protocols for any compounds specifically exempted from the definition of VOC).

42.3. Use of adaptations to test methods. -- Use of an adaptation to any of the analytical methods

specified in subsection 42.2. may be approved by the ~~Director~~ Secretary and the U.S. EPA on a case-by case basis. An owner or operator shall submit sufficient documentation for the ~~Director~~ Secretary and the U.S. EPA to find that the analytical methods specified in ~~sections 42.2.a., 42.2.b., and 42.2.c.~~ subdivisions 42.2.1., 42.2.2., and 42.2.3. will yield inaccurate results and that the proposed adaptation is appropriate.

42.4. Each sample collected for analysis shall meet the following criteria:

~~a~~42.4.1. Each sample shall be at least 1 pint taken into a 1-pint container at a location and time such that the sample will be representative of the coating or ink, as applied (i.e., the sample shall include any dilution solvent or VOC added during the manufacturing process);

~~b~~42.4.2. If a sample larger than 1 pint is obtained, the sample container shall be of a size such that the sample completely fills the container;

~~c~~42.4.3. The container shall be tightly sealed immediately after the sample is taken;

~~d~~42.4.4. Any solvent or other VOC added after the sample is taken shall be measured and accounted for in the calculations in subsection 42.3.; and

~~e~~42.4.5. For multiple-component coatings, separate samples of each component shall be obtained.

42.5. Calculations for determining the VOC content of coatings and inks from data as determined by Method 24 or 24A of 40 CFR Part 60, Appendix A, shall follow the guidance provided in the following documents:

~~a~~42.5.1. "A Guideline for Surface Coating Calculations", EPA-340/1-86-016; and

~~b~~42.5.2. "Procedures for Certifying Quantity of Volatile Organic Compounds Emitted by Paint, Ink and Other Coatings", (Revised June 1986) EPA-450/3-84-019.

§45-21-43. Test Methods and Compliance Procedures: Alternative Compliance Methods for Surface Coating.

43.1. Daily-weighted average. -- The daily-weighted average VOC content, in units of mass of VOC per unit volume of coating, minus water and exempt compounds, as applied, of the coatings used on a day on a coating line or operation shall be calculated using the following equation:

$$VOC_w = \frac{\sum_{i=1}^n V_i C_i}{V_T}$$

~~w~~Where:

VOC_w = The daily-weighted average VOC content of the coatings, as applied, used on a coating line or operation in units of kilograms of VOC per liter of coating (kg VOC/L) (pounds of VOC per gallon of coating [lb VOC/gal]), minus water and exempt compounds;

n = The number of different coatings, as applied, each day on a coating line or operation;

V_i = The volume of each coating, as applied, each day on a coating line or operation in units of L (gal), minus water and exempt compounds; and

C_i = The VOC content of each coating, as applied, each day on a coating line or operation in units of kg VOC/L of coating (lb VOC/gal), minus water and exempt compounds; and

V_T = The total volume of all coating, as applied, each day on a coating line or operation in units of L (gal), minus water and exempt compounds.

43.2. Overall emission reduction efficiency for control systems. -- The overall emission reduction efficiency needed to demonstrate compliance is determined each day as follows:

~~a~~43.2.1. Obtain the emission limitation from the applicable section of this regulation.

~~b~~43.2.2. Calculate the emission limitation on a solids basis according to the following equation:

$$S = C/(1-(C/d))$$

~~w~~Where:

S = The VOC emission limitation in terms of kg VOC/L of coating solids (lb VOC/gal);

C = The VOC emission limitation in terms of kg VOC/L of coating (lb/gal), minus water and exempt compounds; and

d = The density of VOC for converting emission limitation to a solids basis. The density equals 0.882 kg/L (7.36 lb/gal).

~~c~~43.2.3. Calculate the required overall emission reduction efficiency of the control system for the day according to the following equation:

$$E = ((VOC_a - S)/VOC_a) \times 100$$

~~w~~Where:

E = The required overall emission reduction efficiency of the control system for the day;

VOC_a = (1) The maximum VOC content of the coatings, as applied, used each day on the subject coating line or operation, in units of kg VOC/L of coating solids (lb/gal), as determined by the applicable test methods and procedures specified in section 42.; or (2) The daily-weighted average VOC content, as applied, of the coatings used each day on the subject coating line or operation, in units of kg VOC/L of coating solids (lb/gal), as determined by the applicable test methods and procedures specified in section 42. and the procedure in ~~section 43.2.d.~~ subdivision 43.2.4.; and

S = VOC emission limitation in terms of kg VOC/L of coating solids (lb VOC/gal).

~~d~~43.2.4. The daily-weighted average VOC content, as applied, of the coatings used on a coating line or operation in units of mass of VOC per unit volume of coating solids shall be calculated by the following equation:

$$VOC_{ws} = \frac{\sum_{i=1}^n W_{voc_i} D_i}{\sum_{i=1}^n V_i VS_i}$$

~~w~~Where:

VOC_{ws} = The daily-weighted average VOC content, as applied, of the coatings used on a coating line or operation in units of mass of VOC per unit volume of coating solids;

n = The number of different coatings, as applied, used in a day on a coating line or operation;

V_i = The volume of each coating (i), as applied, used in a day on a coating line or operation in units of liters (L) (gallons [gal]);

W_{VOCi} = The weight fraction of VOC in each coating (i), as applied, used in a day on a coating line or operation in units of kg VOC/kg coating (lb/lb);

D_i = The density of each coating (i), as applied, used in a day on a coating line or operation in units of kg coating/L of coating (lb/gal);

VS_i = The volume fraction solids content of each coating (i), as applied, used on a day on a coating line or operation in units of L solids/L coating (gal/gal);

§45-21-44. Test Methods and Compliance Procedures: Emission Capture and Destruction or Removal Efficiency and Monitoring Requirements.

44.1. Determining the efficiency of volatile organic compound (VOC) capture systems.

~~a~~44.1.1. Definitions and abbreviations. -- For purposes of this section 44., the following definitions and abbreviations apply:

~~1~~44.1.1.a. "Gas/gas method" means either of two methods for determining capture which rely only on gas phase measurements. One method requires construction of a temporary total enclosure (TTE) to assure all potential fugitive emissions are measured while the other method uses the room or building which houses the source as an enclosure.

~~2~~44.1.1.b. "Hood" means a partial enclosure or canopy for capturing and exhausting, by means of a draft, the organic vapors or other fumes rising from a coating process or other source.

~~3~~44.1.1.c. "Liquid/gas method" means either of two methods for determining capture which require both gas phase and liquid phase measurements and analysis. One liquid/gas method requires construction of a temporary total enclosure, the other uses the building or room which houses the facility as an enclosure.

~~4~~44.1.1.d. "Process line" means any coating line, coating operation, or printing press.

~~5~~44.1.1.e. "PTE" is a permanent total enclosure, which contains a process that emits VOC and meets the specifications given in Procedure T in Appendix A of this regulation.

~~6~~44.1.1.f. "TTE" is a temporary total enclosure which is built around a process that emits VOC and meets the specifications given in Procedure T in Appendix A of this regulation.

~~7~~44.1.1.g. "BE" is a building or room enclosure that contains a process that emits VOC. If a BE is to substitute for a PTE or TTE, the appropriate requirements given in Procedure T in Appendix A of this regulation shall be met.

~~b~~44.1.2. Applicability.

~~1~~44.1.2.a. The requirements of ~~section 44.1.e.~~ subdivision 44.1.3. shall apply to all regulated VOC emitting processes employing a control system except as provided below.

~~2~~44.1.2.b. If a source owner or operator installs a PTE that meets EPA specifications, and which directs all VOC to a control device, the capture efficiency is assumed to be 100 percent, and the source is exempted from the requirements described in ~~section 44.1.e.~~ subdivision 44.1.3. Procedure T in

Appendix A of this regulation shall be used to determine whether a structure is a PTE. This does not exempt a source from performance of any control device efficiency testing required under this regulation. In addition, a source shall demonstrate that all criteria for a PTE are met during the testing for capture efficiency.

~~344.1.2.c.~~ If a source owner or operator uses a control device designed to collect and recover VOC (e.g. carbon adsorber), an explicit measurement of capture efficiency is not necessary if the conditions given below are met. The overall emission reduction efficiency of the control system can be determined each day by directly comparing the liquid VOC input to the process (L) to the recovered liquid VOC. The procedure for use in this situation is specified in 40 CFR 60.433 with the following modifications:

~~A44.1.2.c.1.~~ The source owner or operator shall be able to equate solvent usage with solvent recovery on a 24-hour (daily) basis, rather than a 30-day weighted average as given in 40 CFR 60.433. This shall be done within 72 hours following each 24-hour period; and

~~B44.1.2.c.2.~~ If the solvent recovery system controls multiple process lines, the source owner or operator shall be able to demonstrate that the overall control (i.e., the total recovered solvent VOC divided by the sum of liquid VOC input to all process lines venting to the control system) meets or exceeds the most stringent standard applicable for any process line venting to the control system.

~~e44.1.3.~~ Specific Requirements.

~~144.1.3.a.~~ The capture efficiency shall be measured using one of the four protocols given in ~~sections 44.1.e.3.A. through 44.1.e.3.D~~ subparagraphs 44.1.3.c.1. through 44.1.3.c.4.

~~244.1.3.b.~~ Any error margin associated with a test protocol shall not be incorporated into the results of a capture efficiency test.

~~344.1.3.c.~~ Any source required to comply with this section 44. shall use one of the following protocols to measure capture efficiency, unless a suitable alternative protocol is approved by the ~~Director~~ Secretary and the U.S. EPA:

~~A44.1.3.c.1.~~ Gas/gas method using TTE. -- Procedure T in Appendix A of this regulation shall be used to determine whether a temporary enclosure is a TTE. The capture efficiency equation to be used for this protocol is:

$$CE = G / (G + F)$$

~~w~~Where:

CE = capture efficiency, decimal fraction

G = mass of VOC captured and delivered to control device using a TTE

F = mass of fugitive VOC that escapes from a TTE.

Procedure G.2 in Appendix A of this regulation is used to obtain G. Procedure F.1 in Appendix A of this regulation is used to obtain F.

~~B44.1.3.c.2.~~ Liquid/gas method using TTE. -- Procedure T in Appendix A of this regulation shall be used to determine whether a temporary enclosure is a TTE. The capture efficiency equation to be used for this protocol is:

$$CE = (L - F) / L$$

~~w~~Where:

CE = capture efficiency, decimal fraction

L = mass of liquid VOC input to process

F = mass of fugitive VOC that escapes from a TTE.

Procedure L in Appendix A of this regulation is used to obtain L. Procedure F.1 in Appendix A of this regulation is used to obtain F.

~~€~~44.1.3.c.3. Gas/gas method using the building or room (BE) in which the source is located as the enclosure and in which G and F are measured while operating only the source to be tested. -- All fans and blowers in the building or room shall be operated as they would under normal production. The capture efficiency equation to be used for this protocol is:

$$CE = G / (G + F_B)$$

~~w~~Where:

CE = capture efficiency, decimal fraction

G = mass of VOC captured and delivered to a control device

F_B = mass of fugitive VOC that escapes from building enclosure.

Procedure G.2 in Appendix A of this regulation is used to obtain G. Procedure F.2 in Appendix A of this regulation is used to obtain F_B

~~D~~44.1.3.c.4. Liquid/gas method using the building or room (BE) in which the source is located as the enclosure and in which L and F are measured while operating only the source to be tested. All fans and blowers in the building or room shall be operated as they would under normal production. The capture efficiency equation to be used for this protocol is:

$$CE = ((L - F_B) / L)$$

~~w~~Where:

CE = capture efficiency, decimal fraction

L = mass of liquid VOC input to process

F_B = mass of fugitive VOC that escapes from building enclosure.

Procedure L in Appendix A of this regulation is used to obtain L. Procedure F.2 in Appendix A of this regulation is used to obtain F_B.

~~d~~44.1.4. Recordkeeping and Reporting.

~~4~~44.1.4.a. All sources complying with this section 44. shall maintain on file a copy of the capture efficiency protocol submitted to the ~~Director~~ Secretary. All results of appropriate test methods and CE protocols shall be reported to the ~~Director~~ Secretary within sixty (60) days of the test date. A copy of the results shall be kept on file with the source.

~~2~~44.1.4.b. If any changes are made to capture or control equipment, the source is required to notify the ~~Director~~ Secretary within thirty (30) days of these changes and a new capture efficiency and/or control device destruction or removal efficiency test may be required.

44.2. Determining the destruction or removal efficiency of incinerators and carbon adsorbers.

~~a~~44.2.1. Testing.

~~44.2.1.a.~~ The control device destruction or removal efficiency shall be determined from data obtained by simultaneously measuring the inlet and outlet gas-phase VOC concentrations and gas volumetric flow rates in accordance with the gas-phase test methods specified in section 45. The control device destruction or removal efficiency shall be calculated using the following equation:

$$E = \frac{\sum_{i=1}^n Q_i C_i - \sum_{j=1}^m Q_j C_j}{\sum_{i=1}^n Q_i C_i}$$

~~w~~Where:

E = VOC destruction efficiency of the control device;

Q_i = Volumetric flow rate of the effluent gas flowing through stack i entering the control device, dry standard cubic meters per hour (dscmh);

C_i = Concentration of VOC (as carbon) in the effluent gas flowing through stack i entering the control device, ppmv;

Q_j = Volumetric flow rate of the effluent gas flowing through stack j leaving the control device, dscmh;

C_j = Concentration of VOC (as carbon) in the effluent gas flowing through stack j leaving the control device, ppmv;

n = The number of vents to the control device; and

m = The number of vents after the control device.

~~244.2.1.b.~~ A source utilizing a PTE (or a BE as a PTE) shall demonstrate that this enclosure meets the requirements given in Procedure T in Appendix A of this regulation for a PTE during any testing of a control device.

~~344.2.1.c.~~ A source utilizing a TTE (or a BE as a TTE) shall demonstrate that this enclosure meets the requirements given in Procedure T in Appendix A of this regulation for a TTE during testing of a control device. The source shall also provide documentation that the quality assurance criteria for a TTE have been achieved.

~~b~~44.2.2. Monitoring.

~~44.2.2.a.~~ Any owner or operator who uses an incinerator or regenerative carbon adsorber to comply with any part of this regulation shall install, calibrate, certify to the ~~Director~~ Secretary, operate, and maintain monitoring equipment. The monitoring equipment shall monitor the following parameters:

~~A44.2.2.a.1.~~ Continuous monitoring of the combustion chamber temperature of each thermal incinerator or afterburner;

~~B44.2.2.a.2.~~ Continuous monitoring of the temperature immediately before and after each catalytic incinerator bed;

~~C44.2.2.a.3.~~ For each carbon adsorption bed the VOC concentration and flow shall be monitored before and after the carbon adsorption bed. The monitor shall be equipped with a continuous recording device. An alternative continuous monitoring program may be used if the monitoring program can be demonstrated to be equally as effective, as determined by the ~~Director~~ Secretary.

~~244.2.2.b.~~ The continuous temperature monitoring equipment shall be equipped with a continuous recorder and have an accuracy of ± 1 percent of the combustion temperature being measured expressed in degrees Celsius (EC) or ± 0.5 EC, whichever is greater.

~~344.2.2.c.~~ The owner or operator shall ensure that the quality assurance measures in subsection 47.10. are met.

44.3. Determining the overall emission reduction efficiency. -- The overall emission reduction efficiency of the emission control system shall be determined each day as the product of the capture efficiency and the control device destruction or removal efficiency; or for each solvent recovery system, by the liquid/liquid test protocol. The results of the capture efficiency test and control device destruction or removal efficiency test remain valid for each day until a subsequent test is performed. The results of any valid test may be used for each day until superseded by the results of a valid test subsequently performed.

§45-21-45. Test Methods and Compliance Procedures: Determining the Destruction or Removal Efficiency of a Control Device.

45.1. Depending upon the conditions at a test site, one of the following test methods from 40 CFR Part 60, Appendix A, shall be used to determine volatile organic compound (VOC) concentrations of a gas stream at the inlet and outlet of a control device:

~~a45.1.1.~~ Method 18;

~~b45.1.2.~~ Method 25; or

~~c45.1.3.~~ Method 25A.

45.2. The method selected shall be based on consideration of the diversity of organic species present and their total concentration and on consideration of the potential presence of interfering gases. Because of the different response factors for the many organic compounds formed during the combustion process, only Method 25, which measures VOC as carbon, shall be used for determining destruction efficiency of incinerators or catalytic incinerators.

45.3. Except as indicated in ~~sections 45.3.a. and 45.3.b.~~ subdivisions 45.3.1. and 45.3.2., a test shall consist of three separate runs, each lasting a minimum of 60 minutes (min), unless the ~~Director~~ Secretary determines that process variables dictate shorter sampling times.

~~a45.3.1.~~ When the method is to be used to determine the efficiency of a fixed-bed carbon adsorption system with a common exhaust stack for all of the individual adsorber vessels, the test shall consist of three separate runs, each coinciding with one or more complete sequences through the adsorption cycles of all the individual adsorber vessels.

~~b45.3.2.~~ When the method is to be used to determine the efficiency of a fixed-bed carbon adsorption system with individual exhaust stacks for each adsorber vessel, each adsorber vessel shall be tested individually. The test for each adsorber vessel shall consist of three separate runs. Each run shall coincide with one or more complete adsorption cycles.

45.4. Method 1 or 1A of 40 CFR Part 60, Appendix A, shall be used for velocity traverses.

45.5. Method 2, 2A, 2C, or 2D of 40 CFR Part 60, Appendix A, shall be used for velocity and volumetric flow rates.

45.6. Method 3 or 3A of 40 CFR Part 60, Appendix A, shall be used for O₂ and CO₂ analysis.

45.7. Method 4 of 40 CFR Part 60, Appendix A, shall be used for stack gas moisture.

45.8. Methods 2, 2A, 2C, 2D, 3, 3A and 4 of 40 CFR Part 60, Appendix A, shall be performed, as applicable, at least once during each test run.

45.9. Use of adaptations to test methods. -- Use of an adaptation to any of the analytical methods specified in subsections 45.1. and 45.4. through 45.8. may be approved by the ~~Director~~ Secretary and the U.S. EPA on a case-by-case basis. An owner or operator shall submit sufficient documentation for the ~~Director~~ Secretary and the U.S. EPA to find that the analytical methods specified in subsections 45.1. and 45.4. through 45.8. will yield inaccurate results and that the proposed adaptation is appropriate.

§45-21-46. Test Methods and Compliance Procedures: Leak Detection Methods for Volatile Organic Compounds (VOCs).

46.1. Owners or operators required to carry out a leak detection monitoring program shall comply with the following requirements:

~~a~~46.1.1. Monitoring shall be performed in accordance with Method 21 of 40 CFR Part 60, Appendix A.

~~b~~46.1.2. The detection instrument shall meet the performance criteria of Method 21.

~~c~~46.1.3. The detection instrument shall be calibrated before and after use on each day of its use by the methods specified in Method 21. Failure to achieve a post-use calibration precision of 10 percent or less shall constitute grounds for rejecting all tests performed since the last pre-use calibration. In such cases, required leak tests shall be reperformed.

~~d~~46.1.4. Calibration gases shall be:

~~1~~46.1.4.a. Zero air (less than 10 parts per million [ppm] of hydrocarbon in air); and

~~2~~46.1.4.b. A mixture of methane or n-hexane and air at a concentration of approximately, but less than, 10,000 ppm methane or n-hexane.

~~e~~46.1.5. The detection instrument probe shall be traversed around all potential leak interfaces as close to the interface as possible as described in Method 21.

46.2. When equipment is tested for compliance with the requirement that there be no detectable emissions, the test shall comply with the following:

~~a~~46.2.1. The requirements of ~~sections 46.1.a. through 46.1.e.~~ subdivisions 46.1.1. through 46.1.5. shall apply and shall be met; and

~~b~~46.2.2. The background level shall be determined as set forth in Method 21.

46.3. Leak detection tests shall be performed consistent with:

~~a~~46.3.1. "APTI Course SI 417-Controlling Volatile Organic Compound Emissions from Leaking Process Equipment," EPA-450/2-82-015;

~~b~~46.3.2. "Portable Instrument User's Manual for Monitoring VOC Sources," EPA-340/1-86-015;

~~e~~46.3.3. "Protocols for Generating Unit-Specific Emission Estimates for Equipment Leaks of VOC and VHcAP," EPA-450/3-88-010; and

~~d~~46.3.4. "Petroleum Refinery Enforcement Manual," EPA-340/1-80-008.

46.4. Use of adaptations to test methods. -- Use of an adaptation to any of the analytical methods specified in subsections 46.1., 46.2., and 46.3. may be approved by the ~~Director~~ Secretary and the U.S. EPA on a case-by-case basis. An owner or operator shall submit sufficient documentation for the ~~Director~~ Secretary and the U.S. EPA to find that the analytical methods specified in subsections 46.1., 46.2., and 46.3. will yield inaccurate results and that the proposed adaptation is appropriate.

§45-21-47. Performance Specifications for Continuous Emissions Monitoring of Total Hydrocarbons.

47.1. Applicability.

~~a~~47.1.1. This method applies to the measurement of total hydrocarbons as a surrogate measure for the total gaseous organic concentration of the combustion gas stream. The concentration is expressed in terms of propane.

~~b~~47.1.2. The ~~Director~~ Secretary and the U.S. EPA may approve the use of gas conditioning, including cooling to between 4.4 and 18EC (40 and 64EF), and condensate traps to reduce the moisture content of the sample gas if the owner/operator:

~~4~~47.1.2.a. Successfully demonstrates to the ~~Director~~ Secretary and the U.S. EPA that the use of such system is necessary for the specific application; and

~~2~~47.1.2.b. Includes in the demonstration a quantification of the total hydrocarbon concentration (THC) lost to the gas conditioning system.

47.2. Principal. -- A gas sample is extracted from the source through a heated sample line and heated glass fiber filter to a flame ionization detector (FID). Results are reported as volume concentration equivalents of the propane.

47.3. Definitions. -- As used in this section 47., all terms not defined herein shall have the meaning given them in section 2.

~~a~~47.3.1. "Calibration drift" means the difference in the measurement system response to a mid-level calibration gas before and after a stated period of operation during which no unscheduled maintenance, repair, or adjustment took place.

~~b~~47.3.2. "Calibration error" means the difference between the gas concentration indicated by the measurement system and the known concentration of the calibration system.

~~e~~47.3.3. "Calibration gas" means a known concentration of a gas in an appropriate diluent gas.

~~d~~47.3.4. "Measurement system" means the total equipment required for the determination of the inlet and outlet gas concentrations, percent capture efficiency, and gas outlet emission rate. The system consists of the following major subsystems:

~~4~~47.3.4.a. Sample interface -- the portion of the system that is used for one or more of the following:

~~A~~47.3.4.a.1. Sample acquisition;

~~B~~47.3.4.a.2. Sample transportation;

~~C~~47.3.4.a.3. Sample conditioning; or

~~D~~47.3.4.a.4. Protection of the analyzer from the effects of the stack effluent;

~~2~~47.3.4.b. Organic analyzer -- the portion of the system that senses organic concentration and generates an output proportional to the gas concentration;

~~3~~47.3.4.c. Data recorder -- the portion of the system that records a permanent record of the measurement values; and

~~4~~47.3.4.d. Flow rate system -- a gas volume meter meeting the requirements of Method 2A, ~~S~~subsection 2.1 (40 CFR Part 60, Appendix A).

~~e~~47.3.5. "Response time" means the time interval from a step change in pollutant concentration at the inlet to the emission measurement system to the time at which 95 percent of the corresponding final value is reached as displayed on the recorder.

~~f~~47.3.6. "Span value" means for most incinerators, a 50 parts per million (ppm) propane span. Higher span values may be necessary if propane emissions are significant. For convenience, the span value should correspond to 100 percent of the recorder scale.

~~g~~47.3.7. "Zero drift" means the difference in the measurement system response to a zero level calibration gas before and after a stated period of operation during which no unscheduled maintenance, repair, or adjustment took place.

47.4. Apparatus. -- [Note: this method is often applied in highly explosive areas. Caution should be exercised in choice of equipment and installation.] An acceptable measurement system includes a sample interface system, a calibration valve, gas filter and a pump preceding the analyzer. THC measurement systems are designated HOT or COLD systems based on the operating temperatures of the system. In HOT systems, all components in contact with the sample gas (probe, calibration valve, filter, and sample lines) as well as all parts of the flame ionization analyzer between the sample inlet and the FID must be maintained between 150E to 175EC. This includes the sample pump if it is located on the inlet side of the FID. A condensate trap may be installed, if necessary, to prevent any condensate entering the FID. The essential components of the measurement system are as follows:

~~a~~47.4.1. Organic concentration analyzer. -- An FID capable of meeting or exceeding the

specifications in this method.

~~b~~47.4.2. Sample probe.

~~1~~47.4.2.a. Stainless steel, or equivalent, three-hole rake type. Sample holes shall be 4 millimeters (mm) (0.2 inches [in.] in diameter or smaller and located at 16.7, 50, and 83.3 percent of the equivalent stack diameter; or

~~2~~47.4.2.b. A single opening probe so that a gas sample is collected from the centrally located 10 percent area of the stack cross section.

~~e~~47.4.3. Sample line. -- Stainless steel or Teflon¹ tubing to transport the sample gas to the analyzer. The sample line from the heated probe shall be heated to between 150 and 175EC (302 and 347EF).

~~d~~47.4.4. Calibration valve assembly.

~~1~~47.4.4.a. A heated three-way valve assembly to direct the zero and calibration gases to the analyzers; or

~~2~~47.4.4.b. Other methods, such as quick-connect lines, to route calibration gas to the analyzers.

~~e~~47.4.5. Particulate filter. -- An in-stack or an out-of-stack glass fiber filter if exhaust gas particulate loading is significant. An out-of-stack filter must be heated.

~~f~~47.4.6. Recorder. -- A strip-chart recorder, analog computer, or digital recorder for recording measurement data. The minimum data recording shall be one measurement value per minute.

47.5. Calibration gases and other gases.

~~a~~47.5.1. Gases used for calibration, fuel, and combustion air shall be contained in compressed gas cylinders.

~~b~~47.5.2. Preparation of calibration gases shall be done according to the procedure in Protocol No.1, listed in the reference in ~~section 47.12.b~~ subdivision 47.12.2.

~~e~~47.5.3. The recommended shelf life for each calibration gas cylinder over which the concentration does not change more than $\sqrt{2}$ percent from the certified value shall be obtained from the cylinder manufacturer.

~~d~~47.5.4. The following calibration and other gases shall be used:

~~1~~47.5.4.a. Fuel. -- A 40 percent hydrogen and 60 percent helium or 40 percent hydrogen and 60 percent nitrogen gas mixture to avoid an oxygen synergism effect that reportedly occurs when oxygen concentration varies significantly from a mean value.

~~2~~47.5.4.b. Zero gas. -- High purity air with less than 0.1 parts per million by volume (ppmv)

¹ Mention of trade names or specific products does not constitute endorsement by the ~~Director~~ Secretary.

of organic material methane or carbon equivalent or less than 0.1 percent of the span value, whichever is greater.

347.5.4.c. Low-level calibration gas. -- Propane calibration gas (in air or nitrogen) with a concentration equivalent to 20 to 30 percent of the applicable span value.

447.5.4.d. Mid-level calibration gas. -- Propane calibration gas with a concentration equivalent to 45 to 55 percent of the applicable span value.

547.5.4.e. High-level calibration gas. Propane calibration gas with a concentration equivalent to 80 to 90 percent of the applicable span value.

47.6. Measurement system performance specifications.

~~a~~47.6.1. Zero drift shall be less than $\sqrt{3}$ percent of the span value.

~~b~~47.6.2. Calibration drift shall be less than $\sqrt{3}$ percent of the span value.

~~e~~47.6.3. Calibration error shall be less than $\sqrt{5}$ percent of the calibration gas value.

47.7. Pretest preparations.

~~a~~47.7.1. Selection of sampling site.

~~1~~47.7.1.a. The location of the sampling site shall be determined from the applicable regulation or purpose of the test (i.e., exhaust stack, inlet line, etc).

~~2~~47.7.1.b. The sample port shall be located at least 1.5 meters (4.9 feet) or 2 equivalent diameters upstream of the gas discharge to the atmosphere.

~~b~~47.7.2. Location of sample probe. -- The sample probe must be installed so that the probe is centrally located in the stack, pipe or duct and is sealed tightly at the stack port connection.

~~e~~47.7.3. Measurement systems preparation. -- Prior to the emission test, the measurement system must be assembled following the manufacturer's written instructions in preparing the sample interface and the organic analyzer. The system must be operable.

~~d~~47.7.4. Calibration error test.

~~1~~47.7.4.a. Immediately prior to the test series (within 2 hours of the start of the test), zero gas and high-level calibration gas shall be introduced at the calibration valve assembly.

~~2~~47.7.4.b. The analyzer output shall be adjusted to the appropriate levels, if necessary.

~~3~~47.7.4.c. The predicted response for the low-level and mid-level gases shall be calculated based on a linear response line between the zero and high-level responses.

447.7.4.d. Low-level and mid-level calibration gases shall be introduced successively to the measurement system.

~~5~~47.7.4.e. The analyzer responses for low-level and mid-level calibration gases shall be recorded, and the differences between the measurement system responses and the predicted responses shall be determined. These differences must be less than ∇ 5 percent of the respective calibration gas value. If not, the measurement system shall be deemed not acceptable and must be replaced or repaired prior to testing. No adjustments to the measurement system shall be conducted after the calibration and before the drift determination found in ~~section 47.8.b~~ subdivision 47.8.2.

~~6~~47.7.4.f. If adjustments are necessary before the completion of the test series, the drift checks shall be performed prior to the required adjustments, and the calibration following the adjustments shall be repeated.

~~7~~47.7.4.g. If multiple electronic ranges are to be used, each additional range must be checked with a mid-level calibration gas to verify the multiplication factor.

~~e~~47.7.5. Response time test.

~~1~~47.7.5.a. Zero gas shall be introduced into the measurement system at the calibration valve assembly.

~~2~~47.7.5.b. When the system output has stabilized, the owner or operator shall switch quickly to the high-level calibration gas.

~~3~~47.7.5.c. The time shall be recorded from the concentration change to the measurement system response equivalent to 95 percent of the step change.

~~4~~47.7.5.d. The test shall be repeated three times and the results averaged.

47.8. Emission measurement test procedure.

~~a~~47.8.1. Organic measurement.

~~1~~47.8.1.a. Sampling shall begin at the start of the test period.

~~2~~47.8.1.b. Time and any required process information shall be recorded, as appropriate.

~~3~~47.8.1.c. Periods of process interruption or cyclic operation shall be noted on the recording chart.

~~b~~47.8.2. Drift determination.

~~1~~47.8.2.a. Immediately following the completion of the test period and hourly during the test period, the zero and mid-level calibration gases shall be introduced, one at a time, to the measurement system at the calibration valve assembly. No adjustments to the measurement system shall be made until after both the zero and calibration drift checks are made.

~~2~~47.8.2.b. The analyzer response shall be recorded.

~~3~~47.8.2.c. If the drift values exceed the specified limits, the test results shall be invalidated preceding the check, and the test shall be repeated following corrections to the measurement system.

~~447.8.2.d.~~ Alternatively, the test measurement system may be recalibrated as in ~~section 47.7.d.~~ subdivision 47.7.4. and the results reported using both sets of calibration data (i.e., data determined prior to the test period and data determined following the test period).

47.9. Organic concentration calculations. -- The average organic concentration shall be determined in terms of ppmv propane by the integration of the output recording over the period specified in the applicable regulation.

47.10. Quality assurance.

~~a~~47.10.1. The owner or operator shall assure proper calibration, maintenance, and operation of the continuous emissions monitoring system on a continual basis.

~~b~~47.10.2. The owner or operator shall establish a quality assurance program to evaluate and monitor performance on a continual basis. The following checks shall routinely be done:

~~1~~47.10.2.a. A daily calibration check for each monitor. The calibration shall be adjusted if the check indicates the instrument's calibration drift exceeds the specification established in subsection 47.6.;

~~2~~47.10.2.b. A daily system audit which includes the following:

~~A~~47.10.2.b.1. A review of the calibration check data;

~~B~~47.10.2.b.2. An inspection of the recording system;

~~C~~47.10.2.b.3. An inspection of the control panel warning lights; and

~~D~~47.10.2.b.4. An inspection of the sample transport/interface system (e.g., flowmeters, filters), as appropriate;

~~3~~47.10.2.c. A quarterly calibration error test at the span midpoint; and

447.10.2.d. The entire performance specification test repeated every second year.

47.11. Reporting of total hydrocarbon levels.

~~a~~47.11.1. The total hydrocarbon concentration (THC) levels from the initial compliance certification test shall be reported as ppm propane for inlet and outlet concentrations and as a percent reduction across the control device.

~~b~~47.11.2. THC levels shall be expressed in milligrams per second (mg/sec) (pounds per second [lb/sec]).

~~e~~47.11.3. This conversion shall be accomplished using the following equation:

$$\text{THC, mg/sec} = (\text{THC ppm propane}) \times (\text{stack gas flow}) \times 2.8 \times 10^{-2}$$

~~w~~Where:

THC ppm propane = the total hydrocarbon concentration as actually measured by this method in ppm propane at the inlet or outlet.

Stack gas flow = measured in dry standard cubic feet as time needed as determined by the flowmeter system or Methods 2 and 4 of 40 CFR Part 60, Appendix A.

2.8×10^{-2} = constant to account for the conversion of units.

47.12. References.

~~a~~47.12.1. Measurement of Volatile Organic Compounds -- Guideline Series. U.S. Environmental Protection Agency, Research Triangle Park, North Carolina. Publication No. EPA-450/2-78-041. June 1978. p.46-54.

~~b~~47.12.2. Traceability Protocol for Establishing True Concentrations of Gases Used for Calibration and Audits of Continuous Source Emission Monitors (Protocol No. 1). U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory. Research Triangle Park, North Carolina. June 1973.

~~e~~47.12.3. Gasoline Vapor Emission Laboratory Evaluation -- Part 2. U.S. Environmental Protection Agency. Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina. EMB Report No.75-GAS-6. August 1975.

~~d~~47.12.4. Methods Manual for Compliance with the BIF Regulations -- Burning Hazardous Waste in Boilers and Industrial Furnaces, EPA/530-SW-91-010, December 1990: Section 2.0 - "Performance Specifications for Continuous Emission Monitoring of Carbon Monoxide and Oxygen for Incinerators, Boilers, and Industrial Furnaces Burning Hazardous Waste", pages 2-1 through 2-35.

§45-21-48. Quality Control Procedures for Continuous Emission Monitoring Systems (CEMS).

48.1. CEMS quality control (QC) program. -- Each owner or operator of a CEMS shall develop and implement a CEMS QC program. At a minimum, each QC program shall include written procedures that describe in detail step-by-step procedures and operations for each of the following:

~~a~~48.1.1. Initial and routine periodic calibration of the CEMS.

~~b~~48.1.2. Calibration drift (CD) determination and adjustment of the CEMS.

~~e~~48.1.3. Preventative maintenance of the CEMS (including spare parts inventory).

~~d~~48.1.4. Data recording, calculations, and reporting.

~~e~~48.1.5. Accuracy audit procedures including sampling and analysis methods.

~~f~~48.1.6. Program of corrective action for malfunctioning CEMS.

48.2. Determining out-of-control condition for the CEMS.

~~a~~48.2.1. If either the zero (or low-level) or high-level CD exceeds twice the applicable drift specification in 40 CFR Part 60, Appendix B, for five consecutive daily periods, the CEMS is out-of-control.

~~b~~48.2.2. If either the zero (or low-level) or high-level CD exceeds four times the applicable drift specification in 40 CFR Part 60, Appendix B, during any CD check, the CEMS is out-of-control.

~~e~~48.2.3. If the CEMS fails a performance audit (PA), the CEMS is out-of-control.

48.3. Determining the out-of-control time period for the CEMS.

~~a~~48.3.1. The beginning of the out-of-control period is:

~~1~~48.3.1.a. The time corresponding to the completion of the fifth consecutive daily CD check with CD in excess of two times the allowable limit, or

~~2~~48.3.1.b. The time corresponding to completion of the daily CD check preceding the daily CD check that results in a CD in excess of four times the allowable limit.

~~b~~48.3.2. The end of the out-of-control period is the time corresponding to the completion of the CD check following corrective action that results in the CD's at both the zero (or low-level) and high-level measurement points being within the corresponding allowable CD limit (i.e., either two times or four times the allowable limit in 40 CFR Part 60, Appendix B).

~~e~~48.3.3. If the CEMS failed a PA, the beginning of the out-of-control period is the time corresponding to the completion of the failed audit test. The end of the out-of-control period is the time corresponding to a successful retest of the PA sample.

48.4. Recordkeeping. -- The owner or operator shall keep the QC procedure described in subsection 48.1. in a readily accessible location for at least 3 years and shall make the procedure available to the ~~Director~~ Secretary upon verbal or written request.

48.5. Reporting. -- The owner or operator shall submit all information concerning out-of-control periods including beginning and end dates and descriptions of corrective actions taken in the excess emissions report defined in 40 CFR 60.7(c).

§45-21-49. Inconsistency between rules.

49.1. In the event of any inconsistency between this rule and any other rule of the Division of Air Quality, the inconsistency shall be resolved by the determination of the Secretary and the determination shall be based upon the application of the more stringent provision, term, condition, method or rule.

Table 45-21F. Coefficients of the total resource effectiveness (TRE) index equation

A1. For chlorinated process vent streams, if $0 \leq \text{net heating value (MJ/scm)} \leq 3.5$:						
FL = vent stream flow rate (scm/min)	a	b	c	d	e	f
FL \leq 13.5	48.73	0	0.404	-0.1632	0	0
13.5 < FL \leq 700	42.35	0.624	0.404	-0.1632	0	0.0245
700 < FL \leq 1,400	84.38	0.678	0.404	-0.1632	0	0.0346
1,400 < FL \leq 2,100	126.41	0.712	0.404	-0.1632	0	0.0424
2,100 < FL \leq 2,800	168.44	0.747	0.404	-0.1632	0	0.0490
2,800 < FL \leq 3,500	210.47	0.758	0.404	-0.1632	0	0.0548
A2. For chlorinated process vent streams, if $3.5 < \text{net heating value (MJ/scm)}$:						
FL = vent stream flow rate (scm/min)	a	b	c	d	e	f
FL \leq 13.5	47.76	0	-0.292	0	0	0
13.5 < FL \leq 700	41.58	0.605	-0.292	0	0	0.0245
700 < FL \leq 1,400	82.84	0.658	-0.292	0	0	0.0346
1,400 < FL \leq 2,100	123.10	0.691	-0.292	0	0	0.0424
2,100 < FL \leq 2,800	165.36	0.715	-0.292	0	0	0.0490
2,800 < FL \leq 3,500	206.62	0.734	-0.292	0	0	0.0548
B. For nonchlorinated process vent streams, if $0 \leq \text{net heating value (MJ/scm)} \leq 0.48$:						
FL = vent stream flow rate (scm/min)	a	b	c	d	e	f
FL \leq 13.5	19.05	0	0.113	-0.214	0	0
13.5 < FL \leq 1,350	16.61	0.239	0.113	-0.214	0	0.0245
1,350 < FL \leq 2,700	32.91	0.260	0.113	-0.214	0	0.0346
2,700 < FL \leq 3,500	49.21	0.273	0.113	-0.214	0	0.0424
C. For nonchlorinated process vent streams, if $0.48 < \text{net heating value (MJ/scm)} \leq 1.9$:						
FL = vent stream flow rate (scm/min)	a	b	c	d	e	f
FL \leq 13.5	19.74	0	0.400	-0.202	0	0
13.5 < FL \leq 1,350	18.30	0.138	0.400	-0.202	0	0.0245
1,350 < FL \leq 2,700	36.28	0.150	0.400	-0.202	0	0.0346
2,700 < FL \leq 4,050	54.26	0.158	0.400	-0.202	0	0.0424
D. For nonchlorinated process vent streams, if $1.9 < \text{net heating value (MJ/scm)} \leq 3.6$:						
FL = vent stream flow rate (scm/min)	a	b	c	d	e	f
FL \leq 13.5	15.24	0	0.033	0	0	0
13.5 < FL \leq 1,190	13.63	0.157	0.033	0	0	0.0245
1,190 < FL \leq 2,380	26.95	0.171	0.033	0	0	0.0346
2,380 < FL \leq 3,570	40.27	0.179	0.033	0	0	0.0424
E. For nonchlorinated process vent streams, if $3.6 < \text{net heating value (MJ/scm)}$:						
FL = vent stream flow rate (scm/min)	a	b	c	d	e	f
FL \leq 13.5	15.24	0	0	0.0090	0	0
13.5 < FL \leq 1,190	13.63	0	0	0.0090	0.0503	0.0245
1,190 < FL \leq 2,380	26.95	0	0	0.0090	0.0546	0.0346
2,380 < FL \leq 3,570	40.27	0	0	0.0090	0.0573	0.0424

**TITLE 45
LEGISLATIVE RULE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
AIR QUALITY**

**SERIES 34
EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS**

§45-34-1. General.

1.1. Scope. -- This rule establishes and adopts a program of national emission standards for hazardous air pollutants and other regulatory requirements promulgated by the United States Environmental Protection Agency pursuant to 40 C.F.R. parts 61, 63 and section 112 of the federal Clean Air Act, as amended. This rule codifies general procedures and criteria to implement emission standards for stationary sources that emit (or have the potential to emit) one or more of the eight substances listed as hazardous air pollutants in 40 C.F.R. § 61.01(a), or one or more of the substances listed as hazardous air pollutants in section 112(b) of the CAA. The Secretary hereby adopts these standards by reference. The Secretary also adopts associated reference methods, performance specifications and other test methods which are appended to these standards.

1.2. Authority. -- W.Va. Code § 22-5-4.

1.3. Filing Date. -- ~~March 31, 2023~~.

1.4. Effective Date. -- ~~June 1, 2023~~.

1.5. Sunset Provision. -- Does not apply.

1.6. Incorporation by Reference. -- Federal Counterpart Regulation. The Secretary has determined that a federal counterpart regulation exists, and in accordance with the Secretary's recommendation, with limited exception, this rule incorporates by reference 40 C.F.R. parts 61, 63 and 65, to the extent referenced in 40 C.F.R. parts 61 and 63, effective June 1, ~~2022~~ 2023.

§45-34-2. Definitions.

2.1. "Administrator" means the Administrator of the United States Environmental Protection Agency or his or her authorized representative.

2.2. "Clean Air Act" ("CAA") means the federal Clean Air Act, as amended, 42 U.S.C. § 7401, et seq.

2.3. "Hazardous air pollutant" means any air pollutant listed pursuant to 40 C.F.R. § 61.01(a) or § 112(b) of the CAA.

2.4. "Secretary" means the Secretary of the Department of Environmental Protection or other person to whom the Secretary has delegated authority or duties pursuant to W.Va. Code §§ 22-1-6 or 22-1-8.

2.5. Other words and phrases used in this rule, unless otherwise indicated, shall have the meaning ascribed to them in 40 C.F.R. Parts 61 and 63. Words and phrases not defined therein shall have the meaning given to them in federal Clean Air Act.

§45-34-3. Requirements.

3.1. No person may construct, reconstruct, modify, or operate, or cause to be constructed, reconstructed, modified, or operated any source subject to the provisions of 40 C.F.R. Parts 61 and 63 which

results or will result in a violation of this rule.

3.2. No person may construct or reconstruct any major source of hazardous air pollutants, unless the Secretary determines that the maximum achievable control technology emission limitation under 40 C.F.R. Part 63 and this rule for new sources will be met.

3.3. The Secretary shall determine and apply case-by-case maximum achievable control technology standards to existing sources categorized by the Administrator pursuant to § 112(c)(1) of the CAA for which the Administrator has not promulgated emission standards in accordance with §§ 112(d) and 112(e) of the CAA.

3.4. Prior to constructing, reconstructing or modifying any facility subject to this rule, the owner or operator shall obtain a permit in accordance with the applicable requirements of 45CSR13, 45CSR14, 45CSR19, 45CSR30 and this rule.

§45-34-4. Adoption of standards.

4.1. The Secretary hereby adopts and incorporates by reference the provisions of 40 C.F.R. Parts 61, 63 and 65, to the extent referenced in 40 C.F.R. Parts 61 and 63, including any reference methods, performance specifications and other test methods which are appended to these standards and contained in 40 C.F.R. Parts 61, 63 and 65, effective June 1, ~~2022~~2023, for the purposes of implementing a program for emission standards for hazardous air pollutants, except as follows:

~~4.1.a~~ 4.1.1. 40 C.F.R. §§ 61.16 and 63.15 are amended to provide that information shall be available to the public in accordance with W.Va. Code §§ 22-5-1 et seq., 29B-1-1 et seq., and 45CSR31;

~~4.1.b~~ 4.1.2. Subpart E of 40 C.F.R. Part 63 and any provision related to § 112(r) of the CAA, notwithstanding any requirements of 45CSR30 shall be excluded;

~~4.1.e~~ 4.1.3. Subparts DDDDDD, LLLLLL, OOOOOO, PPPPPP, QQQQQQ, TTTTTT, WWWWW, ZZZZZ, HHHHHH, BBBBBB, CCCCCC, WWWWWW, XXXXXX, YYYYYY, ZZZZZZ, BBBBBB, CCCCCC, and DDDDDDD of 40 C.F.R. Part 63 shall be excluded; and

~~4.1.d~~ 4.1.4. Subparts B, H, I, K, Q, R, T, and W; Methods 111, 114, 115 and Appendix D and E of 40 C.F.R. Part 61 shall be excluded.

§45-34-5. Secretary.

5.1. Any and all references in 40 C.F.R. Parts 63 and 65 to the “Administrator” are amended to be the “Secretary” except as follows:

~~5.1.a~~ 5.1.1. Where the federal regulations specifically provide that the Administrator shall retain authority and not transfer authority to the Secretary;

~~5.1.b~~ 5.1.2. Where provisions occur which refer to:

~~5.1.b.1~~ 5.1.2.a. Alternate means of emission limitations;

~~5.1.b.2~~ 5.1.2.b. Alternate control technologies;

~~5.1.b.3~~ 5.1.2.c. Innovative technology waivers;

~~5.1.b.4~~ 5.1.2.d. Alternate test methods;

~~5.1.b.5~~ 5.1.2.e. Alternate monitoring methods;

~~5.1.b.6~~ 5.1.2.f. Waivers/adjustments to recordkeeping and reporting;

~~5.1.b.7~~ 5.1.2.g. Emissions averaging;

~~5.1.b.8~~ 5.1.2.h. Applicability determinations; or

~~5.1.e~~ 5.1.3. Where the context of the regulation clearly requires otherwise.

§45-34-6. Permits.

6.1. Nothing contained in this rule shall be construed or inferred to mean that permit requirements in accordance with applicable rules shall in any way be limited or inapplicable.

§45-34-7. Inconsistency between rules.

7.1. In the event of any inconsistency between this rule and any other rule of the Division of Air Quality, the inconsistency shall be resolved by the determination of the Secretary and the determination shall be based upon the application of the more stringent provision, term, condition, method or rule.

**TITLE 45
LEGISLATIVE RULE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
AIR QUALITY**

**SERIES 44
CONTROL OF GREENHOUSE GAS EMISSIONS FROM EXISTING COAL FIRED
ELECTRIC UTILITY GENERATING UNITS**

~~§45-44-1. General.~~

~~1.1. Scope.~~

~~1.1.a. This rule regulates greenhouse gas emissions, in the form of carbon dioxide, from existing coal fired electric generating units that commenced construction on or before January 8, 2014 meeting the definition of a designated facility.~~

~~1.1.b. This rule establishes applicability criteria, permit application requirements, permit requirements, standards of performance requirements, and monitoring, recordkeeping and reporting requirements for designated facilities to control carbon dioxide emission rates based on the heat rate improvements analysis that can be applied to or at the affected steam generating unit.~~

~~1.1.c. This rule implements the federal emission guidelines established at 40 C.F.R. part 60, subpart UUUUa, *Emission Guidelines for Greenhouse Gas Emissions from Existing Electric Utility Generating Units*, commonly referred to as the Affordable Clean Energy (ACE) rule, in accordance with 40 C.F.R. part 60, subpart Ba. The federal emission guidelines establish the best systems of emission reduction (BSER) which, in the judgment of the Administrator, have been adequately demonstrated and provide information on the degree of emission limitation achievable for the designated pollutant. The federal emission guidelines are heat rate improvements which target achieving lower carbon dioxide emission rates at designated facilities. The federal emission guidelines were developed pursuant to section 111(d) of the federal Clean Air Act, as amended.~~

~~1.2. Authority. W. Va. Code §§ 22-5-4 and 22-5-20.~~

~~1.3. Filing Date. April 28, 2021.~~

~~1.4. Effective Date. June 1, 2021.~~

~~1.5. Sunset Provision. Does not apply.~~

~~1.6. Federal Regulation. Unless otherwise indicated, where reference to a federal regulation or standard appears in this rule, such regulation or standard will, for the purpose of this rule, be construed as that version which was in effect as of June 1, 2020.~~

~~§45-44-2. Definitions.~~

~~2.1. "Administrator" means the Administrator of the United States Environmental Protection Agency or the Administrator's duly authorized representative.~~

~~2.2. "Affected Steam Generating Unit" means a designated facility.~~

~~2.3. "Air Heater" means a device that recovers heat from the flue gas for use in pre-heating the incoming combustion air and potentially for other uses such as coal drying.~~

~~2.4. "Alternative method" means any method of sampling and analyzing for an air pollutant which is not a reference or equivalent method but which has been demonstrated to the Administrator's satisfaction to, in specific cases, produce results adequate for the Administrator's determination of compliance.~~

~~2.5. "Annual capacity factor" means the ratio between the actual heat input to an electric generating unit during a calendar year and the potential heat input to the electric generating unit had it been operated for 8,760 hours during a calendar year at the base load rating.~~

~~2.6. "Base load rating" means the maximum amount of heat input (fuel) that an electric generating unit can combust on a steady state basis, as determined by the physical design and characteristics of the electric generating unit at ISO conditions.~~

~~2.7. "Blade Path Upgrade" (Steam Turbine) means an upgrade or overhaul of a steam turbine.~~

~~2.8. "Boiler feed pump" or "boiler feedwater pump" means a device used to pump feedwater into a steam boiler at an electric generating unit. The water may be either freshly supplied or returning condensate produced from condensing steam produced by the boiler. The boiler feed pumps required to be evaluated under this rule have an electric motor.~~

~~2.9. "Capacity factor" means either:~~

~~2.9.a. The ratio of a unit's actual annual electric output (expressed in MWe/hr) to the unit's nameplate capacity (or maximum observed hourly gross load (in MWe/hr) if greater than the nameplate capacity) times 8,760 hours; or~~

~~2.9.b. The ratio of a unit's annual heat input (in million British thermal units or equivalent units of measure) to the unit's maximum rated hourly heat input rate (in million British thermal units per hour or equivalent units of measure) times 8,760 hours.~~

~~2.10. "C.F.R." or "CFR" means the Code of Federal Regulations.~~

~~2.11. "Clean Air Act" ("CAA") means the federal Clean Air Act, as amended, 42 U.S.C. § 7401, et seq.~~

~~2.12. "CO₂" means carbon dioxide.~~

~~2.13. "Combined cycle unit" means an electric generating unit that uses a stationary combustion turbine from which the heat from the turbine exhaust gases is recovered by a heat recovery steam generating unit to generate additional electricity.~~

~~2.14. "Combined heat and power unit" or "CHP unit" (also known as "cogeneration") means an electric generating unit that uses a steam generating unit or stationary combustion turbine to simultaneously produce both electric (or mechanical) and useful thermal output from the same primary energy source.~~

~~2.15. "Compliance period" means a discrete time period for a designated facility to comply with a standard of performance.~~

~~2.16. "Compliance schedule" means a legally enforceable schedule specifying a date or dates by which a source or category of sources shall comply with specific standards of performance contained in a permit or with any increments of progress to achieve such compliance.~~

~~2.17. "Designated facility" means a steam generating unit that meets the applicability criteria in section 3 of this rule.~~

~~2.18. “Designated pollutant” means any air pollutant, the emissions of which are subject to a standard of performance for new stationary sources, but for which air quality criteria have not been issued and that is not included on a list published under section 108(a) or section 112(b)(1)(A) of the CAA.~~

~~2.19. “Economizer” means a heat exchange device used to capture waste heat from boiler flue gas which is then used to heat the boiler feedwater.~~

~~2.20. “EGU” or “electric generating unit” means any steam generating unit that is subject to this rule (i.e. meets the applicability criteria).~~

~~2.21. “Equivalent method” means any method of sampling and analyzing for an air pollutant which has been demonstrated to the Administrator’s satisfaction to have a consistent and quantitatively known relationship to the reference method under specified conditions.~~

~~2.22. “Emission guideline” means a final guideline document published under 40 C.F.R. §60.22a(a), which reflects the degree of emission limitation achievable through the application of the best system of emission reduction which (taking into account the cost of such reduction and any non air quality health and environmental impact and energy requirements) the Administrator has determined has been adequately demonstrated for designated facilities.~~

~~2.23. “Fossil fuel” means natural gas, petroleum, coal, and any form of solid fuel, liquid fuel, or gaseous fuel derived from such material to create useful heat.~~

~~2.24. “Heat rate” is the amount of energy or fuel heat input (typically measured in British thermal units, Btu) required to generate a unit of electricity (typically measured in kilowatt hours, kWh). The lower an EGU’s heat rate, the more efficiently it converts heat input to electrical output.~~

~~2.25. “Integrated gasification combined cycle facility” or “IGCC” means a combined cycle facility that is designed to burn fuels containing 50 percent (by heat input) or more solid derived fuel not meeting the definition of natural gas plus any integrated equipment that provides electricity or useful thermal output to either the affected facility or auxiliary equipment. The Administrator may waive the 50 percent solid-derived fuel requirement during periods of the gasification system construction, startup and commissioning, shutdown, or repair. No solid fuel is directly burned in the unit during operation.~~

~~2.26. “Intelligent sootblower” means an automated system that use process measurements to monitor the heat transfer performance and strategically allocate steam to specific areas to remove ash buildup at a steam generating unit.~~

~~2.27. “ISO conditions” means 288 Kelvin (15 °C), 60 percent relative humidity and 101.3 kilopascals pressure.~~

~~2.28. “Mechanical output” means the useful mechanical energy that is not used to operate the affected EGU(s), generate electricity and/or thermal energy, or to enhance the performance of the affected EGU. Mechanical energy measured in horsepower hour should be converted into MWh by multiplying it by 745.7 then dividing by 1,000,000.~~

~~2.29. “Nameplate capacity” means, starting from the initial installation, the maximum electrical generating output that a generator, prime mover, or other electric power production equipment under specific conditions designated by the manufacturer is capable of producing (in MWe, rounded to the nearest tenth) on a steady state basis and during continuous operation (when not restricted by seasonal or other deratings) as of such installation as specified by the manufacturer of the equipment, or starting from the completion of any subsequent physical change resulting in an increase in the maximum electrical generating output that the equipment is capable of producing on a steady state basis and during continuous operation~~

(when not restricted by seasonal or other deratings), such increased maximum amount (in MWe, rounded to the nearest tenth) as of such completion as specified by the person conducting the physical change.

~~2.30. "Natural gas" means a fluid mixture of hydrocarbons (e.g., methane, ethane, or propane), composed of at least 70 percent methane by volume or has a gross calorific value between 35 and 41 megajoules (MJ) per dry standard cubic meter (950 and 1,100 Btu per dry standard cubic foot) that maintains a gaseous state under ISO conditions. In addition, natural gas contains 20.0 grains or less of total sulfur per 100 standard cubic feet. Natural gas does not include the following gaseous fuels: landfill gas, digester gas, refinery gas, sour gas, blast furnace gas, coal derived gas, producer gas, coke oven gas, or any gaseous fuel produced in a process which might result in highly variable sulfur content or heating value.~~

~~2.31. "Net electric output" means the amount of gross generation the generator(s) produce (including, but not limited to, output from steam turbine(s), combustion turbine(s) and gas expander(s)), as measured at the generator terminals, less the electricity used to operate the plant (i.e., auxiliary loads). Such auxiliary load uses include fuel handling equipment, pumps, fans, pollution control equipment, other electricity needs and transformer losses as measured at the transmission side of the step up transformer (e.g., the point of sale).~~

~~2.32. "Net energy output" means:~~

~~2.32.a. The net electric or mechanical output from the affected facility plus 100 percent of the useful thermal output measured relative to SATP conditions not used to generate additional electric or mechanical output or to enhance the performance of the unit (e.g., steam delivered to an industrial process for a heating application).~~

~~2.32.b. For combined heat and power facilities where at least 20.0 percent of the total gross or net energy output consists of electric or direct mechanical output and at least 20.0 percent of the total gross or net energy output consists of useful thermal output on a 12 operating month rolling average basis, the net electric or mechanical output from the designated facility divided by 0.95 plus 100 percent of the useful thermal output (e.g., steam delivered to an industrial process for a heating application).~~

~~2.33. "Neural network" means a computer model that can be used to optimize combustion conditions, steam temperatures and air pollution at a steam generating unit.~~

~~2.34. "Secretary" means the Secretary of the Department of Environmental Protection or other person to whom the Secretary has delegated authority or duties pursuant to W.Va. Code §§ 22-1-6 or 22-1-8.~~

~~2.35. "Simple cycle combustion turbine" means any stationary combustion turbine which does not recover heat from the combustion turbine engine exhaust gases for purposes other than enhancing the performance of the stationary combustion turbine itself.~~

~~2.36. "Standard ambient temperature and pressure" or "SATP" conditions means 298.15 Kelvin (25 °C or 77 °F) and 100.0 kilopascals (14.504 psi or 0.987 atm) pressure. The enthalpy of water at SATP conditions is 50 Btu/lb.~~

~~2.37. "Standard of performance" means a standard for emissions of air pollutants which reflects the degree of emission limitation achievable through the application of the best system of emission reduction which (taking into account the cost of achieving such reduction and any non air quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated including, but not limited to, a legally enforceable regulation setting forth an allowable rate or limit of emissions into the atmosphere, or prescribing a design, equipment, work practice, or operational standard, or combination thereof.~~

~~2.38. "Stationary combustion turbine" means all equipment, including but not limited to the turbine~~

~~engine, the fuel, air, lubrication and exhaust gas systems, control systems (except emissions control equipment), heat recovery system, fuel compressor, heater, and/or pump, post combustion emissions control technology, and any ancillary components and sub-components comprising any simple cycle stationary combustion turbine, any combined cycle combustion turbine, and any combined heat and power combustion turbine based system plus any integrated equipment that provides electricity or useful thermal output to the combustion turbine engine, heat recovery system or auxiliary equipment.~~

~~2.38.a. “Stationary” means the combustion turbine is not self propelled or intended to be propelled while performing its function. It may be mounted on a vehicle for portability.~~

~~2.38.b. If a stationary combustion turbine burns any solid fuel directly it is considered a steam generating unit.~~

~~2.39. “Steam generating unit” means any furnace, boiler, or other device used for combusting fuel and producing steam (nuclear steam generators are not included) plus any integrated equipment that provides electricity or useful thermal output to the affected facility or auxiliary equipment.~~

~~2.40. “Useful thermal output” means the thermal energy made available for use in any heating application (e.g., steam delivered to an industrial process for a heating application, including thermal cooling applications) that is not used for electric generation, mechanical output at the designated facility, to directly enhance the performance of the designated facility (e.g., economizer output is not useful thermal output, but thermal energy used to reduce fuel moisture is considered useful thermal output), or to supply energy to a pollution control device at the designated facility. Useful thermal output for designated facility(s) with no condensate return (or other thermal energy input to the designated facility(s)) or where measuring the energy in the condensate (or other thermal energy input to the designated facility(s)) would not meaningfully impact the emission rate calculation is measured against the energy in the thermal output at SATP conditions. Designated facility(s) with meaningful energy in the condensate return (or other thermal energy input to the designated facility) must measure the energy in the condensate and subtract that energy relative to SATP conditions from the measured thermal output.~~

~~2.41. “Variable frequency drive” means an adjustable speed drive used on induced draft fans and boiler feed pumps with electric motors to control motor speed and torque by varying motor input frequency and voltage.~~

~~2.42. Other words and phrases used in this rule, unless otherwise indicated, shall have the meaning ascribed to them in 40 C.F.R. part 60 subparts UUUUa, TTTT, A and Ba. Words and phrases not defined therein shall have the meaning given to them in the federal Clean Air Act, as amended.~~

§45-44-3. Applicability.

~~3.1. This rule applies to the owner or operator of any EGU that is a designated facility that commenced construction on or before January 8, 2014.~~

~~3.2. A designated facility is a steam generating unit that meets the relevant applicability criteria specified in subdivisions 3.2.a through 3.2.c, except as provided in subsection 3.3:~~

~~3.2.a. Serves a generator connected to a utility power distribution system with a nameplate capacity greater than 25 MW net (i.e., capable of selling greater than 25 MW of electricity);~~

~~3.2.b. Has a base load rating (i.e., design heat input capacity) greater than 250 MMBtu/hr heat input of fossil fuel (either alone or in combination with any other fuel); and~~

~~3.2.c. Is an electric utility steam generating unit that burns coal for more than 10.0 percent of the average annual heat input during the previous three (3) calendar years.~~

~~3.3. An EGU is excluded from being a designated facility if it meets any condition specified below:~~

~~3.3.a. Any EGU subject to 40 C.F.R. 60, subpart TTTT and 45CSR16 as a result of commencing construction after January 8, 2014 or commencing a modification or reconstruction after June 18, 2014;~~

~~3.3.b. Any steam generating unit subject to a federally enforceable permit limiting annual net electric sales to one third or less of its potential electric output, or 219,000 MWh or less;~~

~~3.3.c. Any stationary combustion turbine that meets the definition of a simple cycle stationary combustion turbine, a combined cycle stationary combustion turbine or a combined heat and power combustion turbine;~~

~~3.3.d. Any IGCC unit;~~

~~3.3.e. Any non fossil fuel unit (i.e., a unit that is capable of combusting 50 percent or more non-fossil fuel) that has always limited the use of fossil fuels to 10 percent or less of the annual capacity factor or is subject to a federally enforceable permit limiting fossil fuel use to 10 percent or less of the annual capacity factor;~~

~~3.3.f. Any EGU that serves a generator along with other steam generating unit(s), IGCC(s), or stationary combustion turbine(s) where the effective generation capacity (determined based on a prorated output of the base load rating of each steam generating unit, IGCC, or stationary combustion turbine) is 25 MW or less;~~

~~3.3.g. Any EGU that is a municipal waste combustor unit subject to 40 C.F.R. part 60, subpart Eb and 45CSR18;~~

~~3.3.h. Any EGU that is a commercial or industrial solid waste incineration unit subject to 40 C.F.R. part 60, subpart CCCC and 45CSR18; or~~

~~3.3.i. Any steam generating unit that fires more than 50 percent non-fossil fuels.~~

~~§45-44-4. Permit application requirements.~~

~~4.1. The owner or operator of any affected steam generating unit that meets the applicability requirements set forth in section 3 shall limit CO₂ emissions pursuant to a permit issued by the Secretary under this rule and the procedural requirements set forth in 45CSR13.~~

~~4.2. The owner or operator of any affected steam generating unit in existence on the effective date of this rule shall submit a complete permit application in accordance with the procedural requirements for a construction or modification permit set forth in 45CSR13 to the Secretary within 120 days of the effective date of this rule. The application shall contain sufficient information that, in the judgment of the Secretary, will enable the Secretary to determine the appropriate standard of performance and applicable monitoring, reporting and recordkeeping requirements for each affected steam generating unit. The permit application shall at a minimum include the information required by section 4 of this rule, as applicable.~~

~~4.3. The owner or operator of an affected steam generating unit shall provide a heat rate improvement analysis and the associated degree of emission limitation achievable for each affected steam generating unit as specified in subdivisions 4.3.a and 4.3.b.~~

~~4.3.a. The permit application must include an applicability evaluation for each of the following heat rate improvements technologies identified in paragraphs 4.3.a.1 through 4.3.a.7 to each affected steam generating unit:~~

~~4.3.a.1. Neural network and intelligent sootblowers;~~

~~4.3.a.2. Boiler feed pumps;~~

~~4.3.a.3. Air heater and duct leakage control;~~

~~4.3.a.4. Variable frequency drives;~~

~~4.3.a.5. Blade path upgrades for steam turbines;~~

~~4.3.a.6. Redesign or replacement of economizer; and~~

~~4.3.a.7. Improved operating and maintenance practices.~~

~~4.3.b. During the evaluation of each heat rate improvement to each affected steam generating unit, the owner or operator shall include an evaluation of the following degree of emission limitations achievable through the application of the heat rate improvements.~~

Table 45CSR44. Most impactful HRI measures and range of their HRI potential (%) by EGU size.

HRI Measure	<200 MW		200–500 MW		>500 MW	
	Min	Max	Min	Max	Min	Max
Neural Network / Intelligent Sootblowers	0.5	1.4	0.3	1.0	0.3	0.9
Boiler Feed Pumps	0.2	0.5	0.2	0.5	0.2	0.5
Air Heater & Duct Leakage Control	0.1	0.4	0.1	0.4	0.1	0.4
Variable Frequency Drives	0.2	0.9	0.2	1.0	0.2	1.0
Blade Path Upgrade (Steam Turbine)	0.9	2.7	1.0	2.9	1.0	2.9
Redesign / Replace Economizer	0.5	0.9	0.5	1.0	0.5	1.0
Improved Operating and Maintenance (O & M Practices)	Can range from 0 to > 2.0% depending on the affected steam generating unit's historical O & M practices.					

~~4.4. The owner or operator shall propose and justify a standard of performance for each affected steam generating unit in the permit application that satisfies the following requirements:~~

~~4.4.a. The standard of performance shall:~~

~~4.4.a.1. Be an emission performance rate relating mass of CO₂ emitted per unit of energy (e.g. pounds of CO₂ emitted per MWh).~~

~~4.4.a.2. Include an averaging period.~~

~~4.4.b. The justification shall:~~

~~4.4.b.1. Include a summary of how the owner or operator determined each standard of performance for each designated facility; and~~

~~4.4.b.2. Include a description for how each heat rate improvement and associated degree of emission limitation achievable were considered in calculating the proposed standard of performance.~~

~~4.5. In applying a standard of performance to an affected steam generating unit, the owner or operator may take into consideration source specific factors, such as the remaining useful life of such affected steam generating unit, provided the owner or operator demonstrates with respect to each such affected steam~~

generating unit (or class of such affected steam-generating units):

~~4.5.a. Unreasonable cost of control resulting from plant age, location, or basic process design;~~

~~4.5.b. Physical impossibility of installing necessary control equipment; or~~

~~4.5.c. Other unique factors specific to the affected steam-generating unit (or class of steam-generating unit) that make application of a less stringent standard or final compliance time significantly more reasonable;~~

~~4.5.d. In accordance with the standard of performance definition provided in subsection 2.37, the owner or operator may take into consideration non-air quality health and environmental impact and energy requirements;~~

~~4.6. If the owner or operator considered remaining useful life and other factors for a designated facility, the application shall include a summary of how those factors were used in deriving a proposed standard of performance and must include a summary in the application of relevant factors from subsection 4.3 in deriving a proposed standard of performance;~~

~~4.7. The owner or operator of an affected steam-generating unit shall submit a compliance schedule with the permit application to the Secretary if the owner or operator requests a compliance date past July 8, 2024.~~

~~4.8. Standards of performance for affected steam-generating units proposed in the application shall be demonstrated to be quantifiable, verifiable, permanent, and enforceable with respect to each affected steam-generating unit. The application shall include the methods by which each standard of performance meets each of the following requirements:~~

~~4.8.a. The standard of performance is quantifiable if it can be reliably measured in a manner that can be replicated.~~

~~4.8.b. The standard of performance is verifiable if adequate monitoring, recordkeeping and reporting requirements are in place to enable the State and the Administrator to independently evaluate, measure, and verify compliance with the standard of performance.~~

~~4.8.c. The standard of performance is permanent if the standard of performance must be met for each compliance period, unless it is replaced by another standard of performance in an approved plan revision.~~

~~4.8.d. The standard of performance is enforceable if:~~

~~4.8.d.1. A technically accurate limitation or requirement and the time period for the limitation or requirement are specified;~~

~~4.8.d.2. Compliance requirements are clearly defined;~~

~~4.8.d.3. The designated facility responsible for compliance and liable for violations is identified; and~~

~~4.8.d.4. Each compliance activity or measure is enforceable as a practical matter.~~

~~4.9. The application shall include the information listed below, as applicable in establishing the standard of performance for each designated facility:~~

~~4.9.a. A summary of each designated facility's anticipated future operation characteristics, including:~~

~~4.9.a.1. Annual generation;~~

~~4.9.a.2. CO₂ emissions;~~

~~4.9.a.3. Fuel use, fuel prices, fuel carbon content;~~

~~4.9.a.4. Fixed and variable operations and maintenance costs;~~

~~4.9.a.5. Heat rates; and~~

~~4.9.a.6. Electric generation capacity and capacity factors.~~

~~4.9.b. A timeline for implementation.~~

~~4.9.c. All wholesale electricity prices.~~

~~4.9.d. A time period of analysis, which must extend through at least 2035.~~

~~4.10. The application shall include materials supporting calculations for the affected steam generating unit's standards of performance and any other materials necessary to support evaluation of the plan by the Secretary.~~

~~4.11. Each proposed standard of performance must include a proposed compliance period that ensures the standard of performance reflects the degree of emission limitation achievable through application of the heat rate improvements used to calculate the standard. Any compliance schedule extending past July 8, 2024 must include legally enforceable increments of progress to achieve compliance for each affected steam generating unit or category of affected steam generating units.~~

~~4.12. The permit application shall propose and justify monitoring, recordkeeping, and reporting requirements that satisfy either of the following options:~~

~~4.12.a. Report emission and electricity generation data according to 40 C.F.R. Part 75; or~~

~~4.12.b. Include an alternative monitoring, recordkeeping, and reporting program that includes specifications for the following program elements:~~

~~4.12.b.1. Monitoring plans that specify the monitoring methods, systems, and formulas that will be used to measure CO₂ emissions;~~

~~4.12.b.2. Monitoring methods to continuously and accurately measure all CO₂ emissions, CO₂ emission rates, and other data necessary to determine compliance or assure data quality;~~

~~4.12.b.3. Quality assurance test requirements to ensure monitoring systems provide reliable and accurate data for assessing and verifying compliance;~~

~~4.12.b.4. Recordkeeping requirements;~~

~~4.12.b.5. Electronic reporting procedures and systems; and~~

~~4.12.b.6. Data validation procedures for ensuring data are complete and calculated consistent with program rules, including procedures for determining substitute data in instances where required data~~

would otherwise be incomplete.

~~4.13. The owner or operator of an affected steam generating unit shall keep records of all information relied upon in support of any aspect of the permit application for a minimum for five (5) years. Each record must be in a form suitable and readily available for expeditious review.~~

~~4.14. If an owner or operator requests a revision to an existing permit issued pursuant to 45CSR44, the owner or operator shall submit to the Secretary an application in accordance with the procedural requirements set forth in 45CSR13 that meets the application requirements of 45CSR44.~~

~~§45-44-5. Permit requirements, standards of performances and compliance periods.~~

~~5.1. After U.S. EPA's approval of a comprehensive West Virginia State Plan, no person may operate any affected steam generating unit meeting the applicability requirements set forth in section 3 without obtaining a permit in accordance with this rule and the procedural requirements of 45CSR13.~~

~~5.2. A separate permit shall be issued by the Secretary for the sole purpose of complying with this rule. The Secretary may issue a single permit for multiple affected steam generating units located within the same site.~~

~~5.3. The Secretary shall establish a standard of performance for each affected steam generating unit in a permit issued pursuant to this rule and the procedural requirements of 45CSR13. Each standards of performance shall:~~

~~5.3.a. Include a rate-based limit relating the mass of carbon dioxide emitted per unit of output energy (e.g. pounds of CO₂ emitted per MWh);~~

~~5.3.b. Specify whether the unit of energy in the rate-based limit is in terms of gross or net energy output; and~~

~~5.3.c. Reflect the degree of emission limitation achievable through application of heat rate improvements used to calculate the standard after the applicability of each of the heat rate improvements were considered by the Secretary.~~

~~5.3.d. The Secretary may establish multiple limitations or requirements for different time periods or operational condition provided each limitation or requirements is clearly defined and technically accurate.~~

~~5.4. The Secretary may consider remaining useful life or other source specific factors when determining the standard of the performance for the affected steam generating unit based on the factors identified in subsection 4.5. If the Secretary considers remaining useful life, the time frame should not exceed five years, and the shutdown date shall be specified in the permit.~~

~~5.5. The Secretary shall establish monitoring, recordkeeping, and reporting requirements and shall establish compliance requirements in a permit issued pursuant to this rule and the procedural requirements of 45CSR13.~~

~~5.6. The Secretary shall establish a compliance period for each standard of performance in a permit issued pursuant to this rule and the procedural requirements of 45CSR13.~~

~~5.6.a. The compliance period must reflect the degree of emission limitation achievable through application of the heat rate improvements used to calculate the standard of performance.~~

~~5.6.b. The compliance period must include the averaging period and a compliance date.~~

~~5.6.c. If the compliance date for any affected steam generating unit is later than July 8, 2024, the Secretary shall establish legally enforceable increments of progress to monitor progress toward final compliance.~~

~~5.7. The owner or operator of an affected steam generating unit shall notify the Secretary in writing if an affected steam generating unit ceases to meet the applicability requirements established in section 3 within 30 days of the change.~~

~~§45 44 6. Monitoring, Recordkeeping and Reporting.~~

~~6.1. The Secretary shall establish monitoring, recordkeeping and reporting requirements in accordance with either subdivision 6.1.a or 6.1.b for each affected steam generating unit in a permit issued pursuant to 45CSR13 and this rule.~~

~~6.1.a. The Secretary may require sources to report emission and electricity generation data according to 40 C.F.R. 75; or~~

~~6.1.b. The Secretary may include an alternative monitoring, recordkeeping, and reporting program that includes specifications for the following program elements:~~

~~6.1.b.1. Monitoring plans that specify the monitoring methods, systems, and formulas to measure CO₂ emissions;~~

~~6.1.b.2. Monitoring methods to continuously and accurately measure all CO₂ emissions, CO₂ emission rates, and other data necessary to determine compliance or assure data quality;~~

~~6.1.b.3. Quality assurance test requirements to ensure monitoring systems provide reliable and accurate data for assessing and verifying compliance;~~

~~6.1.b.4. Recordkeeping requirements;~~

~~6.1.b.5. Electronic reporting procedures and systems; and~~

~~6.1.b.6. Data validation procedures for ensuring data are complete and calculated consistent with program rules, including procedures for determining substitute data in instances where required data would otherwise be incomplete.~~

~~6.2. The Secretary shall establish test methods and compliance requirements in a permit issued pursuant to this rule and the procedural requirements of 45CSR13.~~

~~6.3. The owner or operator of an affected steam generating unit may decide how to comply with the standard of performance provided the compliance method does not include any of the following prohibited methods:~~

~~6.3.a. Averaging emission rates across multiple affected steam generating units;~~

~~6.3.b. Trading programs; and~~

~~6.3.c. Bio-mass cofiring.~~

~~§45 44 7. Inconsistency Between Rules.~~

~~7.1. In the event of any inconsistency between this rule and any other rule of the Division of Air~~

~~Quality, the inconsistency shall be resolved by the determination of the Secretary and the determination shall be based upon the application of the more stringent provision, term, condition, method or rule.~~

~~§45-44-8. Disposition of Permits.~~

~~— 8.1. In the event the ACE Rule is withdrawn by the U.S. EPA or invalidated by a court of competent jurisdiction or legislative action, the Secretary may terminate any permit or section of an existing permit issued pursuant to this rule.~~

**TITLE 33
LEGISLATIVE RULE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
WASTE MANAGEMENT**

**SERIES 20
HAZARDOUS WASTE MANAGEMENT SYSTEM**

§33-20-1. General.

1.1. Scope. – This rule establishes and adopts a program of regulation for the generation, treatment, storage, and disposal of hazardous waste to the extent necessary for the protection of the public health and safety and the environment.

1.2. Authority. – W. Va. Code § 22-18-6.

1.3. Filing Date. – ~~April 19, 2021.~~

1.4. Effective Date. – ~~July 1, 2021.~~

1.5. Sunset Provision. This rule does not sunset.

§1.6. Incorporation by Reference. – Whenever either federal statutes or regulations or State statutes or rules are incorporated by reference into this rule, the reference is to that statute or regulation in effect on ~~September 8, 2020~~ October 31, 2021 unless otherwise noted in the text of this rule. This incorporation by reference is not intended to replace or abrogate federal authorities granted the Resource Conservation and Recovery Act.

~~5.a~~ 1.6.1. In applying the federal requirements incorporated by reference throughout this rule, the following exceptions or substitutions apply, unless the context clearly requires otherwise or the referenced rule cannot be delegated to the State:

~~5.a.1~~ 1.6.1.a. “West Virginia Department of Environmental Protection” will be substituted for “Environmental Protection Agency”.

~~5.a.2~~ 1.6.1.b. “Secretary of the West Virginia Department of Environmental Protection” will be substituted for “Administrator”, “Regional Administrator”, and “Director”. In those sections that are not adopted by reference or that are not delegable to the State, “Administrator”, “Regional Administrator”, and “Director” will have the meaning defined in 40 C.F.R. § 260.10.

~~5.a.3~~ 1.6.1.c. Whenever the regulations require publication in the “Federal Register” compliance will be accomplished by publication in the “West Virginia Register”, a part of the “State Register” created pursuant to the provisions of W. Va. Code § 29A-2-2 for those areas applicable and delegable to the state.

~~5.a.4~~ 1.6.1.d. Whenever in the federal regulation reference is made to the Resource Conservation and Recovery Act (42 U.S.C. § 6930), the reference is to section 4 of this rule. The notification requirements of the Resource Conservation and Recovery (42 U.S.C. §3010) remain in effect and will be satisfied by compliance with section 4 of this rule.

~~6~~ 1.7. This rule references the provisions of the West Virginia Department of Environmental Protection, Division of Air Quality rule, 45CSR25, “Control of Air Pollution from Hazardous Waste Treatment, Storage and Disposal Facilities” that is in effect on the date that this rule becomes effective.

§33-20-2. Hazardous Waste Management System: General.

2.1. 40 C.F.R. Part 260. – The provisions of 40 C.F.R. § 260 are hereby adopted and incorporated by reference with the modifications, exceptions, and additions set forth in this section.

~~a~~ 2.1.1. The definitions of terms used in this rule will have the meaning ascribed to them in 40 C.F.R. §§ 260, 261, 262, 263, 264, 265, 266, 267, 268, 270, 273, and 279 with the exceptions, modifications, and additions set forth in this section.

~~a-1~~ 2.1.1.a. “Full regulation” means those rules applicable to generators of greater than 1,000 kilograms of non-acutely hazardous waste in a calendar month and/or those generators that treat, store or dispose of hazardous waste at the facility.

~~a-2~~ 2.1.1.b. “Stage” or “staging” means the temporary placement of off-site generated recyclable materials within a recycling facility for a period of time no longer than three days. Placement of recyclable materials for longer than three days is considered “storage”.

~~a-3~~ 2.1.1.c. In all matters related to implementation of the West Virginia Hazardous Waste Management Act and the rules promulgated thereunder, the term “conditionally exempt small quantity generator” shall have the same meaning as the term “very small quantity generator” as defined in 40 CFR § 260.10.

2.2. 40 C.F.R. §260.2. – The provisions of 40 C.F.R. §§ 260.2(a) and (b) are excepted from incorporation by reference herein. Availability of information provided under this rule is controlled by the provisions of W. Va. Code § 22-18-12.

2.3. 40 C.F.R. § 260.21(d). – The provisions of 40 C.F.R. § 260.21(d) are excepted from incorporation by reference in this rule.

2.4. Petitions for Waste Exclusions.

~~a~~ 2.4.1. Any person seeking to exclude a waste at a particular generating facility from 40 C.F.R. § 261.3 or 40 C.F.R. part 261, Subpart D, as incorporated by this rule, may petition the Secretary for an exclusion following the procedures established in 40 C.F.R. § 260.20 and 40 C.F.R. § 260.22. The Secretary will utilize EPA guidance in evaluating delisting petitions.

~~b~~ 2.4.2. An initial non-refundable fee of one thousand dollars (\$1,000.00) shall accompany all petitions submitted under this rule. The petitioner shall execute an agreement with the Secretary providing for the recovery of all reasonable costs incurred by the Department of Environmental Protection attributable to the review and investigation of the petition in excess of the initial fee submitted with the petition.

~~b-1~~ 2.4.2.a. Recoverable costs will be determined by the number of hours worked under the agreement by the primary Department of Environmental Protection employee multiplied by two and one-half (2.5) times the hourly rate of that employee and then adding direct expenses incurred by that employee. Costs related to independent contractors retained by the Department of Environmental Protection to assist in the review and investigation of petitions will be included as direct expenses.

~~b-2~~ 2.4.2.b. Within thirty (30) calendar days of receiving a petition under this section, the Department shall send the petitioner an itemized list of estimated costs it expects to incur as a result of reviewing and investigating the petition. The list will include anticipated outside contractor costs.

~~b.3~~ 2.4.2.c. If, upon review of the itemized list of estimated costs submitted by the Department, the petitioner determines not to continue the petition process, the petitioner, if he wishes to withdraw the petition, shall submit a certified letter to the Secretary withdrawing the petition. If the letter is submitted within ten (10) days of the date of receipt of the Department's list of estimated costs, the petitioner will not be liable for any costs incurred in excess of the initial application fee.

e 2.4.3. Where the Administrator of the EPA has granted a petition to exclude hazardous waste from 40 C.F.R. § 261.3 or 40 C.F.R. part 261, Subpart D, pursuant to 40 C.F.R. § 260.22, the Secretary shall accept the determination and amend this rule accordingly, provided:

~~e.1~~ 2.4.3.a. Petitioner submits a copy of the petition submitted to the Administrator, including all demonstrative information, and a copy of the Administrator's approval granting the exclusion pursuant to 40 C.F.R. § 260.20(e); and

~~e.2~~ 2.4.3.b. No scientifically supportable reasons for denying the petition are advanced that had not been presented to the Administrator.

2.5. Petitions to amend the regulations to include additional wastes as universal wastes.

~~a.2.5.1.~~ Persons desiring to include a waste as a universal waste shall petition the Secretary for an inclusion after having received approval from the Administrator of the Environmental Protection Agency. The petition will include:

~~a.1~~ 2.5.1.a. A copy of the petition submitted to the Administrator of the Environmental Protection Agency pursuant to 40 C.F.R. § 260.23, including all demonstration information;

~~a.1~~ 2.5.1.b. A copy of the Administrator's approval granting the petition under 40 C.F.R. § 260.23 and 40 C.F.R. § 260.20 and 40 C.F.R. Part 273; and

~~a.1~~ 2.5.1.c. Any additional information that may be required for the Secretary to evaluate the petition.

~~b~~ 2.5.2. Within one hundred twenty (120) days of the filing of the petition, the Secretary shall decide whether to approve or to deny the petition and so advise the petitioner. If the Secretary denies the petition is made, he or she shall notify the petitioner of the action in writing, setting forth the reasons therefor.

e 2.5.3. The Secretary shall not deny a petition to include a waste as a universal waste that has been approved by the Administrator, unless scientifically supportable reasons for the denial are advanced that had not been presented to the Administrator.

~~d~~ 2.5.4. Any person may petition the Secretary to include a waste as a universal waste as follows:

~~d.1~~ 2.5.4.a. Submit a petition to the Secretary demonstrating that regulation under the universal waste regulations of 40 C.F.R. Part 273 is appropriate for the waste or category of waste, will improve management practices for the waste or category of waste, and will improve implementation of the Hazardous Waste Program. The petition shall also include information required by 40 C.F.R. § 260.20(b) and include as many of the factors listed in 40 C.F.R. § 273.81 as are appropriate for the waste or category of waste addressed in the petition.

~~d.2~~ 2.5.4.b. The Secretary shall grant or deny a petition using the factors listed in 40 C.F.R. § 273.81. The decision will be based on the weight of evidence showing that regulation under 40 C.F.R. Part

273 is appropriate for the waste or category of waste, will improve management practices for the waste or category of waste, and will improve implementation of the Hazardous Waste Program.

~~d~~ 2.5.4.c. The decision of the Secretary will be in writing and state the reasons to either grant or deny the petition. Any petitioner aggrieved by the decision of the Secretary may appeal the decision to the Environmental Quality Board in accordance with the provisions of W. Va. Code § 22-18-20.

§33-20-3. Identification and Listing of Hazardous Waste.

3.1. 40 C.F.R. Part 261. – The provisions of 40 C.F.R. Part 261 are hereby adopted and incorporated by reference with the modifications, exceptions, and additions set forth in this section.

~~a~~ 3.1.1. In order for a mixture of a waste and one or more hazardous wastes identified in 40 C.F.R. § 261.3(a)(2)(iv) to be exempt from the definition of hazardous waste, the owner or operator shall comply with the following:

~~a~~ 3.1.1.a. Provide a certification in writing to the Secretary that groundwater monitoring that either complies with 40 C.F.R. Part 265, Subpart F or that is agency approved is or will be in place at the wastewater treatment facility identified in 40 C.F.R. § 261.3(a)(2)(iv). The certification shall include a time schedule for the installation of groundwater monitoring. This requirement does not apply to wastewater treatment units or containers.

~~a~~ 3.1.1.b. Before claiming an exemption, the owner or operator of each wastewater treatment facility receiving mixtures of wastes under 40 C.F.R. § 261.3(a)(2)(iv) shall notify the Secretary of the receipt of the wastes on a form prescribed by the Secretary.

~~a~~ 3.1.1.c. Annually submit to the Secretary a list of hazardous wastes that are expected to be present in the mixture to be exempted.

§33-20-4. Notification of Hazardous Waste Activity Regulations.

4.1. Applicability. – Pursuant to 40 C.F.R. §262.18 any person engaging in any activity involving hazardous waste in the State of West Virginia shall notify the Secretary of those activities when they begin, unless those activities are exempted from the requirements of this rule.

4.2. Notification. Any person who notified EPA of its hazardous waste activities in the State of West Virginia shall provide a copy of that notification to the Secretary.

~~a~~ 4.2.1. Any person exempted from the federal notification requirements as specified in 40 C.F.R. §§ 261.6(a)(2) and (3) and 262.14, remains subject to West Virginia notification requirements, and shall notify the Secretary in writing of hazardous waste activities on the date of initiation of those activities. Notification may be accomplished by using EPA Form 8700-12 or by providing the same information required by EPA Form 8700-12 in any other manner selected by the notifier.

~~b~~ 4.2.2. One notification form is required for each generator.

~~e~~ 4.2.3. A notification form is required for each storage, treatment, disposal or other facility. However, if one facility site includes more than one storage, treatment or disposal activity, only one notification form for the entire facility site is required.

~~d~~ 4.2.4. Generators that store, treat or dispose of hazardous waste on-site shall file a notification form for generation activities, as well as storage, treatment, and disposal activities, unless those activities are exempted from the requirements of this rule.

§33-20-5. Standards Applicable to Generators of Hazardous Waste.

5.1. 40 C.F.R. Part 262. – The provisions of 40 C.F.R. Part 262 are hereby adopted and incorporated by reference with the modifications, exceptions, and additions contained in this section.

5.2. 40 C.F.R. §§ 262.10(g)(1) and 262.10 (g)(2). – The provisions of 40 C.F.R. §§ 262.10(g)(1) and 262.10 (g)(2) will be excepted from incorporation.

a 5.2.1. A person who generates a hazardous waste as defined by 40 C.F.R. Part 261 is subject to the compliance requirements and penalties prescribed in W. Va. Code § 22-18-1, et seq. if he or she does not comply with the requirements of this rule. This rule in no way abrogates the enforcement authority of the Resource Conservation and Recovery Act.

b 5.2.2. All references to 40 C.F.R. § 262.10(g) will be deemed references to subsection 5.2 of this rule and its subdivisions, as appropriate.

5.3. The provisions of 40 C.F.R. 262.14 (a)(5)(iv) and (v) are excepted from incorporation by reference.

5.4. 40 C.F.R. Part 262, Subpart H. – The provisions of 40 C.F.R. Part 262, Subpart H -- Transboundary Movements of Hazardous Waste for Recovery or Disposal are hereby adopted and incorporated by reference. The substitution of terms in subdivision 1.5.1a above does not apply to the provisions of this subsection. In addition to the requirements contained therein, any person subject to the provisions of Subpart H shall file with the Secretary copies of all documentation, manifests, exception reports, annual reports or records submitted to EPA, the Administrator or the Regional Administrator as required by and within the time frames set forth in subpart H.

§33-20-6. Standards Applicable to Transporters of Hazardous Waste.

6.1. 40 C.F.R. Part 263. – The provisions of 40 C.F.R. Part 263 are hereby adopted and incorporated by reference, insofar as those regulations relate to the transportation of hazardous waste by air and water.

6.2. Transportation of hazardous waste by railroad, roads, and highways is regulated by the West Virginia Public Service Commission rules, “Rules and Regulations Governing the Transportation of Hazardous Waste by Rail,” 150CSR11. The use of the state highways for the transportation of hazardous waste is also regulated by the West Virginia Division of Highways at 157CSR7, “Transportation of Hazardous Wastes upon the Roads and Highways.”

§33-20-7. Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities.

7.1. 45CSR25, Division of Air Quality. – The standards in this section apply to owners and operators of all facilities that treat, store or dispose of hazardous waste, except as otherwise provided by law. In addition to the standards in section 7 of this rule, 45CSR25, “Control of Air Pollution from Hazardous Waste Treatment, Storage and Disposal Facilities” applies to hazardous waste management facilities that may emit hazardous waste or the constituents thereof into the atmosphere, including incineration facilities, except as otherwise provided by law. For purposes of this section, the following persons are considered to be incinerating hazardous waste:

a 7.1.1. Owners or operators of hazardous waste incinerators; and

b 7.1.2. Owners or operators of boilers or industrial furnaces used to destroy wastes.

7.2. 40 C.F.R. Part 264. – The provisions of 40 C.F.R. Part 264 are hereby adopted and incorporated by reference with the modifications, exceptions, and additions set forth in this section.

7.3. Required Receipt of Identical Notification. – The provisions of 40 C.F.R. §§ 264.12(a)(1) and (2) are retained by the Environmental Protection Agency; however, the Secretary shall receive identical notification.

7.4. Releases from Solid Waste Management Units. – The provisions of 40 C.F.R. Part 264, Subpart F - Releases from Solid Waste Management Units are incorporated by reference with the following modifications, exceptions, and additions.

a 7.4.1. For purposes of 40 C.F.R. § 264.92, reference to the “Regional Administrator” will be to the Secretary of the Department of Environmental Protection. The Secretary establishes groundwater protection standards pursuant to the authority granted to the Secretary in W. Va. Code § 22-12-4.

b 7.4.2. For purposes of 40 C.F.R. § 264.94 and subparagraphs thereof, the agency rule on groundwater protection standards, 47CSR12, will apply as required pursuant to the authority granted the Secretary in W. Va. Code § 22-12-4.

c 7.4.3. The provisions of 40 C.F.R. § 264.99(g) are incorporated by reference with the following modifications:

~~e-1~~ 7.4.3.a. The Secretary shall specify in the facility permit the frequencies for collecting samples required under 40 C.F.R. § 264.99(g). This frequency shall not be less than once annually.

7.5. Financial Requirement. – The provisions of 40 C.F.R. Part 264, Subpart H - Financial Requirements are adopted and incorporated by reference with the following modifications:

a 7.5.1. The provisions of 40 C.F.R. §§ 264.149 and 264.150 are excepted from incorporation by reference.

7.6. Provisions Relating to Incinerators. – The provisions of 40 C.F.R. §§ 264.341, 264.342, 264.343, 264.344, 264.345, and 264.347(a) relating to incinerators are excepted from incorporation by reference. Consult the rules of the Division of Air Quality regarding emissions from incinerators. The Division of Air Quality retains its authority to enforce the air monitoring items listed in 40 C.F.R. § 264.347(a) related to incinerating hazardous waste. The Division of Water and Waste Management retains authority to enforce 40 C.F.R. §§ 264.347(b), (c), and (d). Consult the Division of Air Quality, 45CSR25, “Control of Air Pollution from Hazardous Waste Treatment, Storage and Disposal Facilities”.

7.7. 40 C.F.R. Part 264, Subparts AA, BB, CC and 40 C.F.R. § 264.1080(f); and 40 C.F.R. § 264.1080(g). – The provisions of 40 C.F.R. § 264.1080(f) and 40 C.F.R. § 264.1080(g) are hereby adopted and incorporated by reference, and the remaining provisions of 40 C.F.R. Part 264, Subparts AA, BB, and CC are excepted from incorporation by reference. Consult the rules of the Division of Air Quality regarding air emission standards for process vents, air emission standards for equipment leaks, and air emission standards for tanks, surface impoundments and containers.

§33-20-8. Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities.

8.1. 40 C.F.R. Part 265. -- The provisions of 40 C.F.R. Part 265 are adopted and incorporated by reference with the modifications, exceptions, and additions set forth in this section.

8.2 Required Receipt of Identical Notification. – The provisions of 40 C.F.R. §§ 265.12(a)(1) and (2) are retained by the Environmental Protection Agency; however, the Secretary shall receive identical notification.

8.3 Financial Requirement. – The provisions of 40 C.F.R. Part 265, Subpart H - Financial Requirements are adopted and incorporated by reference with the following modifications:

a 8.3.1. The provisions of 40 C.F.R. §§ 265.149 and 265.150 are excepted from incorporation by reference.

8.4. 40 C.F.R. §§ 265.341, 265.345, 265.347, 265.352. -- The provisions of 40 C.F.R. §§ 265.341, 265.345, 265.347, and 265.352 relating to incinerators are excepted from incorporation by reference. Consult the rules of the Division of Air Quality regarding emissions from incinerators. The Division of Air Quality retains its authority to enforce the items listed in 40 C.F.R. § 265.347(a) related to incinerating hazardous waste. The Division of Water and Waste Management retains authority to enforce 40 C.F.R. §§ 265.347(b).

8.5. Thermal Treatment. – The provisions of 40 C.F.R. Part 265, Subpart P - Thermal Treatment are incorporated by reference except for the provisions of 40 C.F.R. § 265.375 and 40 C.F.R. § 265.383 that are excepted from incorporation by reference. Consult the rules of the Division of Air Quality regarding emissions from thermal treatment units.

8.6. 40 C.F.R. Part 265, Subparts AA, BB, CC and 40 C.F.R. § 265.1080(f) and (g). – The provisions of 40 C.F.R. § 265.1080(f) and (g) are hereby adopted and incorporated by reference, and the remaining provisions of 40 C.F.R. Part 265, Subparts AA, BB, and CC are excepted from incorporation by reference. Consult the rules of the Division of Air Quality regarding air emission standards for process vents, air emission standards for equipment leaks, and air emission standards for tanks, surface impoundments and containers.

§33-20-9. Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities.

9.1. 40 C.F.R. Part 266. -- The provisions of 40 C.F.R. Part 266 are hereby adopted and incorporated by reference. Consult the rules of the Division of Air Quality regarding Subpart H of this part.

§33-20-10. Land Disposal Restrictions.

10.1. 40 C.F.R. Part 268. -- The provisions of 40 C.F.R. Part 268 are hereby adopted and incorporated by reference with the modifications, exceptions, and additions set forth in this section.

10.2. 40 C.F.R. §§ 268.5, 268.6, 268.13, 268.42(b), and 268.44. -- The provisions of 40 C.F.R. §§ 268.5, 268.6, 268.13, 268.42(b), and 268.44 are excepted from incorporation by reference.

10.3. Definition of Administrator in 40 C.F.R. § 268.40(b). The term “Administrator” in 40 C.F.R. § 268.40(b) will retain its meaning as defined in 40 C.F.R. § 260.10.

§33-20-11. The Hazardous Waste Permit Program and Standardized Permit.

11.1. 40 C.F.R. Part 270. – The provisions of 40 C.F.R. Part 270, 40 C.F.R. Part 267, and 40 C.F.R. Part 124, Subpart G are hereby adopted and incorporated by reference with the modifications, exceptions, and additions set forth in this section.

11.2. 40 C.F.R. § 270.2 Definitions.

a 11.2.1. Definition of “RCRA permit”. – For purposes of this section, the term “RCRA permit” means “West Virginia Hazardous Waste Management Permit”. The following additional requirements will apply to obtain a Hazardous Waste Management Permit in West Virginia. All references in 40 C.F.R. Part 270 and 40 C.F.R. Part 267 to 40 C.F.R. Part 124 will be deemed to be references to the applicable

provisions of subsections 11.4 through 11.17 of this rule. To the extent of any inconsistency with 40 C.F.R. Part 270 and 40 C.F.R. Part 267, the specific provisions contained herein will control.

11.3. Application Fees.

a 11.3.1. Any person who applies for a permit for the construction or operation of a hazardous waste management facility, or both, shall submit as part of the application a money order or cashier's check payable to "The Hazardous Waste Management Fund." Persons required to obtain a permit-by-rule pursuant to this rule are not required to pay a permit application fee.

b 11.3.2. The fee will be determined by the schedule set forth in Table 1. If the cumulative total of application fees imposed under this section equals or exceeds fifty thousand dollars (\$50,000) then the person required to pay the fees may, at the person's option, elect to submit the fee payments in installments over a three-year period. The installments submitted to the Department of Environmental Protection may not be less frequent than annually, and the amount submitted annually may not be less than one-third (1/3) of the total amount due.

c 11.3.3. The fee for permit renewal is the same as for an initial permit.

11.4. Pre-application Public Meeting and Notice.

a 11.4.1. Applicability. The requirements of this subsection will apply to West Virginia Hazardous Waste Management Part B permit applicants seeking initial permits for hazardous waste management units. The requirements of this section will also apply to West Virginia Hazardous Waste Management Part B permit applicants seeking renewal of permits for those units, when the renewal application is proposing a significant change in facility operations. For the purposes of this section, a "significant change" is any change that would qualify as a Class 3 permit modification (*See*, 40 C.F.R. § 270.42 for a description of permit modifications). The requirements of this section shall also apply to hazardous waste management facilities for which facility owners or operators are seeking coverage under a RCRA standardized permit (*See*, 40 CFR Part 270, Subpart J), including renewal of a standardized permit for such units, where the renewal is proposing a significant change in facility operations, as defined at 40 CFR § 124.211(c). The requirements of this section do not apply to permit modifications under 40 C.F.R. § 270.42 or to applications that are submitted for the sole purpose of conducting post-closure activities or post-closure activities and corrective action at a facility.

b 11.4.2. Prior to the submission of a West Virginia Hazardous Waste Management Part B permit application for a facility, or to the submission of a written Notice of Intent to be covered by a RCRA standardized permit (*See*, 40 CFR Part 270, Subpart J), the applicant shall hold at least one meeting with the public in order to solicit questions from the community and inform the community of proposed hazardous waste management activities. The applicant shall post a sign-in sheet or otherwise provide a voluntary opportunity for attendees to provide their names and addresses.

c 11.4.3. The applicant shall submit a summary of the meeting, along with the list of attendees and their addresses developed under ~~subsection~~ division **b 11.4.2** and copies of any written comments or materials submitted at the meeting, to the Department as a part of the Part B application, in accordance with 40 C.F.R. § 270.14(b), or with the written Notice of Intent to be covered by a RCRA standardized permit (*See*, 40 CFR Part 270, Subpart J).

d 11.4.4. The applicant shall provide public notice of the pre-application meeting at least 30 days prior to the meeting. The applicant shall maintain, and provide to the Department upon request, documentation of the notice.

~~d.1~~ **11.4.4.a.** The applicant shall provide public notice in all of the following forms:

~~d.1.A~~ 11.4.4.a.1. A newspaper advertisement. The applicant shall publish a notice, fulfilling the requirements in paragraph ~~d.2~~ 11.4.4.b, in a newspaper of general circulation in the county or equivalent jurisdiction that hosts the proposed location of the facility. In addition, the Secretary shall instruct the applicant to publish the notice in newspapers of general circulation in adjacent counties or equivalent jurisdictions, where the Secretary determines that publication is necessary to inform the affected public. The notice shall be published as a display advertisement.

~~d.1.B~~ 11.4.4.a.1. A visible and accessible sign. The applicant shall post a notice on a clearly marked sign at or near the facility, fulfilling the requirements in paragraph ~~d.2~~ 11.4.4.b. If the applicant places the sign on the facility property, then the sign shall be large enough to be readable from the nearest point where the public would pass by the site.

~~d.1.C~~ 11.4.4.a.2. A broadcast media announcement. The applicant shall broadcast a notice, fulfilling the requirements in paragraph ~~d.2~~ 11.4.4.b, at least once on at least one local radio station or television station. The applicant may employ another medium with prior approval of the Secretary.

~~d.1.D~~ 11.4.4.a.3. A notice to the permitting agency. The applicant shall send a copy of the newspaper notice to the Department and to the appropriate units of State and local government having jurisdiction over the area where the facility is or is proposed to be located and to each State agency having any authority under State law with respect to the construction or operation of the facility.

~~d.2~~ 11.4.4.b. The notices required by paragraph 11.4.4.a. shall include:

~~d.2.A~~ 11.4.4.b.1. The date, time, and location of the meeting;

~~d.2.B~~ 11.4.4.b.2. A brief description of the purpose of the meeting;

~~d.2.C~~ 11.4.4.b.3. A brief description of the facility and proposed operations, including the address or a map (e.g., a sketched or copied street map) of the facility location;

~~d.2.D~~ 11.4.4.b.4. A statement encouraging people to contact the facility at least seventy-two (72) hours before the meeting if they need special access to participate in the meeting; and

~~d.2.E~~ 11.4.4.b.5. The name, address, and telephone number of a contact person for the applicant.

11.5. Public Notice Requirements at the Application Stage.

~~a~~ 11.5.1. Applicability. The requirements of this subsection apply to all West Virginia Hazardous Waste Management Part B permit applicants seeking initial permits for hazardous waste management units. The requirements of this section also apply to Hazardous Waste Management Part B permit applicants seeking renewal of permits for these units upon the expiration of the existing permit. The requirements of this section do not apply to hazardous waste units for which facility owners or operators are seeking coverage under a RCRA standardized permit (*See*, 40 CFR Part 270, Subpart J). The requirements of this section do not apply to permit modifications under 40 C.F.R. § 270.42 or permit applications submitted for the sole purpose of conducting post-closure activities or post-closure activities and corrective action at a facility.

~~b~~ 11.5.2. Notification. The Secretary shall provide public notice as required in ~~subsection~~ division 11.5 when an applicant has submitted a Part B permit application. The Secretary shall provide public notice that a Part B permit application has been submitted to the Secretary and is available for review to:

~~b.1~~ 11.5.2.a. The applicant;

~~b.2~~ 11.5.2.b. All persons on a mailing list developed pursuant to ~~subparagraph part d.1.D~~ 11.11.4.a.4; and

~~b.3~~ 11.5.2.c. The appropriate units of State and local government having jurisdiction over the area where the facility is proposed to be located and to each State agency having any authority under State law with respect to the construction or operation of the facility.

~~b.4~~ 11.5.2.d. Any person otherwise entitled to receive notice under subdivision ~~b~~11.5.2 may waive the right to receive notice for any classes and categories of permits.

e 11.5.3. The Secretary shall publish the notice within a reasonable period of time after he or she receives the application. The notice shall include:

~~e.1~~ 11.5.3.a. The name and telephone number of the applicant's contact person;

~~e.2~~ 11.5.3.b. The name and telephone number of the Department's contact office and a mailing address to which information, opinions, and inquiries shall be directed throughout the permit review process;

~~e.3~~ 11.5.3.c. An address to which people can write in order to be put on the facility mailing list;

~~e.4~~ 11.5.3.d. The location where copies of the permit application and any supporting documents can be viewed and copied;

~~e.5~~ 11.5.3.e. A brief description of the facility and proposed operations, including the address or a map (e.g., a sketched or copied street map) of the facility location on the front page of the notice; and

~~e.6~~ 11.5.3.f. The date that the application was submitted.

d 11.5.4. Concurrent with the notice required under subdivision ~~b~~11.5.2, the Secretary shall place the permit application and any supporting documents in a location accessible to the public in the vicinity of the facility or at the Department's office.

11.6. Information Repository.

a 11.6.1. Applicability. The requirements of this section apply to all applicants seeking West Virginia Hazardous Waste Management Permits for hazardous waste management units.

b 11.6.2. The Secretary shall assess the need, on a case-by-case basis, for an information repository. When assessing the need for an information repository, the Secretary shall consider a variety of factors, including the level of public interest, the type of facility, the presence of an existing repository, and the proximity to the nearest copy of the administrative record. If the Secretary determines, at any time after submittal of a permit application, that there is a need for a repository, then the Secretary shall notify the facility that it must establish and maintain an information repository.

c 11.6.3. The information repository shall contain all documents, reports, data, and information deemed necessary by the Secretary to fulfill the purposes for which the repository is established. The Secretary has the discretion to limit the contents of the repository.

d 11.6.4. The information repository shall be located and maintained at a site chosen by the facility. If the Secretary finds the site unsuitable for the purposes and persons for which it was established due to problems with the location, hours of availability, access or other relevant considerations, then the Secretary shall specify a more appropriate site.

~~e~~ 11.6.5. The Secretary shall specify requirements for informing the public about the information repository. At a minimum, the Secretary shall require the facility to provide a written notice about the information repository to all individuals on the facility mailing list.

~~f~~ 11.6.6. The facility's owner/operator is responsible for maintaining and updating the repository with appropriate information throughout a time period specified by the Secretary. The Secretary shall close the repository at his or her discretion, based on the factors listed in subdivision ~~b~~11.6.2.

11.7. Application for a Permit.

~~a~~ 11.7.1. Any person who requires a permit under this rule shall complete, sign, and submit to the Secretary an application for each permit required under this rule. Applications are not required for hazardous waste permits by rule pursuant to 40 C.F.R. § 270.60. The Secretary shall not begin processing a permit until the applicant has fully complied with the application requirements for that permit. Permit applications shall comply with the signature and certification requirements of 40 C.F.R. § 270.11.

~~b~~ 11.7.2. The Secretary shall review for completeness every application. The Secretary shall review for completeness, within 30 days of receipt, each application submitted by a new hazardous waste management facility. The Secretary shall review for completeness, within 60 days of receipt, each application submitted by an existing hazardous waste management facility (both Part A and Part B of the application). Upon completing the review, the Secretary shall notify the applicant in writing whether the application is complete. If the application is incomplete, the Secretary shall list the information necessary to make the application complete. When the application is for an existing hazardous waste management facility, the Secretary shall specify in the notice of deficiency a date for submitting the necessary information. The Secretary shall notify the applicant that the application is complete upon receiving this information. After the application is completed, the Secretary shall request additional information from the applicant, but only when necessary to clarify, modify or supplement previously submitted material. Request for additional information shall not render an application incomplete.

~~c~~ 11.7.3. If the applicant fails or refuses to correct deficiencies in the application, the Secretary shall deny the permit and take appropriate enforcement actions pursuant to W. Va. Code §§ 22-18-15, 22-18-16, and 22-18-17.

~~d~~ 11.7.4. If the Secretary decides that a site visit is necessary for any reason in conjunction with the processing of an application, he or she shall notify the applicant and schedule a date for the site visit.

~~e~~ 11.7.5. The effective date of an application is the date on which the Secretary notifies the applicant that the application is complete as provided for in subdivision ~~b~~11.7.2 above.

~~f~~ 11.7.6. For each application, the Secretary shall, no later than the effective date of the application, prepare and mail to the applicant a project decision schedule. The schedule shall specify target dates by which the Secretary intends to:

~~f.1~~ 11.7.6.a. Prepare a draft permit;

~~f.2~~ 11.7.6.b. Give public notice;

~~f.3~~ 11.7.6.c. Complete the public comment period, including any public hearing; and

~~f.4~~ 11.7.6.d. Issue a final permit.

11.8. Modification, Revocation and Reissuance, or Termination of Permits.

a 11.8.1. Permits shall be modified, revoked and reissued, or terminated either at the request of an interested person (including the permittee) or upon the Secretary's initiative. However, permits shall only be modified, revoked and reissued, or terminated for the reasons specified in 40 C.F.R. §§ 270.41 or 270.43. All requests shall be in writing and shall contain facts or reasons supporting the request.

b 11.8.2. If the Secretary decides the request is not justified, he or she shall send the requester a brief written response giving a reason for the decision. Denials of requests for modification, revocation and reissuance, or termination are not subject to public notice, comment or hearings. Denials by the Secretary may be appealed to the Environmental Quality Board in accordance with section 16 of this rule and W. Va. Code § 22-18-20.

~~b-1~~ **11.8.2.a.** If the Secretary initially decides to modify or revoke and reissue a permit under 40 C.F.R. §§ 270.41 (other than § 270.41(b)(3)) or 270.42 (c), he or she shall prepare a draft permit pursuant to subsection 11.9 below, incorporating the proposed changes. The Secretary may request additional information and, in the case of a modified permit, may require the submission of an updated application. In the case of a revoked and reissued permit, other than under 40 CFR § 270.41(b)(3), the Secretary shall require the submission of a new application. In the case of revoked or reissued permits under 40 CFR § 270.41(b)(3), the Secretary and the permittee shall comply with the appropriate requirements in 40 CFR Part 124, Subpart G for RCRA standardized permits.

~~b-2~~ **11.8.2.b.** In a permit modification under this section, only those conditions to be modified will be reopened when a new draft permit is prepared. When a permit is revoked and reissued under this section, the entire permit is reopened. During any revocation and reissuance proceeding, the permittee shall comply with all conditions of the existing permit until a new final permit is reissued.

~~b-3~~ **11.8.2.c.** "Classes 1 and 2 Modifications" as defined in 40 C.F.R. §§ 270.42 (a) and (b) are not subject to the requirements of this Section.

e 11.8.3. If the Secretary decides to terminate a permit under 40 C.F.R. § 270.43, he or she shall issue a Notice of Intent to Terminate. A Notice of Intent to Terminate is a type of draft permit that follows the same procedures as any draft permit prepared under subsection 11.9 below.

11.9. Draft Permits.

a 11.9.1. Once an application is complete, the Secretary shall decide whether to prepare a draft permit or to deny the application.

~~b-1~~ **11.9.2.** If the Secretary decides to deny the permit application, he or she shall issue a Notice of Intent to Deny. A Notice of Intent to Deny the permit application is a type of draft permit that follows the same procedures as any draft permit prepared under this section. If the Secretary's final decision is that the initial decision to deny the permit application was incorrect, he or she shall withdraw the Notice of Intent to Deny and proceed to prepare a draft permit.

e 11.9.3. If the Secretary decides to issue a draft permit, he or she shall prepare a draft permit that contains the following information:

~~e-1~~ **11.9.3.a.** All conditions under 40 C.F.R. §§ 270.30 and 270.32;

~~e-2~~ **11.9.3.b.** All compliance schedules under 40 C.F.R. § 270.33;

~~e-3~~ **11.9.3.c.** All monitoring requirements under 40 C.F.R. § 270.31; and,

~~e-4~~ **11.9.3.d.** Standards for treatment, storage, and disposal and other permit conditions under 40 C.F.R. § 270.30.

~~d~~ 11.9.4. All draft permits prepared by the Secretary under this section shall be accompanied by a fact sheet and shall be based on the administrative record, publicly noticed, and made available for public comment.

11.10. Fact Sheet.

~~a~~ 11.10.1. The Secretary shall prepare a fact sheet for every draft permit for a hazardous waste management facility that the Secretary finds is the subject of wide-spread public interest or raises major issues. The fact sheet will briefly set forth the principal facts and the significant factual, legal, and methodological and policy questions considered in preparing the draft permit. The Secretary shall send the fact sheet to the applicant and to anyone who requests it.

~~b~~ 11.10.2. The fact sheet shall include when applicable:

~~b.1~~ 11.10.2.a. A brief description of the type of facility or activity that is the subject of the draft permit;

~~b.2~~ 11.10.2.b. The type and quantity of waste, fluids or pollutants that are proposed to be or are being treated, stored, disposed of, injected, emitted or discharged;

~~b.3~~ 11.10.2.c. A brief summary of the basis for the draft permit conditions, including references to applicable statutory or regulatory provisions and appropriate supporting references to the administrative record;

~~b.4~~ 11.10.2.d. Reasons why any requested variances or alternatives to required standards do or do not appear justified;

~~b.5~~ 11.10.2.e. A description of the process for reaching a final decision on a draft permit including:

~~b.1.A~~ 11.10.2.e.1. The beginning and the ending dates of the comment period and the address where comments will be received;

~~b.1.B~~ 11.10.2.e.2. Procedures for requesting a hearing and the nature of that hearing; and

~~b.1.C~~ 11.10.2.e.3. Any other procedures by which the public participates in the final decision.

~~b.6~~ 11.10.2.f. Name and telephone number of a person to contact for additional information.

11.11. Public Notice of Permit Actions and Public Comment Period.

~~a~~ 11.11.1. Scope. The Secretary shall give public notice if the following actions have occurred:

~~a.1~~ 11.11.1.a. A draft permit has been prepared; and

~~a.2~~ 11.11.1.b. A hearing has been scheduled.

~~b~~ 11.11.2. No public notice is required when a request for permit modification, revocation and reissuance, or termination is denied under subsection 11.8 above. Written notice of that denial shall be given to the requester and to the permittee.

e 11.11.3. Timing. Public notice of the preparation of a draft permit (including a Notice of Intent to Deny a Permit Application) required under subdivision a11.11.1 will allow at least 45 days for public comment. Public notice of a public hearing shall be given at least 30 days before the hearing. (Public notice of the hearing may be given at the same time as public notice of the draft permit, and the two notices may be combined.)

d 11.11.4. The Secretary shall provide public notice of activities described in subdivision a11.11.1 by the following methods:

~~d.1~~ 11.11.4.a. By mailing a copy of a notice to the following persons (any person otherwise entitled to receive notice under this paragraph may waive his or her rights to receive notice for any classes and categories of permits):

~~d.1.A~~ 11.11.4.a.1. The applicant;

~~d.1.B~~ 11.11.4.a.2. The West Virginia Division of Water and Waste Management and the Division of Air Quality, if those agencies are required to issue a RCRA permit, an underground injection control (UIC) permit, a prevention of significant deterioration (PSD) permit or other permit under the Clean Air Act, and W.Va. Code §22-5-1, et seq., a National Pollutant Discharge Elimination System (NPDES) permit, or a sludge management permit for the same facility or activity;

~~d.1.C~~ 11.11.4.a.3. Federal and State agencies with jurisdiction over fish, shell fish, and wildlife resources and over coastal zones management plans, the advisory council on historic preservation, and the State Historic Preservation Office, as applicable;

~~d.1.D~~ 11.11.4.a.4. Persons on a mailing list developed by:

~~d.1.D.1~~ 11.11.4.a.4.A. Including those who request in writing to be on the list;

~~d.1.D.2~~ 11.11.4.a.4.B. Soliciting persons for "area lists" from participants in past permit proceedings in that area; and

~~d.1.D.3~~ 11.11.4.a.4.C. Notifying the public of the opportunity to be put on the mailing list through periodic publication in the public press and in such publications as regional and State funded newsletters, environmental bulletins or state law journals. The Secretary may update the mailing lists from time to time by requesting written indications of continued interest from those listed. The Secretary may delete from the lists the name of any person who fails to respond to the request.

~~d.1.E~~ 11.11.4.a.5. To any unit of local government having jurisdiction over the area where the facility is proposed to be located; and

~~d.1.F~~ 11.11.4.a.6. To each State agency having any authority under State law with respect to the construction or operation of the facility.

~~d.2~~ 11.11.4.b. By publishing a notice in a daily or weekly major local newspaper of general circulation and broadcast over local radio stations;

~~d.3~~ 11.11.4.c. By any manner constituting legal notice to the public under State laws; and

~~d.4~~ 11.11.4.d. By any other method reasonably calculated to give actual notice of the action in question to the persons potentially affected by it, including press releases or any other forum or medium to elicit public participation.

e 11.11.5. All public notices issued under this section shall contain the following minimum information:

~~e-1~~ 11.11.5.a. Name and address of the office processing the permitting action for which notice is being given;

~~e-2~~ 11.11.5.b. Name and address of the permittee or the permit applicant and, if different, of the facility or activity regulated by the permit;

~~e-3~~ 11.11.5.c. A brief description of the business conducted at the facility or activity described in the permit application or the draft permit;

~~e-4~~ 11.11.5.d. Name, address and telephone number of a person from whom interested persons may obtain further information, including copies of the draft permit, fact sheet, and the application;

~~e-5~~ 11.11.5.e. A brief description of the comment procedures required by subsections 11.12 and 11.13 and the time and place of any hearing that will be held, including a statement of procedures to request a hearing (unless a hearing has already been scheduled) and other procedures by which the public may participate in the final decision;

~~e-6~~ 11.11.5.f. The location of the administrative record and the times that the record will be open for public inspection; and

~~e-7~~ 11.11.5.g. Any additional information considered by the Secretary to be necessary or proper.

f 11.11.6. Public notices for hearings. In addition to the general public notice described in subdivision 11.11.e, the public notice of a hearing shall contain the following information:

~~f-1~~ 11.11.6.a. Reference to the date of previous public notices relating to the permit;

~~f-2~~ 11.11.6.b. Date, time, and place of the hearing; and

~~f-3~~ 11.11.6.c. A brief description of the nature and purpose of the hearing, including the applicable rules and procedures.

g 11.11.7. In addition to the general public notice described in subdivision ~~e~~ 11.11.5, the Secretary shall send to all persons identified in subparagraphs ~~d-1-A~~ 11.11.4.a.1 through ~~d-1-F~~ 11.11.4.a.6 a copy of the fact sheet, the permit application, and the draft permit, as applicable.

11.12. Public Comments and Requests for Public Hearings.

a 11.12.1. During the public comment period provided under subsection 11.11, any interested person may submit written comments on the draft permit and may request a public hearing, if a hearing has not already been scheduled.

b 11.12.2. A request for a public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing. The Secretary shall consider and respond to all relevant comments, as provided in subsection 11.16 below, in making the final decision.

11.13. Public Hearings.

a 11.13.1. The Secretary shall hold a public hearing whenever he or she finds, on the basis of requests, a significant degree of public interest in a draft permit.

~~b~~ 11.13.2. The Secretary shall also hold a public hearing at his or her discretion, whenever, for instance, a hearing might clarify one or more issues involved in the permit decision.

~~e~~ 11.13.3. The Secretary shall hold a public hearing whenever he or she receives written notice of opposition to a draft permit and a request for a hearing within 45 days of public notice under subdivision ~~e~~11.11.3. Whenever possible, the Secretary shall schedule a hearing under this section at a location convenient to the nearest population center to the proposed facility.

~~d~~ 11.13.4. The Secretary shall provide public notice of the hearing as specified in subsection 11.11.

~~e~~ 11.13.5. Whenever a public hearing will be held, the Secretary shall designate a presiding officer for the hearing who will be responsible for its scheduling and orderly conduct.

~~f~~ 11.13.6. Any person may submit oral or written statements and data concerning the draft permit. The Secretary may set reasonable limits upon the time allowed for oral statements and may require the submission of statements in writing. The public comment period under subsection 11.11 shall automatically be extended to the close of any public hearing under this section. The hearing officer may also extend the comment period by so stating at the hearing.

~~g~~ 11.13.7. A tape recording or written transcript of the hearing shall be made available to the public.

11.14. Reopening of the Public Comment Period.

~~a~~ 11.14.1. If any data, information, or arguments submitted during the public comment period appear to raise substantial new questions concerning a permit, the Secretary shall take one or more of the following actions:

~~a.1~~ 11.14.1.a. Prepare a new draft permit, appropriately modified, under subsection 11.9.

~~a.2~~ 11.14.1.b. Prepare a revised fact sheet under subsection 11.10 and reopen the comment period.

~~a.3~~ 11.14.1.c. Reopen or extend the comment period under subsection 11.11 to give interested persons an opportunity to comment on the information or arguments submitted.

~~b~~ 11.14.2. Comments filed during the reopened comment period shall be limited to the substantial new questions that caused its reopening. The public notice under subsection 11.11 shall define the scope of the reopening.

~~e~~ 11.14.3. The Secretary shall issue public notice of any of the above actions in accordance with subsection 11.11 above.

11.15. Issuance and Effective Date of Permit.

~~a~~ 11.15.1. After the close of the public comment period on a draft permit, the Secretary shall issue a final permit decision. The Secretary shall notify the applicant and each person who has submitted written comments or requested notice of the final permit decision. The notice shall include reference to the procedures for appealing a decision on the permit. For purposes of this section the final permit decision means a final decision to issue, deny, modify, revoke and reissue, or terminate a permit.

~~b~~ 11.15.2. A final permit decision will become effective 30 days after the service of Notice of Decision unless:

~~b.1~~ 11.15.2.a. A later effective date is specified in the decision; or

~~b.2~~ 11.15.2.b. Review is requested or evidentiary hearing is requested; or

~~b.3~~ 11.15.2.c. No comments requested change in the draft permit, in which case the permit will become effective immediately upon issuance.

11.16. Response to Comments.

a 11.16.1. At the time that any final permit decision is issued, the Secretary shall issue a response to comments. This response will:

~~a.1~~ 11.16.1.a. Specify which provisions, if any, of the draft permit have been changed in the final permit decision and the reasons for the change; and

~~a.2~~ 11.16.1.b. Briefly describe and respond to all comments on the draft permit or the permit application raised during the public comment period or during any hearing.

b 11.16.2. The response to comments shall be available to the public.

11.17. Administrative Record.

a 11.17.1. The provisions of a draft permit prepared under subsection 11.9 shall be based on the administrative records consisting of:

~~a.1~~ 11.17.1.a. The application and any supporting data furnished by the applicant;

~~a.2~~ 11.17.1.b. The draft permit or notice of intent to deny the application or to terminate the permit;

~~a.3~~ 11.17.1.c. The fact sheet;

~~a.4~~ 11.17.1.d. All documents cited in the fact sheet; and

~~a.5~~ 11.17.1.e. Other documents contained in the supporting file for the draft permit.

b 11.17.2. The Secretary shall base final permit decisions on the administrative record consisting of:

~~b.1~~ 11.17.2.a. Administrative record for the draft permit;

~~b.2~~ 11.17.2.b. All comments received during the public comment period provided under subsection 11.11 (including any extension or reopening under subsection 11.14);

~~b.3~~ 11.17.2.c. The tape or transcript of any hearing(s) held under subsection 11.13;

~~b.4~~ 11.17.2.d. Any written material submitted at the hearing;

~~b.5~~ 11.17.2.e. The response to comments required by subsection 11.16 that identify and support any change made in the draft permit and any new material placed in the record under that subsection;

~~b.6~~ 11.17.2.f. Other documents contained in the supporting file for the permit;

~~b-7~~ 11.17.2.g. An addendum to the fact sheet if needed; and

~~b-8~~ 11.17.2.h. The final permit.

e 11.17.3. The administrative record shall be complete on the date the final permit is issued.

d 11.17.4. Material readily available at the Department or published material that is generally available and that is included in the administrative record under subdivisions a 11.17.1 and b 11.17.2 need not be physically included with the rest of the record, as long as it is specifically referred to in the fact sheet or in the addendum to the fact sheet.

11.18. Public Access to Information.

a 11.18.1. Any records, reports, or information and any permit, permit applications, and related documentation within the Secretary's possession shall be available to the public for inspection and copying; provided that, upon a satisfactory showing to the Secretary that those records, reports, permit documentation or information or any part thereof would, if made public, divulge methods or processes or activities entitled to protection as trade secrets, the Secretary shall consider, treat, and protect those records as confidential.

b 11.18.2. It is the responsibility of the person claiming any information as confidential under the provisions of this subsection to clearly mark each page containing that information with the word "CONFIDENTIAL" and to submit an affidavit setting forth the reasons that the person believes that the information is entitled to protection.

c 11.18.3. The person claiming confidentiality shall submit any document that contains information for which claim of confidentiality is made in a sealed envelope marked "CONFIDENTIAL" and addressed to the Secretary. The person claiming confidentiality shall submit the document in two separate parts. The first part shall contain all information that is not deemed by the person preparing the report as confidential and shall include appropriate cross-references to the second part, which contains data, words, phrases, paragraphs or pages and appropriate affidavits containing or relating to information that is claimed to be confidential.

d 11.18.4. No information shall be protected as confidential information by the Secretary unless it is submitted in accordance with the provisions of subdivision e 11.18.3 above, and no information that is submitted in accordance with the provision of subdivision e 11.18.3 shall be afforded protection as confidential information unless the Secretary finds that the protection is necessary to protect trade secrets. The person who submits information claimed to be confidential shall receive written notice from the Secretary as to whether the information has been accepted as confidential or not.

e 11.18.5. The Secretary shall mark with the term "ACCEPTED" all information that meets the tests of subdivision 11.18.4d and shall protect the same as confidential information. If the person fails to satisfactorily demonstrate to the Secretary that information in the form presented meets the criteria of subdivision 11.18.4d, the Secretary shall mark the information "REJECTED" and promptly return it to the person who submitted the information. The Secretary shall retain a copy of the information for reference.

f 11.18.6. Nothing contained herein shall be construed to restrict the release of relevant confidential information during situations declared to be emergencies by the Secretary.

g 11.18.7. Nothing in subsection 11.18 shall be construed as limiting the disclosure of information by the Department to any officer, employee or authorized representative of State or federal government concerned with effectuating the purposes of this subsection.

h 11.18.8. Persons interested in obtaining information pursuant to this subsection shall submit a request in accordance with the Freedom of Information Act, W. Va. Code § 29B-1-1, et seq.

11.19. 40 C.F.R. § 270.12. The provisions of 40 C.F.R. § 270.12 are excepted from incorporation by reference herein. Availability of information provided under this rule is controlled by the provision of W. Va. Code §§ 22-18-12, 29B-1-1, et seq., and subsection 11.18 of this rule.

11.20. 40 C.F.R. § 270.24. The provisions of 40 C.F.R. § 270.24 are excepted from incorporation by reference herein. Consult the rules of the Division of Air Quality regarding emissions from process vents.

11.21. 40 C.F.R. § 270.60(b). The provisions of 40 C.F.R. § 270.60(b) are hereby adopted and incorporated by reference. Consult the rules of the Division of Water and Waste Management regarding additional requirements for underground injection wells.

11.22. 40 C.F.R. § 270.155. – The provisions of 40 C.F.R. § 270.155 relating to the administrative appeal of a decision to approve or deny a Remedial Action Plan (RAP) application are hereby modified for the purposes of this rule as follows: Any commenter on the draft RAP or notice of intent to deny or any participant in any public hearing(s) on the draft RAP may appeal the Secretary's decision to approve or deny the RAP application to the Environmental Quality Board pursuant to W. Va. Code § 22-18-20. Any person who did not file comments or did not participate in any public hearing(s) on the draft RAP may petition for administrative review only to the extent of the changes from the draft to the final RAP decision. Appeals of a RAP may be made to the same extent as for final permit decisions under section 11 of this rule. The Secretary shall give public notice of any grant of review of a RAP by the Environmental Quality Board through the same means used to provide notice under subsections 11.4 through 11.17 above.

§33-20-12. Deed and Lease Disclosure; Notice in Deed to Property.

12.1. Recording Requirement. – The owner of the property on which a hazardous waste management facility is located shall record, in accordance with State law, a notation on the deed or lease to the facility property, or on some other instrument that is normally examined during title search, that will in perpetuity notify any potential purchaser of the property that:

~~a~~-12.1.1. The land has been used to manage hazardous wastes; and

~~b~~ 12.1.2. Its use is restricted under 40 C.F.R. § 264.117(c).

12.2. Upon actual transfer of property that contains hazardous wastes that have been stored, treated or disposed of, the previous owner shall notify the Secretary in writing of the transfer.

12.3. Other Requirements. – Nothing contained in this section will relieve any person from complying with the requirements on deed and lease disclosures set forth in W. Va. Code § 22-18-21.

§33-20-13. Universal Waste Rule.

13.1. 40 C.F.R. Part 273. – The provisions of 40 C.F.R. Part 273 are hereby adopted and incorporated by reference with the modifications, exceptions, and additions contained in this section.

13.2. 40 C.F.R. §§ 273.20, 273.40, and 273.56. – The provisions of 40 C.F.R. §§ 273.20, 273.40, and 273.56 relating to exports are hereby adopted and incorporated by reference. The substitution of terms in subdivision 1.6.1~~a~~ does not apply to the provisions of this subsection. In addition to the requirements contained therein, any person subject to the provisions of 40 C.F.R. Part 273 shall file with the Secretary copies of all documentation, manifests, exception reports, annual reports or records submitted to EPA, the Administrator or the Regional Administrator as required by 40 C.F.R. Part 273.

13.3. 40 C.F.R. § 273.70. – The provisions of 40 C.F.R. § 273.70 “Imports” are hereby adopted and incorporated by reference. Persons managing universal waste that is imported to West Virginia are subject to the requirements of this rule.

13.4. 40 C.F.R. §§ 273.80 and 273.81. – The provisions of 40 C.F.R. §§ 273.80 and 273.81 are excepted from incorporation by reference. Consult the provisions of subdivision 2.5.4d above to petition to include a waste as a universal waste.

§33-20-14. Standards for the Management of Used Oil.

14.1. 40 C.F.R. Part 279. – The provisions of 40 C.F.R. Part 279 are hereby adopted and incorporated by reference, with the exception contained in this section. Consult the rules of the Division of Air Quality regarding the burning of used oil.

14.2. 40 C.F.R. § 279.82(b). – Notwithstanding the provisions of paragraph ~~a-1~~ 1.5.1.a above, the term “EPA” at 40 C.F.R. § 279.82(b) will mean United States Environmental Protection Agency.

§33-20-15. Standards for Hazardous Waste Recycling.

15.1. The provisions of 40 C.F.R. § 261.6 are hereby adopted and incorporated by reference, with the modifications contained in this section.

15.2. Standards Applicable to All Hazardous Waste Recycling Activities.

~~a~~ 15.2.1. Any residual material resulting from a recycling process shall be evaluated in accordance with section 3 of this rule to determine whether it is subject to regulation as a hazardous waste.

~~b~~ 15.2.2. Any facility that treats hazardous waste without recycling it, or that treats hazardous waste prior to recycling it, is subject to regulation under section 11 above. Generators that treat hazardous waste in containers or tanks in compliance with 40 C.F.R. §§ 262.16 and 262.17 are exempt from regulation under section 11 of this rule for that treatment activity.

~~c~~ 15.2.3. Owners or operators of facilities with hazardous waste management units that recycle hazardous wastes are subject to section 7 of this rule.

15.3. Hazardous Waste Recycling at Off-Site Facilities.

~~a~~ 15.3.1. Owners or operators of facilities that receive recyclable materials, stage recyclable materials, and recycle them without storing them before they are recycled are subject to:

~~a-1~~ 15.3.1.a. The requirements of subsection 15.2 of this rule;

~~a-2~~ 15.3.1.b. The generator requirements of section 5 of this rule; and

~~a-3~~ 15.3.1.c. Financial Requirements. – Prior to staging any material, owners or operators shall demonstrate financial assurance for closure of the facility by:

~~a-3-A~~ 15.3.1.c.1. Maintaining a closure cost estimate that meets the requirements of 40 C.F.R. § 265.142 and that has been approved by the Secretary; and

~~a-3-B~~ 15.3.1.c.2. Establishing financial assurance in accordance with 40 C.F.R. § 265.143.

~~b~~ 15.3.2. Owners or operators of facilities that store recyclable materials before they are recycled are subject to subsection 11 of this rule and to all applicable provisions of subsections 1, 3, and 5.

§33-20-16. Appeal Rights.

Any person aggrieved or adversely affected by the failure or refusal of the Secretary to act within a reasonable time on an application for a permit or by the issuance or denial of or by the terms and conditions of a permit granted by the Secretary under the provisions of this rule, may appeal to the Environmental Quality Board in accordance with the provisions of W. Va. Code §§ 22-18-22 and 22B-2-1, *et seq.*

TABLE 1
PERMIT APPLICATION FEE SCHEDULE

STORAGE

EPA CODE ACTIVITY	FEE	FEE
S01 Container	<100 tons capacity \$2,500.00	>100 tons capacity \$3,750.00
S02 Tank	<100 tons capacity \$2,500.00	>100 tons capacity \$3,750.00
S04 Surface Impoundment	<1,000 tons capacity \$10,000.00	>1,000 tons capacity \$12,500.00
S05 Drip Pad	\$2,500.00	
S03 Waste Pile	<100 tons capacity \$5,000.00	>100 tons capacity \$7,500.00
S06 Waste Pile (Containment Bldg.)	<100 tons capacity \$5,000.00	>100 tons capacity \$7,500.00

DISPOSAL

EPA CODE ACTIVITY	FEE	FEE
D80 Landfill	<1,000 tons/year \$15,000.00	>1,000 tons/year \$25,000.00
D81 Land Application	<1,000 tons/year \$15,000.00	>1,000 tons/year \$25,000.00
D83 Surface Impoundment	<1,000 tons/year \$15,000.00	>1,000 tons/year \$25,000.00

TABLE 1
PERMIT APPLICATION FEE SCHEDULE
(CONTINUED)

TREATMENT

EPA CODE ACTIVITY	FEE	FEE
T01 Tank	<100 tons capacity \$2,500.00	>100 tons capacity \$3,750.00
T02 Surface Impoundment	<1,000 tons/year \$10,000.00	>1,000 tons/year \$12,500.00
T03 Incinerator	<1,000 tons/year \$5,000.00	>1,000 tons/year \$7,500.00
T80 thru T93 Boiler/Industrial Furnace	<1,000 tons/year \$5,000.00	>1,000 tons/year \$7,500.00
T04 Other	\$5,000.00	\$7,500.00
T-94 Containment Bldg. Treatment	\$5,000.00	\$7,500.00

EMERGENCY PERMITS

EPA CODE ACTIVITY	FEE
State and Federal	Nil
Others	\$500.00

TABLE 1
PERMIT APPLICATION FEE SCHEDULE
(CONTINUED)

MISCELLANEOUS

EPA CODE ACTIVITY	FEE
Permit Modification under 40 C.F.R., 270.42 (Class I)	\$500.00
Permit Modification under 40 C.F.R., 270.42 (Class II and III) HWIR Staging Pile	\$1,250.00
Modification under 40 C.F.R., 270.41	\$2,500.00
Post-Closure Care Permit	\$15,000.00
Closure Plans	\$1,500.00

TITLE 47
LEGISLATIVE RULE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER RESOURCES

SERIES 13
UNDERGROUND INJECTION CONTROL

§47-13-1. General.

1.1. Scope. -- These rules set forth criteria and standards for the requirements which apply to the State Underground Injection Control Program (U.I.C.). The UIC permit program regulates underground injections by six (6) classes of wells. The six (6) classes of wells are set forth in section 4 of this rule. All owners or operators of these injection wells must be authorized either by permit or rule by the Director.

~~a~~1.1.1. Specific inclusions. The following wells are included among those types of injection activities which are covered by the UIC rules (this list is not intended to be exclusive but is for clarification only):

~~b~~1.1.2. Any dug hole or well that is deeper than its largest surface dimension, where the principal function of the hole is emplacement of fluids.

~~c~~1.1.3. Any septic tank or cesspool used by generators of hazardous waste, or by owners or operators of hazardous waste management facilities, to dispose of fluids containing hazardous waste.

~~d~~1.1.4. Any septic tank, cesspool, or other well used by multiple dwelling, community, or regional system for the injection of waste.

~~e~~1.1.5. Specific exclusions. The following are not covered by this rule:

~~e~~~~1~~1.1.5.a. Individual or single family residential waste disposal systems such as domestic cesspools or septic systems.

~~e~~~~2~~1.1.5.b. Any dug hole which is not used for emplacement of fluids underground.

~~e~~~~3~~1.1.5.c. Nonresidential cesspools, septic systems or similar waste disposal systems if such systems are used solely for the disposal of sanitary wastes and have the capacity to serve fewer than twenty (20) persons a day.

~~e~~41.1.5.d. Injection wells are used for injection of hydrocarbons which are of pipeline quality and are gases at standard temperature and pressure for the purpose of storage.

NOTE: The specification of exclusions under subdivision 1.1.~~e~~5 of this section shall not relieve any person of any requirements imposed under the State Act and rules, other than this Series, including State permit requirements.

NOTE: Interim Status under RCRA for Class 1 Hazardous Waste Injection Wells. The minimum national standards which define acceptable injection of hazardous waste during the period of interim status under RCRA are set out in the applicable provisions of 40 CFR parts 144, 146, 147, and 40 CFR section 265.430. A UIC permit does not automatically terminate upon issuance to that well of a RCRA

permit-by-rule under 40 CFR section 270.60(b). Thus, until a Class I well injecting hazardous waste receives a RCRA permit or permit-by-rule, the well's interim status requirements are the applicable requirements imposed pursuant to 40 CFR parts 144, 146, 147 and 40 CFR part 265, including any requirements imposed in the UIC permit.

1.2. Authority -- W. Va. Code §22-11-8(B)(7).

1.3. Filing Date -- ~~March 9, 2022~~.

1.4. Effective Date -- ~~March 9, 2022~~.

1.5. Sunset Provision -- This rule is not subject to a sunset provision and does not expire.

§47-13-2. Definitions.

The definitions set forth in W. Va. Code §22-11-3 shall apply to this rule along with the following definitions unless the context clearly indicates otherwise:

2.1. "Abandoned well" means a well whose use has been permanently discontinued or which is in a state of disrepair such that it cannot be used for its intended purpose or for observation purposes.

2.2. "Acidizing" means the injection of acid through the borehole or "well" into a "formation" to increase permeability and porosity by dissolving the acid-soluble portion of the rock constituents.

2.3. "Application" means the State standard forms for applying for a permit or permit modification, including any additions, revisions or modifications to the forms.

2.4. "Aquifer" means a geological "formation", group of formations, or part of a formation that is capable of yielding a usable amount of water to a well or spring.

2.5. "Area of review" means the area surrounding an injection well described according to the criteria set forth in subsection 5.2, or in the case of an area permit, the project area plus a circumscribing area the width of which is either 1/4 of a mile or a number calculated according to the criteria set forth in subsection 5.3.

2.5.1. For Class 6 well types, "area of review" means the region surrounding the geologic sequestration project where underground sources of drinking water (USDWs) may be endangered by the injection activity. The area of review is delineated using computational modeling that accounts for the physical and chemical properties of all phases of the injected carbon dioxide stream and displaced fluids, and is based on available site characterization, monitoring, and operational data as set forth in section 5.4.

2.6. "Authorized representatives of the Director" means the personnel of the Division of Water and Waste Management, Division of Mining and Reclamation, and the personnel of the Office of Oil and Gas and the Commissioner.

2.7. "Carbon dioxide plume" means the extent underground, in three dimensions, of an injected carbon dioxide stream.

2.8. "Carbon dioxide stream" means carbon dioxide that has been captured from an emission source (e.g., a power plant), plus incidental associated substances derived from the source materials and the capture process, and any substances added to the stream to enable or improve the injection process. This subpart

does not apply to any carbon dioxide stream that meets the definition of a hazardous waste under 40 CFR part 261.

2.9. "Casing" means a pipe or tubing of appropriate material, of varying diameter and weight, lowered into a borehole during or after drilling in order to support the sides of the hole and thus prevent the walls from caving, to prevent loss of drilling mud into porous ground, or to prevent water, gas, or other fluid from entering or leaving the hole.

2.10. "Catastrophic collapse" means the sudden and utter failure of overlying "strata" caused by removal of underlying materials.

2.11. "Cementing" means the operation whereby a cement slurry is pumped into a drilled hole and/or forced behind the casing.

2.12. "Commissioner" means the Commissioner of the West Virginia Oil and Gas Conservation Commission.

2.13. "Confining bed" means a body of impermeable or distinctly less permeable material stratigraphically adjacent to one or more aquifers.

2.14. "Confining zone" means a geological formation, group of formations, or part of a formation stratigraphically overlying the injection zone(s) that acts as barrier to fluid movement above an injection zone. For Class 6 wells operating under an injection depth waiver, confining zone means a geologic formation, group of formations, or part of a formation stratigraphically overlying and underlying the injection zone(s).

2.15. "Contaminant" means any man induced physical, chemical, biological or radiological substance or matter in water.

2.16. "Conventional mine" means an open pit or underground excavation for the production of minerals.

2.17. "Corrective action" means the use of Director-approved methods to ensure that wells within the area of review do not serve as conduits for the movement of fluids into USDWs.

2.18. "Draft permit" means a document indicating the Director's tentative decision to issue, modify, suspend, revoke, and reissue, or reissue a "permit". A notice of intent to revoke a permit is a type of "draft permit". A denial of a request for modification, suspension, revocation, or revocation and reissuance, is not a "draft permit".

2.19. "Drilling mud" means a heavy suspension used in drilling an "injection well", introduced down the drill pipe and through the drill bit.

2.20. "Dry Well" means a bored, drilled, or driven shaft or a dug hole, that is not an improved sinkhole or subsurface fluid distribution system, whose depth is greater than its largest surface dimension which is completed above the water table so that its bottom and sides are typically dry except when receiving fluids.

2.21. "Environmental Protection Agency" (EPA) means the United States Environmental Protection Agency.

2.22. "Exempted aquifer" means an "aquifer" or its portion that meets the criteria in the definition of "underground source of drinking water" but which has been exempted according to the procedures in subsection 3.1.

2.23. "Existing injection well" means an "injection well" other than a "new injection well".

2.24. "Experimental technology" means a technology which has not been proven feasible under the conditions in which it is being tested.

2.25. "Facility or activity" means any "injection well" that is subject to rule under the UIC program.

2.26. "Fault" means a surface or zone of rock fracture along which there has been displacement.

2.27. "Flow rate" means the volume per time unit given to the flow of gases or other fluid substance which emerges from an orifice, pump, turbine, or passes along a conduit or channel.

2.28. "Fluid" means any material or substance which flows or moves whether in a semisolid, liquid, sludge, gas, or any other form or state.

2.29. "Formation" means a body of rock characterized by a degree of lithologic homogeneity which is prevailing, but not necessarily, tabular and is mappable on the earth's surface or traceable in the subsurface.

2.30. "Formation fluid" means "fluid" present in a "formation" under natural conditions as opposed to introduced fluids, such as "drilling mud".

2.31. "Generator" means any person, by site location, whose act or process produces hazardous waste identified or listed in 33CSR20, Hazardous Waste Management Rule, or whose act first causes a hazardous waste to become subject to this rule.

2.32. "Geologic sequestration" means the long-term containment of a gaseous, liquid, or supercritical carbon dioxide stream in subsurface geologic formations. This term does not apply to carbon dioxide capture or transport.

2.33. "Geologic sequestration project" means an injection well or wells used to emplace a carbon dioxide stream beneath the lowermost formation containing a USDW; or, wells used for geologic sequestration of carbon dioxide that have been granted a waiver of the injection depth requirements pursuant to requirements at § 47CSR13.14.8.44.; or, wells used for geologic sequestration of carbon dioxide that have received an expansion to the areal extent of an existing Class II enhanced oil recovery or enhanced gas recovery aquifer exemption pursuant to 47CSR13-3 and 47CSR13-14.22. It includes the subsurface three-dimensional extent of the carbon dioxide plume, associated area of elevated pressure, and displaced fluids, as well as the surface area above that delineated region.

2.34. "Groundwater" means water below the land surface in a zone of saturation.

2.35. "Hazardous waste" means a hazardous waste as defined in 33CSR20-2.1.a.

2.36. "Hazardous Waste Management facility" ("HWM facility") means all contiguous land, and structures, other appurtenances, and improvements on the land, used for treating, storing, or disposing of "hazardous waste". A facility may consist of several "treatment", "storage", or "disposal" operational units.

2.37. "Improved Sinkhole" means a naturally occurring karst depression or other natural crevice found in volcanic terrain and other geologic settings which have been modified by man for the purposes of directing and emplacing fluids into the subsurface.

2.38. "Injection well" means a well, subsurface distribution system, or an improved sinkhole into which fluids are being injected.

2.39. "Injection zone" means a geological "formation", group of formations or part of a formation receiving fluids through a "well" and for Class 6 Wells, the formation that is of sufficient areal extent, thickness, porosity, and permeability to receive carbon dioxide through a well or wells associated with a geologic sequestration project.

2.40. "Large Capacity Cesspool" means a dry well that receives untreated sanitary waste containing human excreta, and which sometimes have an open bottom and/or perforated sides. Large-capacity cesspools serve multiple dwellings and community or regional establishments. Non-residential large capacity cesspools must have the capacity to serve more than 20 persons per day.

2.41. "Lithology" means the description of rocks on the basis of their physical and chemical characteristics.

2.42. "Manifest" means the form used for identifying the quantity, composition and the origin, routing and destination of the hazardous waste during its transportation off-site from the point of generation to the point of disposal, treatment or storage.

2.43. "Maximum Contaminant Level (MCL)" means as defined in the Safe Drinking Water Act as "the maximum permissible level of a contaminant in water which is delivered to any user of a public water system."

2.44. "Motor Vehicle Waste Disposal Wells (MVWDW)" mean dry wells or septic tank and leachfield combinations that receive or have received fluids from motor vehicle repair or maintenance activities, such as an auto body repair shop, automotive repair shop, new and used car dealership, specialty repair shop (e.g. transmission and muffler repair shop), or any facility that does any vehicular repair work.

2.45. "New injection well" means a "well" which began injection after the effective date of this rule.

2.46. "Owner or operator" means the owner or operator of a facility or activity subject to regulation under the UIC program.

2.47. "Packer" means a device lowered into a "well" to produce a fluid-tight seal.

2.48. "Permit" means an authorization, license, or equivalent control document issued by the State to implement the requirements of the UIC Program. "Permit" includes an area permit and a UIC Emergency Permit. "Permit" does not include UIC authorization by rule or any permit which has not yet been the subject of final agency action, such as a "draft permit".

2.49. "Person" means an individual, association, partnership, corporation, municipality, State, Federal, or Tribal agency, or an agency or employee thereof.

2.50. "Plugging" means the act or process of stopping the flow of water, oil or gas into or out of a "formation" through a borehole or well penetrating that formation.

2.51. "Plugging record" means a systematic listing of permanent or temporary abandonment of water, oil, gas, test, exploration and waste injection wells, and may contain a well log, description of amounts and types of plugging material used, the method employed for plugging, a description of formations which are sealed and a graphic log of the well showing formation location, formation thickness, and location of plugging structures.

2.52. "Point of Injection" means for a Class 5 well the last accessible sampling point before the release of waste fluids into the subsurface environment. For example, the point of injection of a septic system might be the distribution box-the last accessible sampling point before the waste fluids drain into the leachfield and the underlying soils. For a dry well, it is likely to be the well bore itself.

2.53. "Post-injection site care" means appropriate monitoring and other actions (including corrective action) needed following cessation of injection to ensure that USDWs are not endangered by Class 6 wells, as required under subsection 13.9.

2.54. "Pressure" means the total load or force per unit area acting on a surface.

2.55. "Pressure front" means the zone of elevated pressure that is created by the injection of carbon dioxide into the subsurface. For the purposes of this subpart, the pressure front of a carbon dioxide plume refers to a zone where there is a pressure differential sufficient to cause the movement of injected fluids or formation fluids into a USDW.

2.56. "Project" means a group of "wells" in a single operation.

2.57. "Public water system" means a system for the provision to the public of piped water for human consumption, if such system has at least fifteen (15) individuals. Such term includes (a) any collection, treatment, storage, and distribution facilities under control of the operator of such system and used primarily in connection with such system, and (b) any collection or pretreatment storage facilities not under such control which are used primarily in connection with such system.

2.58. "Radioactive waste" means any waste which contains radioactive material in concentrations which exceed those listed in (10) CFR Part 20, Appendix B, Table II, Column 2.

2.59. "RCRA" means the Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act of 1976 (Pub. L. 94-580, as amended by Pub. L. 95-609, 42 USC 6901 et seq.)

2.60. "Regional Administrator" means the Regional Administrator of Region 3 of the U.S. Environmental Protection Agency or the authorized representative of the Regional Director.

2.61. "Safe Drinking Water Act" (SDWA) means the Safe Drinking Water Act (Pub. L. 95-523 as amended by Pub. L. 95-1900; 42 USC section 3000 et seq.

2.62. "Sanitary waste" means liquid or solid waste originating solely from humans and human activities, such as wastes collected from toilets, showers, wash basins, sinks used for cleaning domestic areas, sinks used for food preparation, clothes washing operations, and sinks or washing machines where food and beverage serving dishes, glasses, and utensils are cleaned. Sources of these wastes may include single or multiple residences, hotels and motels, restaurants, bunkhouses, schools, ranger stations, crew quarters, guard stations, campgrounds, picnic grounds, day-use recreation areas, other commercial facilities, and industrial facilities provided the waste is not mixed with industrial waste.

2.63. "Schedule of compliance" means a schedule of remedial measures included in a "permit", including an enforceable sequence of interim requirements (for example, actions, operations, or milestone events) leading to compliance with the SDWA and State Act and rules.

2.64. "Septic system" means a "well" that is used to emplace sanitary waste below the surface and is typically comprised of a septic tank and subsurface fluid distribution system or disposal system.

2.65. "Site" means the land or water where any "facility or activity" is physically located or conducted, including adjacent land used in connection with the facility or activity.

2.66. "Site closure" means the point/time, as determined by the Director following the requirements under subsection 13.9., at which the owner or operator of a geologic sequestration site is released from post-injection site care responsibilities.

2.67. "Sole or principal source aquifer" means an aquifer which has been designated by the Administrator pursuant to section 1424 (a) or (e) of the SDWA.

2.68. "State" means the State of West Virginia.

2.69. "State Act" means the State Water Pollution Control Act, W. Va. Code §22-11-1 et seq.

2.70. "State/EPA agreement" means an agreement between the Regional Administrator and the State which coordinates EPA and State activities, responsibilities and programs.

2.71. "Stratum" (plural strata) means a single sedimentary bed or layer, regardless of thickness, that consists of generally the same kind of rock material.

2.72. "Subsidence" means the lowering of the natural land surface in response to: Earth movements; lowering of fluid pressure; removal of underlying supporting material by mining or solution of solids, either artificially or from natural causes; compaction due to wetting (Hydro compaction); oxidation of organic matter in soils; or added load on the land surface.

2.73. "Subsurface distribution system" means an assemblage of perforated pipes, drain tiles, or other similar mechanisms intended to distribute fluids below the surface of the ground.

2.74. "Surface casing" means the first string of well casing to be installed in the well.

2.75. "Total dissolved solids" means the total dissolved (filterable) solids as determined by use of the method specified in 40 CFR Part 136.

2.76. "Transmissive Fault" is a type of fault or fracture that has sufficient permeability and vertical extent to allow fluids to move between formations.

2.77. "UIC" means the Underground Injection Control program under Part C of the Safe Drinking Water Act, including an approved State program.

2.78. "Underground injection" means the subsurface emplacement of fluids into a well, subsurface distribution system, or improved sinkhole.

2.79. "Underground source of drinking water" (USDW) means an "aquifer" or its portion:

a2.79.1. which supplies any public water system; or

b2.79.2. which contains a sufficient quantity of groundwater to supply a public water system; and

~~b.12.79.2.a.~~ currently supplies drinking water for human consumption; or

~~b.22.79.2.b.~~ contains fewer than 10,000 mg/1 total dissolved solids; and

e2.79.3. which is not an exempted aquifer.

2.80. "Well" for the purpose of the State UIC Program, means a bored, drilled or driven shaft, or a dug hole whose depth is greater than the largest surface dimension, an improved sinkhole; or, a subsurface fluid distribution system.

2.81. "Well injection" means the subsurface emplacement of fluids through a well.

2.82. "Well plug" means a watertight and gastight seal installed in a borehole or well to prevent movement of fluids.

2.83. "Well stimulation" means several processes used to clean the well bore, enlarge channels, and increase pore space in the interval to be injected thus making it possible for wastewater to move more readily into the formation, and includes (1) surging, (2) jetting, (3) blasting, (4) acidizing, (5) hydraulic fracturing.

2.84. "Well monitoring" means the measurement, by on-site instruments or laboratory methods, of the quality of water in a well.

2.85. "Wetlands" means those areas that are inundated and saturated by surface groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas such as sloughs, wet meadows, mudflats, sandflats and natural ponds.

§47-13-3. Criteria for Exempted Aquifer Status.

3.1. An aquifer or a portion thereof which meets the criteria for an "underground source of drinking water" in section 2 may be determined to be an exempted aquifer if it meets the following criteria:

a3.1.1. It does not currently serve as a source of drinking water; and

b3.1.2. It cannot now and will not in the future serve as a source of drinking water because:

~~b.13.1.2.a.~~ It is a mineral, hydrocarbon or geothermal energy producing, or can be demonstrated by a permit applicant as part of a permit application for a Class 2 or 3 operation to contain minerals or hydrocarbons that considering their quantity and location are expected to be commercially producible;

~~b.23.1.2.b.~~ It is situated at a depth or location which makes recovery of water for drinking water purposes economically or technologically impractical;

~~b.33.1.2.c.~~ It is so contaminated that it would be economically or technologically impractical to render the water fit for human consumption; or

~~b.43.1.2.d.~~ It is located over a Class 3 well mining area subject to subsidence or catastrophic collapse; or

~~e.3.1.3.~~ The Total Dissolved Solids content of the groundwater is more than three thousand (3,000) and less than ten thousand (10,000) mg/l and it is not reasonably expected to supply a public water system.

~~d.3.1.4.~~ The areal extent of an aquifer exemption for a Class II EOR/EGR well may be expanded for the exclusive purpose of Class 6 injection for geologic sequestration if:

~~d.1~~ ~~3.1.4.a.~~ It is not currently a source of drinking water; and

~~d.2~~ ~~3.1.4.b.~~ Total dissolved solids content of the ground water is >3,000 but <10,000 mg/l; and

~~d.3~~ ~~3.1.4.c.~~ It is not reasonably expected to supply a public water system.

§47-13-4. Classes of Wells.

4.1. Class 1.

~~a.4.1.1.~~ Wells used by generators of hazardous waste or owners or operators of hazardous waste management facilities to inject hazardous waste beneath the lowermost formation containing, within 1/4 mile of the well bore, an underground source of drinking water.

~~b.4.1.2.~~ Other industrial and municipal disposal wells which inject fluids beneath the lowermost formation containing, within 1/4 mile of the well bore, an underground source of drinking water.

~~e.4.1.3.~~ It also includes wells not covered in Class 4 that inject radioactive material listed in 10 CFR Part 20, Appendix B, Table II, Column 2.

4.2. Class 2. Wells injecting fluids:

~~a.4.2.1.~~ Which are brought to the surface in connection with natural gas storage, or oil or natural gas production and may be commingled with waste waters from gas plants which are an integral part of production operations, unless those waters are classified as a hazardous waste at the time of injection;

~~b.4.2.2.~~ For enhanced recovery of oil or natural gas; and

~~e.4.2.3.~~ For storage of hydrocarbons which are liquid at standard temperature and pressure.

4.3. Class 3. Wells which inject for extraction of minerals including:

~~a.4.3.1.~~ Mining of sulphur by the Frasch process;

~~b.4.3.2.~~ In situ production of uranium or other metals. This category includes only in situ production from ore bodies which have not been conventionally mined. Solution mining of conventional mines such as stopes leaching is included in Class 5;

~~e.4.3.3.~~ Solution mining of salts or potash; and

~~4.3.d. In situ combustion of fossil fuel.~~

4.4. Class 4.

~~a~~4.4.1. Wells used by generators of hazardous waste or by owners or operators of hazardous waste management facilities, or by owners or operators of radioactive waste disposal sites, to dispose of hazardous wastes which cannot be classified under subdivisions 4.1.~~a~~1., 4.1.~~b~~2., or 4.1.~~c~~3.

4.5. Class 5. Injection wells not included in Classes 1, 2, 3, 4, or 6. Class 5 wells include, but are not limited to:

~~a~~4.5.1. Cesspools, including multiple dwelling, community or regional cesspools, or other devices that receive wastes, which have an open bottom and sometimes have perforated sides. The UIC requirements do not apply to single family residential cesspools nor to nonresidential cesspools which receive solely sanitary wastes and have the capacity to serve fewer than twenty (20) persons a day.

~~b~~4.5.2. Sand backfill and other backfill wells used to inject a mixture of water and sand, mill tailings or other solids into mined out portions of subsurface mines provided what is injected is not a radioactive waste.

~~c~~4.5.3. Septic system wells used to inject the waste or effluent from a multiple dwelling, business establishment, community or regional business establishment septic tank. The UIC requirements do not apply to single family residential septic system wells, nor to nonresidential septic system wells which are used solely for the disposal of sanitary waste and have the capacity to serve fewer than twenty (20) persons a day.

~~d~~4.5.4. Injection wells associated with the recovery of geothermal energy for heating, aquaculture and production of electric power.

~~e~~4.5.5. Wells used for solution mining of conventional mines such as stopes leaching.

~~f~~4.5.6. Injection wells used for in situ recovery of lignite, coal, tar sands, and oil shale.

~~g~~4.5.7. Wells used to inject spent brine into the same formation from which it was withdrawn after extraction of halogens or their salts.

~~h~~4.5.8. Injection wells used in experimental technologies.

~~i~~4.5.9. Wells for waste disposal into solution cavities in carbonate formations.

~~j~~4.5.10. Sinkholes used for the disposal of sewage or any other waste.

~~k~~4.5.11. Air conditioning return flow wells used to return to the supply aquifer the water used for heating or cooling in a heat pump.

~~l~~4.5.12. Cooling water return flow wells used to inject water previously used for cooling.

~~m~~4.5.13. Drainage wells used to drain surface fluid, primarily storm runoff, into a subsurface formation.

~~n~~4.5.14. Dry wells used for the injection of wastes into a subsurface formation.

~~o~~4.5.15. Recharge wells used to replenish the water in an aquifer.

~~p~~4.5.16. Salt water intrusion barrier wells used to inject water into the fresh water aquifer to prevent the intrusion of salt water into the fresh water.

~~q~~4.5.17. Subsidence control wells (not used for the purpose of oil or natural gas production) used to inject fluids into a non-oil or gas producing zone to reduce or eliminate subsidence associated with the overdraft of fresh water.

4.6. Class 6.

~~a~~4.6.1. Wells used to inject carbon dioxide (CO₂) into rock formations. Wells that are not experimental in nature that are used for geologic sequestration of carbon dioxide beneath the lowermost formation containing a USDW; or, wells used for geologic sequestration of carbon dioxide that have been granted a waiver of the injection depth requirements pursuant to requirements at subsection 14.8.~~d4~~. of this chapter; or, wells used for geologic sequestration of carbon dioxide that have received an expansion to the areal extent of an existing Class 2 enhanced oil recovery or enhanced gas recovery aquifer exemption pursuant to section 13.3 and 40 CFR 144.7(d).

§47-13-5. Area of Review.

5.1. The Director shall select the methods by which the area of review shall be established for each injection well or each field, project, or area of the State.

5.2. The area of review may be defined as either:

~~a~~5.2.1. The zone of endangering influence as determined in accordance with subdivision 5.3.a; or

~~b~~5.2.2. An area within a fixed radius around each injection well as determined in accordance with subdivision ~~e~~5.3.3.

5.3. Zone of endangering influence. The zone of endangering influence shall be:

~~a~~5.3.1. In case of application(s) for well permit(s) under subsection 14.3, that area the radius of which is the horizontal distance from the injection well in which the pressures in the injection zone may cause the migration of the injection and/or formation fluid into an underground source of drinking water; or

~~b~~5.3.2. In the case of an application for an area permit under subsection 14.4, the area of the project plus a circumscribing area, the width of which is the horizontal distance for the perimeter of the project, in which the pressures in the injection zone may cause the migration of the injection and/or formation fluid into an underground source of drinking water. Computation of the zone of endangering influence should be based upon but not limited to, the parameters listed below and should be calculated for an injection time period equal to the expected life of the facility. The ~~Thisis~~ Theis equation is an example of one possible objective method:

Where "r" is equal to the square root of a quantity which consists of a numerator divided by the denominator where the numerator is equal to 2.25 multiplied by "K" multiplied by "H" multiplied by "t"; and, the denominator is equal to "S" multiplied by 10 to the "x" power. And, where "x" is equal to a numerator divided by a denominator, where the numerator is equal to four multiplied by "pi" multiplied by

"K" multiplied by "H" multiplied [by the quantity equal to the product of ("h(subscript w)" minus "h(subscript bo)")] multiplied by "S(subscript p)G(subscript b)"; and, the denominator is equal to 2.3 multiplied by "Q". (See Figure 47-13-5 at the end of this rule)

~~b.1~~ 5.3.2.a. Where "r" is equal to the radius of endangering influence from injection well (length):

~~b.1.A~~ 5.3.2.a.1. "K" is equal to hydraulic conductivity of the injection zone (length/time);

~~b.1.B~~ 5.3.2.a.2. "H" is equal to thickness of the injection zone (length);

~~b.1.C~~ 5.3.2.a.3. "t" is equal to time of injection (time);

~~b.1.D~~ 5.3.2.a.4. "S" is equal to storage coefficient (dimensionless);

~~b.1.E~~ 5.3.2.a.5. "Q" is equal to injection rate (volume/time);

~~b.1.F~~ 5.3.2.a.6. "h(subscript bo)" is equal to observed original hydrostatic head of injection zone (length) measured from the base of the lowermost underground source of drinking water;

~~b.1.G~~ 5.3.2.a.7. "h(subscript w)" is equal to hydrostatic head of underground source of drinking water (length) measured from the base of the lowest underground source of drinking water;

~~b.1.H~~ 5.3.2.a.8. "S(subscript p)G(subscript b)" is equal to specific gravity of fluid in the injection zone (dimensionless);

~~b.1.I~~ 5.3.2.a.9. "pi" is equal to 3.142 (dimensionless)

~~b.2~~ 5.3.2.b. The above equation is based on the following assumptions:

~~b.2.A~~ 5.3.2.b.1. The injection zone is homogenous and ~~isotropic~~; isotropic;

~~b.2.B~~ 5.3.2.b.2. The injection zone has infinite area extent;

~~b.2.C~~ 5.3.2.b.3. The injection well penetrates the entire thickness of the injection zone;

~~b.2.D~~ 5.3.2.b.4. The well diameter is infinitesimal compared to "r" when injection time is longer than a few minutes; and

~~b.2.E~~ 5.3.2.b.5. The emplacement of fluid into the injection zone creates instantaneous increase in pressure.

e5.3.3. Fixed radius:

~~e.1~~ 5.3.3.a. In the case of application(s) for well permit(s), a fixed radius around the well may be used but not less than 1/4 mile, except for:

~~e.1.A~~ 5.3.3.a.1. For Class1 hazardous waste wells, the area of review is a 2 mile radius.

~~e.2~~ 5.3.3.b. In the case of an application for an area permit, a fixed width may be used but not less than 1/4 mile for the circumscribing area.

~~e-3~~ 5.3.3.c. In determining the fixed radius, the following factors shall be taken into consideration: the chemistry of the injected and formation fluids; geology; hydrogeology; population and groundwater use and dependence; and historical practices in the area.

5.4. For Class 6 wells, the area of review is the region surrounding the geologic sequestration project where USDWs may be endangered by the injection activity. The area of review is delineated using computational modeling that accounts for the physical and chemical properties of all phases of the injected carbon dioxide stream and is based on available site characterization, monitoring, and operational data.

§47-13-6. Corrective Action and Mechanical Integrity.

6.1. Corrective Action. In determining the adequacy of corrective action proposed by the applicant and in determining the additional steps needed to prevent fluid migration into underground sources of drinking water, the Director shall consider the following criteria and factors:

- ~~a~~6.1.1. Nature and volume of injected fluid;
- ~~b~~6.1.2. Nature of native fluids or by-products of injection;
- ~~c~~6.1.3. Geology;
- ~~d~~6.1.4. Hydrology;
- ~~e~~6.1.5. History of the injection operation;
- ~~f~~6.1.6. Completion and plugging reports;
- ~~g~~6.1.7. Abandonment procedures in effect at the time the well was abandoned;
- ~~h~~6.1.8. Hydraulic connections with the underground sources of drinking water; and
- ~~i~~6.1.9. Potentially effected population.
- ~~j~~6.1.10. Reliability of the procedures used to identify abandoned wells; and
- ~~k~~6.1.11. Any other factors which might affect the movement of fluids into or between USDWs.

6.2. Mechanical Integrity.

~~a~~6.2.1. An injection well has mechanical integrity if:

- ~~a-1~~ 6.2.1.a. There is no significant leak in the casing, tubing, or packer; and
- ~~a-2~~ 6.2.1.b. There is no significant fluid movement into an underground source of drinking water through vertical channels adjacent to the injection well bore.

~~b~~6.2.2. One of the following methods must be used to evaluate the absence of significant leaks under paragraph 6.2.~~a-1~~1.a. of this section:

~~b.1~~ 6.2.2.a. Monitoring of annulus pressure; or

~~b.2~~ 6.2.2.b. Pressure test with liquid or gas.

e6.2.3. The absence of significant fluid movement under paragraph 6.2.a.21.b. of this section may be demonstrated by:

e1 6.2.3.a. For Class 2 wells, any requirements determined necessary under subdivision 9.1.a1.;

e2 6.2.3.b. For Class 3 wells where the nature of the casing precludes the use of logging techniques prescribed at 6.2.e.33.c. of this section, cementing records demonstrating the presence of adequate cement to prevent such migration;

e3 6.2.3.c. The results of a temperature or noise log;

e4 6.2.3.d. For Class 3 wells where the Director elects to rely on cementing records to demonstrate the absence of significant fluid movement, the monitoring program prescribed by subsection 10.4 shall be designed to verify the absence of significant fluid movement;

e5 6.2.3.e. For Class 6 wells, to evaluate the absence of significant leaks under 6.2.a1. of this section, owners or operators must, following an initial annulus pressure test, continuously monitor injection pressure, rate, injected volumes; pressure on the annulus between tubing and long-string casing; and annulus fluid volume as specified in subsection 13.6.a.51.e.;

e5.A 6.2.3.e.1. At least once per year, the owner or operator must use an approved tracer survey such as an oxygen-activation log or a temperature or noise log to determine the absence of significant fluid movement under 6.2.b2. of this section.

e5.B 6.2.3.e.2. If required by the Director, at a frequency specified in the testing and monitoring plan required at subsection 13.6.b2., the owner or operator must run a casing inspection log to determine the presence or absence of corrosion in the long-string casing.

e5.C 6.2.3.e.3. The Director may require any other test to evaluate mechanical integrity under 6.2.c.5. of this section. Also, the Director may allow the use of a test to demonstrate mechanical integrity other than those listed above with the written approval of the Administrator. To obtain approval for a new mechanical integrity test (MIT), the Director must submit a written request to the Administrator setting forth the proposed test and all technical data supporting its use. The Administrator may approve the request if he or she determines that it will reliably demonstrate the mechanical integrity of wells for which its use is proposed. Any alternate method approved by the Administrator will be published in the FEDERAL REGISTER and may be used in all States in accordance with applicable State law unless its use is restricted at the time of approval by the Administrator.

e5.D 6.2.3.e.4. In conducting and evaluating the tests enumerated in this section or others to be allowed by the Director, the owner or operator and the Director must apply methods and standards generally accepted in the industry. When the owner or operator reports the results of mechanical integrity tests to the Director, he/she shall include a description of the test(s) and the method(s) used. In making his/her evaluation, the Director must review monitoring and other test data submitted since the previous evaluation.

~~e.5.E~~ 6.2.3.e.5. The Director may require additional or alternative tests if the results presented by the owner or operator under paragraphs A through D of this subsection are not satisfactory to the Director to demonstrate that there is no significant leak in the casing, tubing, or packer, or to demonstrate that there is no significant movement of fluid into a USDW resulting from the injection activity as stated in 6.2.a~~1~~. of this section; or

~~d~~6.2.4. The Director may allow the use of a test to demonstrate mechanical integrity other than those listed in subdivisions 6.2.b~~2~~. and 6.2.e~~3~~. of this section with the written approval of the Director of the U.S. Environmental Protection Agency.

e6.2.5. In conducting and evaluating the tests enumerated in this section or others to be allowed by the Director, the owner or operator and the Director shall apply methods and standards generally accepted in the industry. When the owner or operator reports the results of mechanical integrity tests to the Director, he shall include a description of the test(s) and the method(s) used. In making his/her evaluation, the Director shall review monitoring and other test data submitted since the previous evaluation.

§47-13-7. Requirements for Wells Injecting Hazardous Waste.

7.1. Applicability. The rules in this section and section 8 apply to all generators of hazardous waste, and to the owners or operators of all hazardous waste management facilities, using any Class 1 well to inject hazardous waste accompanied by a manifest.

7.2. Authorization. The owner or operator of any Class 1 well that is used to inject hazardous wastes accompanied by a manifest or delivery document shall apply for authorization to inject within six (6) months of the effective date of this rule.

7.3. Requirements. In addition to requiring compliance with the applicable requirements of section 8, the Director shall, for each facility meeting the requirements of subsection 7.2 require that the owner or operator comply with the following:

~~a~~7.3.1. Notification. The owner or operator shall comply with the notification requirements in the Hazardous Waste Management Rule, 33CSR20-4, (W. Va. Code §22-18).

~~b~~7.3.2. Identification number. The owner or operator shall comply with the requirements in the Hazardous Waste Management Rule, 33CSR20-8. (W. Va. Code §22-18).

e7.3.3. Manifest system. The owner or operator shall comply with the applicable record keeping and reporting requirements for manifested wastes in the Hazardous Waste Management Rules, 33CSR20-8. (W. Va. Code §22-18).

~~d~~7.3.4. Manifest discrepancies. The owner or operator shall comply with the Hazardous Waste Management Rules, 33CSR20-8. (W. Va. Code §22-18).

e7.3.5. Operating record. The owner or operator shall comply with the Hazardous Waste Management Rules, 33CSR20-8. (W. Va. Code §22-18).

~~f~~7.3.6. Annual report. The owner or operator shall comply with the Hazardous Waste Management Rules, 33CSR20-8. (W. Va. Code §22-18).

~~g~~7.3.7. Unmanifested waste report. The owner or operator shall comply with the Hazardous Waste Management Rules, 33CSR20-8. (W. Va. Code §22-18).

~~h~~7.3.8. Personnel training. The owner or operator shall comply with the applicable personnel training requirements in the Hazardous Waste Management Rules, 33CSR20-8. (W. Va. Code §22-18).

~~i~~7.3.9. Certification of closure. When abandonment is completed, the owner or operator must submit to the Director certification by the owner or operator and certification by an independent registered professional engineer that the facility has been closed in accordance with the specifications in subsection 14.7.~~f~~ 6 of this rule.

7.4. Location Standards. Owners and operators of all new hazardous waste injection wells shall comply with the following location standards:

~~a~~7.4.1. Seismic Risk Zones. Wells shall not be located in Seismic Risk Zone 2 (Expected Moderate Damage). The following counties are located in Seismic Risk Zone 2: Jefferson, Berkeley, Morgan (east of Cacapon District), Hampshire (Bloomery, Capon Districts), Hardy (Capon, Lost River Districts), Pendleton (Bethel, Sugar Grove Districts), Pocahontas (south of the Green Bank District), Greenbrier, Monroe, Summers, Mercer, Raleigh (Slab Fork, Shady Spring, and Richmond Districts), McDowell and Wyoming (south of Oceana District).

~~b~~7.4.2. Subsurface Mining Areas. The borehole of any hazardous waste injection well shall not pass through a cavity created by subsurface mining.

~~e~~7.4.3. Carbonate Formations. The borehole of any hazardous waste injection well shall not pass through any cavity created by solution of carbonate rock above the injection zone.

~~d~~7.4.4. Inundation Danger Zone. Hazardous waste injection wells shall not be located where inundation from dam failure or a 100 year flood could occur.

~~e~~7.4.5. Designated Wetlands. Hazardous waste injection wells shall not be located in wetlands.

§47-13-8. Criteria and Standards Applicable to Class 1 Wells.

8.1. General. This section sets forth requirements for underground injection control programs to regulate Class 1 wells.

~~a~~8.1.1. Existing well means a Class I well which was authorized prior to August 25, 1988 or a well which has become a Class I well as a result of a change in the definition of the injected waste into a hazardous waste.

8.2. Construction Requirements. The Director shall prescribe requirements for the construction of Class 1 injection wells. Existing wells shall achieve compliance with such requirements according to a specific compliance schedule established by the Director as a condition of the permit. New wells shall be in compliance with construction requirements before injection operations begin. The owner or operator of a proposed injection well shall submit plans to the Director for testing, drilling, and construction and obtain the approval of the initial plans as a condition of the permit. The Director's approval of any modifications of the plan shall be obtained before incorporating them into the construction of the injection well. At a minimum, such requirements shall prescribe that:

~~a~~8.2.1. Each Class 1 well shall be sited in such a fashion that it injects into a formation which is below the lowermost formation containing within 1/4 mile of the well bore, an underground source of drinking water, and which has an overlying confining bed that is free of known faults or fractures within

the area of review. The injection zone shall have sufficient permeability, porosity, thickness and areal extent to prevent migration of fluids into USDWs. The confining zone shall be laterally continuous and free of transecting, transmissive faults or fractures over an area sufficient to prevent the movement of fluids into a USDW. The siting shall contain at least one formation of sufficient thickness and with lithologic and stress characteristics capable of preventing vertical propagation of fractures.

~~a-1~~ 8.2.1.a. Owners or operators must demonstrate that: 1) the confining zone is separated by at least one sequence of permeable and less permeable strata to prevent fluid migration; or 2) the piezometric surface of the fluid in the injection zone is less than the piezometric surface of the lowermost USDW; or 3) no USDW is present; or 4) would not endanger USDWs if the site does not meet the requirements in (1), (2), or (3).

~~b~~8.2.2. Each Class 1 well shall be cased, and cemented to prevent the movement of fluids into or between underground sources of drinking water, and to prevent potential leaks of fluids from the well. The casing and cement used in the construction of each newly drilled well shall be designed for the life expectancy of the well and post-closure period. The well construction must permit use of appropriate testing devices and workover tools, and continuous monitoring of tubing and casing. In determining and specifying casing and cementing requirements, the Director shall consider the following factors:

~~b-1~~ 8.2.2.a. Depth to the injection zone;

~~b-2~~ 8.2.2.b. Injection pressure (external pressure, internal pressure, axial loading, etc.);

~~b-3~~ 8.2.2.c. Hole size;

~~b-4~~ 8.2.2.d. Size and grade of all casing strings (wall thickness, diameter, nominal weight, length, joint specification, construction material, etc.);

~~b-5~~ 8.2.2.e. Corrosiveness of injected fluid, formation fluids, and temperatures;

~~b-6~~ 8.2.2.f. Lithology of possible injection and confining intervals; and

~~b-7~~ 8.2.2.g. Type or grade of cement.

8.2.2.h. Quantity and chemical composition of the injected fluid.

~~e~~8.2.3. All Class 1 injection wells, except for those municipal wells injecting only non-corrosive wastes, shall inject fluids through tubing and packer set immediately above the injection zone. The tubing and packer shall be designed for the expected service.

~~e-1~~ 8.2.3.a. The use of other alternatives to a packer may be allowed with the written approval of the Director. To obtain approval, the operator shall submit a written request to the Director, which shall set forth the proposed alternative and all technical data supporting its use. The Director shall approve the request only if the alternative method will reliably provide a comparable level of protection to underground sources of drinking water. The Director may approve an alternative method solely for an individual well or for general use.

~~e-2~~8.2.3.b. In determining and specifying requirements for tubing and packer, the Director shall consider the following factors:

~~e-2-A~~ 8.2.3.b.1. Depth of setting;

~~e.2.B~~ 8.2.3.b.2. Characteristics of injection fluid (chemical content, density, etc.);

~~e.2.C~~ 8.2.3.b.3. Injection pressure;

~~e.2.D~~ 8.2.3.b.4. Annular pressure;

~~e.2.E~~ 8.2.3.b.5. Rate, temperature and volume of injected fluid; and

~~e.2.F~~ 8.2.3.b.6. Size of casing; and

~~e.2.G~~ 8.2.3.b.7. Tubing tensile, burst, and collapse strengths.

~~e.3~~ 8.2.3.c. The Director may approve the use of a fluid seal if the conditions in this section are met.

~~e.3.A~~ 8.2.3.c.1. Operator demonstrates that seal will provide a level of protection comparable to a packer;

~~e.3.B~~ 8.2.3.c.2. Operator demonstrates that staff is adequately trained to operate and maintain the well;

~~e.3.C~~ 8.2.3.c.3. The permit specifies limitations on variations in annular pressure and loss of annular fluid;

~~e.3.D~~ 8.2.3.c.4. The design and construction of the well allow continuous monitoring of the annular pressure and mass balance of annular fluid; and

~~e.3.E~~ 8.2.3.c.5. A secondary system is used to monitor the interface between the annulus fluid and the injection fluid and the permit contains requirements for testing the system every three months and recording the results.

~~e.4~~ 8.2.3.d. One surface casing string shall extend into the confining bed below the lowest formation that contains a USDW and be cemented by circulating cement from the base of the casing to the surface, using a minimum of 120% of the calculated annular volume.

~~e.5~~ 8.2.3.e. At least one long string casing, using a sufficient number of centralizers, shall extend to the injection zone and shall be cemented by circulating cement to the surface in one or more stages of sufficient quantity and quality to withstand the maximum operating pressure; and in a quantity no less than 120% of the calculated volume necessary to fill the annular space. The Director may require more than 120% when the geology or other circumstances warrant it.

~~e.6~~ 8.2.3.f. Circulation of cement may be accomplished by staging. The Director may approve an alternative method of cementing in cases where the cement cannot be recirculated to the surface, provided the cement is continuous and does not allow fluid movement behind the well bore.

~~e.7~~ 8.2.3.g. Casings must be rated to have sufficient structural strength to withstand: First, the maximum burst and collapse pressures which may be experienced during construction, operation and closure of the well; and second, the maximum tensile stress which may be experienced at any point along the length of the casing during the construction, operation, and closure of the well. Cement and cement additives must be of sufficient quality and quantity to maintain integrity over the design life of the well.

~~d~~8.2.4. All parts of Class 1 wells which will come into contact with corrosive fluids (whether injected or in the native environment) shall be constructed of corrosion resistant material.

~~e~~8.2.5. Logs and other tests shall be conducted during the drilling and construction of new Class 1 wells. A descriptive report interpreting the results of such logs and tests shall be prepared by a knowledgeable log analyst and submitted to the Director. At a minimum such logs and tests shall include:

~~e-1~~ 8.2.5.a. Directional surveys conducted on all holes, including pilot holes, at sufficiently frequent intervals to assure that vertical avenues for fluid migration in the form of diverging holes are not created during drilling.

~~e-2~~ 8.2.5.b. For surface casing intended to protect underground sources of drinking water:

~~e-2.A~~ 8.2.5.b.1. Resistivity, spontaneous potential and caliper logs before the casing is installed; and

~~e-2.B~~ 8.2.5.b.2. A cement bond, temperature, or density log after the casing is set and cemented.

~~e-3~~ 8.2.5.c. For intermediate and long strings of casing intended to facilitate injection:

~~e-3.A~~ 8.2.5.c.1. Resistivity, spontaneous potential, porosity, caliper and gamma ray logs before the casing is installed;

~~e-3.B~~ 8.2.5.c.2. Fracture finder logs in appropriate situations as prescribed by the Director; and

~~e-3.C~~ 8.2.5.c.3. A cement bond, temperature, or density log after the casing is set and cemented.

~~e-4~~ 8.2.5.d. Cores of the injection and confining zones must be taken. Fluid temperature, pH, conductivity, pressure, and static fluid level must be measured in the injection zone.

~~f~~8.2.6. At a minimum, the measurements required in subsection 8.2.~~e-4~~5.d. and the following information concerning the injection formation shall be determined for the new Class 1 wells, and submitted to the Director:

~~f-1~~ 8.2.6.a. Fluid pressure;

~~f-2~~ 8.2.6.b. Temperature;

~~f-3~~ 8.2.6.c. Fracture pressure;

~~f-4~~ 8.2.6.d. Other physical and chemical characteristics of the injection matrix;

~~f-5~~ 8.2.6.e. Physical and chemical characteristics of the formation fluids;

~~f-6~~ 8.2.6.f. Compatibility of injected fluids with formation fluids; and

~~f.7~~ 8.2.6.g. Fracture pressure and other physical and chemical characteristics of the confining zones must be recorded.

g8.2.7. Information requirements for Class 1 Hazardous Waste Injection Well Permits.

~~g.1~~ 8.2.7.a. The following is required for each active Class 1 hazardous waste injection well at a facility seeking a UIC permit:

~~g.1.A~~ 8.2.7.a.1. Dates well was operated.

~~g.1.B~~ 8.2.7.a.2. Specifications of all wastes which have been injected in the well, if available.

~~g.2~~ 8.2.7.b. The owner or operator of any existing facility containing one or more active hazardous waste injection wells must submit all available information pertaining to any release of hazardous waste or constituents from any active hazardous waste injection well at the facility.

~~g.3~~ 8.2.7.c. The owner or operator of any facility containing one or more active Class 1 hazardous waste injection wells must conduct preliminary site investigations as are necessary to determine whether a release is occurring, has occurred, or is likely to have occurred.

~~g.4~~ 8.2.7.d. Permit requirements for hazardous waste wells which inject wastes which can react with the injection formation to generate gases shall include 1) Conditions limiting the temperature, pH or acidity of the injected waste and 2) Procedures necessary to assure that pressure imbalances which might cause a backflow or blowout do not occur.

~~h~~8.2.8. Hydrogeologic characteristics of the injection zone should be verified through pump or injectivity tests before injection begins. The Director may witness all logging and testing by this Subpart if desired.

8.3. Abandonment of Class 1 Wells.

~~a~~8.3.1. Class 1 wells shall be abandoned in a manner to be prescribed by the Director under subdivision 14.7.~~f.6~~. At a minimum, the well shall be plugged with cement in a manner which will not allow the movement of fluids either into or between underground sources of drinking water.

~~b~~8.3.2. Placement of cement plugs shall be accomplished by one of the following:

~~b.1~~ 8.3.2.a. The Balance Method;

~~b.2~~ 8.3.2.b. The Dump Bailer Method;

~~b.3~~ 8.3.2.c. The Two-Plug method; or

~~b.4~~ 8.3.2.d. An alternative method approved by the Director which will reliably provide a comparable level of protection to USDW'S.

~~e~~8.3.3. Prior to closure, the owner or operator shall observe and record the pressure decay for a time specified by the Director. The Director shall determine whether the injection activity has conformed with predicted values.

~~d~~8.3.4. Prior to closure, MIT is required to ensure integrity of the long string casing and cement that will be left in the ground. Testing methods may include pressure tests with liquid or gas; radioactive tracer surveys; noise, temperature, pipe evaluation, or cement bond logs; and any other test required by the Director.

~~e~~8.3.5. Prior to closure, the well shall be flushed with a buffer fluid. Each plug used shall be appropriately tagged and tested for seal and stability before closure is completed.

~~f~~8.3.6. The well to be abandoned shall be in a state of static equilibrium with the mud weight equalized top to bottom, either by circulating the mud in the well at least once or a comparable method prescribed by the Director, prior to the placement of the cement plug(s).

~~g~~8.3.7. The owner or operator shall assure, through a performance bond or other appropriate means, the availability of resources necessary for the proper abandonment of the well as required in subdivision 14.7.~~g~~7.

8.4. Operating, Monitoring, and Reporting Requirements.

~~a~~8.4.1. Operating Requirements: The Director shall, under subdivision 14.7.~~e~~3, prescribe requirements governing the operation of injection wells in the permit. Requirements for Class 1 wells shall, at a minimum, specify that:

~~a-1~~ 8.4.1.a. Except during stimulation, injection pressure at the wellhead shall not exceed a maximum which shall be calculated so as to assure that the pressure in the injection zone during injection does not initiate new fractures or propagate existing fractures in the injection zone. In no case shall injection pressure initiate fractures in the confining zone or cause the movement of injection or formation fluids into an underground source of drinking water;

~~a-2~~ 8.4.1.b. Injection between the outermost casing protecting underground sources of drinking water and the well bore is prohibited; and

~~a-3~~ 8.4.1.c. Unless alternative to tubing and packer has been approved, the annulus between the tubing and the long string of casings shall be filled with a fluid approved by the Director and a pressure, also approved by the Director, shall be maintained on the annulus that is greater than the injection pressure.

~~a-4~~ 8.4.1.d. The owner/operator must notify the Director by writing at least 30 days before conducting any workovers.

~~b~~8.4.2. Monitoring Requirements: The Director shall prescribe requirements for the monitoring of the injection fluids, the injection well, and the underground sources of drinking water that could potentially be affected by the injection. Monitoring requirements shall, at a minimum, include:

~~b-1~~ 8.4.2.a. Testing of the injected fluids with sufficient frequency to yield representative data of its characteristics;

~~b-2~~ 8.4.2.b. Continuous recording devices to monitor injection pressure, temperature, flow rate and volume, and the pressure on the annulus between the tubing and the long strings of casing;

~~b-3~~ 8.4.2.c. Mechanical integrity must be maintained at all times. Demonstration of mechanical integrity at least every five (5) years during the life of the well;

~~b.4~~ 8.4.2.d. Type, number and location of wells within the area of review to monitor any migration of fluids into and pressure in the underground sources of drinking water with the parameters to be measured and the frequency of monitoring specified; and

~~b.5~~ 8.4.2.e. The maintenance of the results of required monitoring for at least three (3) years.

~~b.6~~ 8.4.2.f. The owner/operator must also install automatic alarms and shut off systems as described in this section, designed to sound and shut-in the well when pressures and flow rates or other parameters approved by the Director exceed a range and/or gradient specified in the permit. If an automatic alarm or shutdown is triggered, the owner or operator shall immediately investigate the cause. If the well appears or is found to be lacking mechanical integrity, the owner or operator shall:

~~b.6.A~~ 8.4.2.f.1. Cease injection unless authorized by the Director to continue or resume injection;

~~b.6.B~~ 8.4.2.f.2. Take all necessary steps to determine the presence or absence of a leak; and

~~b.6.C~~ 8.4.2.f.3. Notify the Director within 24 hours after the alarm or shutdown.

~~b.7~~ 8.4.2.g. Owners/operators must show that well design will not be compromised by adverse reactions between well materials and waste stream. The Director shall require continuous corrosion monitoring of the construction materials in wells injecting corrosive waste, and may require such monitoring for other waste, by placing coupons of the well construction materials in contact with the waste stream; routing the waste stream through a loop constructed with well material; or using an alternative method approved by the Director. If a corrosion monitoring program is required: One, the test shall use materials identical to those used in well's construction, and such materials must be continuously exposed to the operating pressures and temperatures and flow rates; and Two, the owner or operator shall monitor the materials for loss of mass, thickness, cracking, pitting and other signs of corrosion quarterly.

~~b.8~~ 8.4.2.h. Owners of Class 1 wells injecting hazardous waste shall conduct mechanical integrity testing as follows:

~~b.8.A~~ 8.4.2.h.1. The long string casing, injection tube, and annular seal shall be tested by an approved pressure test with a liquid or gas annually and whenever there has been a well workover;

~~b.8.B~~ 8.4.2.h.2. The bottom-hole cement shall be tested by means of an approved radioactive tracer survey annually;

~~b.8.C~~ 8.4.2.h.3. An approved temperature, noise, or other approved log shall be run at least once every five years to test for movement of fluid along the borehole;

~~b.8.D~~ 8.4.2.h.4. Casing inspection logs shall be run whenever the owner or operator conducts a workover in which the injection string is pulled, unless the Director waives this requirement due to well construction or other factors which limit the test's reliability, or based upon the satisfactory results of a casing inspection log run within the previous five years. The Director may require a casing inspection log every five years, if he is concerned about the integrity of the long string casing; and

~~b.8.E~~ 8.4.2.h.5. Any other test approved by the Director may also be used.

~~b.9~~ 8.4.2.i. Owners shall develop an ambient monitoring program based on an assessment of the potential for fluid movement. At a minimum, the Director shall require monitoring of the pressure buildup in the injection zone annually, including a shut down of the well for a time sufficient to observe the pressure fall-off curve. The Director may also require:

~~b.9.A~~ 8.4.2.i.1. Continuous monitoring for pressure changes in the first aquifer overlying the confining zone. When such a well is installed, the owner or operator shall, sample the aquifer quarterly and analyze for constituents specified by the Director;

~~b.9.B~~ 8.4.2.i.2. The use of geophysical techniques to determine the position of the waste front, the water quality in a formation designated by the Director, or to provide other site specific data;

~~b.9.C~~ 8.4.2.i.3. Periodic monitoring of ground water quality in the first aquifer overlying the injection zone and in the lowermost USDW;

~~b.9.D~~ 8.4.2.i.4. Any additional monitoring necessary to determine whether fluids are moving into or between USDWs; and

~~b.9.E~~ 8.4.2.i.5. The Director may require seismicity monitoring when he has reason to believe that the injection activity may cause seismic disturbances.

8.4.2.j. For Class 1 hazardous waste injection wells, testing and monitoring requirements shall include the following requirements for monitoring of the injected wastes:

8.4.2.j.1. The owner or operator shall develop and follow an approved written waste analysis plan that describes the procedures to be carried out to obtain a detailed chemical and physical analysis of a representative sample of the waste, including the quality assurance procedures used. At a minimum, the plan shall specify:

8.4.2.j.1.A. The parameters for which the waste will be analyzed and the rationale for the selection of these parameters;

8.4.2.j.1.B. The test methods that will be used to test for these parameters; and

8.4.2.j.1.C. The sampling method that will be used to obtain a representative sample of the waste to be analyzed.

8.4.2.j.2. The owner or operator shall repeat the analysis of the injected wastes as described in the waste analysis plan at frequencies specified in the waste analysis plan and when process or operating changes occur that may significantly alter the characteristics of the waste stream.

8.4.2.j.3. The owner or operator shall conduct continuous or periodic monitoring of selected parameters as required by the Director.

8.4.2.j.4. The owner or operator shall assure that the plan remains accurate and the analyses remain representative.

~~e~~8.4.3. Reporting requirements: The Director shall prescribe the form, manner, content and frequency of reporting by the operator. The operator shall be required to identify the types of tests and methods used to generate the monitoring data. At a minimum, requirements shall include:

~~e-1~~ 8.4.3.a. Quarterly reports to the Director on:

~~e-1.A~~ 8.4.3.a.1. The physical, chemical, and other relevant characteristics of injection fluids;

~~e-1.B~~ 8.4.3.a.2. Monthly average, maximum, and minimum values for injection pressure, flow rate and volume, and annular pressure;

~~e-1.C~~ 8.4.3.a.3. Monitoring of pressure and quality in underground sources of drinking water as prescribed under paragraph 8.4.b.4; and

~~e-1.D~~ 8.4.3.a.4. Descriptions of any event where operating parameters exceed permit requirements and/or any event that triggered an alarm or shut down device including the response taken.

8.4.3.a.5. The total volume of fluid injected

8.4.3.a.6. Any change in the annular fluid volume:"

~~e-2~~ 8.4.3.b. Reporting with the first quarterly report after the completion of:

~~e-2.A~~ 8.4.3.b.1. Periodic demonstration of mechanical integrity;

~~e-2.A~~ 8.4.3.b.2. Any other test of injection well conducted by the permittee if required by the Director; and

~~e-2.A~~ 8.4.3.b.3. Any well workover results.

~~e-3~~ 8.4.3.c. Written notice to the Director within thirty (30) days after any compliance schedule date whether the permittee has or has not complied with the requirements in question;

~~e-4~~ 8.4.3.d. Immediate reports to the Director of any violation of a permit condition or malfunction of the injection system which may cause fluid migration into or between underground sources of drinking water.

8.5. Information to be Considered by the Director Prior to the Issuance of a Permit.

~~a~~8.5.1. Prior to the issuance of a permit for an existing or new Class 1 well, the Director shall consider the following information: For an existing Class 1 well the Director may rely on the existing State permit file for those items of information listed below which are current and accurate in the State file. For a new Class 1 well, the Director shall require the submission of all the information listed below. For both existing and new Class 1 wells, paragraphs 8.5.~~a-3~~1.c., 8.5.~~a-4~~1.d., and 8.5.~~a-6~~1.f. of this section may be included in the application by reference if the reference is specific in identifying the maps in question and the maps are readily available to the Director. The following information is required:

~~a-1~~ 8.5.1.a. Any increase in the amount of hazardous waste or change in the type of hazardous waste injected;

~~a-2~~ 8.5.1.b. A map showing the injection well(s) for which a permit is sought and the applicable area of review. Within the area of review, the map must show the number or name, and location of all producing wells, injection wells, abandoned wells, dry holes, surface bodies of water, springs, mines (surface and subsurface), quarries, water wells and other pertinent surface features including residences and roads. The map should also show faults, if known or suspected. ~~Only information of public record is required to be included on this map;~~

~~a-3~~ 8.5.1.c. A tabulation of data on all wells within the area of review which penetrate into the proposed injection zone and/or confining zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of plugging and/or completion, and any additional information on these wells as the Director may require;

~~a-3-A~~ 8.5.1.c.1. The protocol used to identify all wells within the area of review, and to determine if the wells are properly plugged.

~~a-4~~ 8.5.1.d. Maps and cross sections indicating the general vertical and lateral limits of all underground source of drinking water within the area of review, their position relative to the injection formation and the direction of water movement, where known, in each underground source of drinking water which may be affected by the proposed injection;

~~a-5~~ 8.5.1.e. Maps and cross sections detailing the geologic structure of the local area;

~~a-6~~ 8.5.1.f. Generalized maps and cross sections illustrating the regional geologic setting;

~~a-7~~ 8.5.1.g. Operating data:

~~a-7-A~~ 8.5.1.g.1. The anticipated average and maximum pressure and flow rate at which the permittee will operate; and

~~a-7-B~~ 8.5.1.g.2. Source and an analysis of the chemical, physical, radiological and biological characteristics of injection fluids;

~~a-8~~ 8.5.1.h. Formation testing program to obtain analysis of the chemical, physical, and radiological characteristics of and other information on the receiving formation;

~~a-8-A~~ 8.5.1.h.1. A determination that the geology of the area can be described confidently and that limits of waste fate and transport can be accurately predicted through the use of models.

~~a-9~~ 8.5.1.i. Stimulation program;

~~a-10~~ 8.5.1.j. Injection procedure;

~~a-11~~ 8.5.1.k. Schematic or other appropriate drawings of the surface and subsurface construction details of the well;

~~1-12~~ 8.5.1.l. Contingency plans to cope with all shut-ins or well failures so as to prevent migration of contaminating fluids into any underground source of drinking water;

~~1-13~~ 8.5.1.m. All available logging and testing program data on the well;

~~a.14~~ 8.5.1.n. Plans for meeting the monitoring requirements, including an Ambient monitoring plan. Owners/operators must develop a monitoring plan based on the site-specific assessment of the fluid migration potential. Pressure build up in the injection zone must be monitored annually;

~~a.15~~ 8.5.1.o. For wells within the area of review which penetrate the injection zone and/or confining zone but are not properly completed or plugged, the corrective action proposed to be taken under subsections 6.1 and 14.9;

~~a.16~~ 8.5.1.p. Construction procedures including a cementing and casing program, well materials specifications and their life expectancy, logging procedures, directional survey, and a drilling, testing, and coring program;

~~a.17~~ 8.5.1.q. Feasibility of monitoring permeable strata located between the injection zone and underground sources of drinking water;

~~a.18~~ 8.5.1.r. Compatibility of injected waste with fluids in the injection zone and minerals in both the injection zone and the confining strata including proving that injection fluid will not react with formation fluids and change relevant characteristics if the confining or injection zones so they would no longer meet requirements in 8.5.a1.;

~~a.19~~ 8.5.1.s. A certificate that the applicant has assured, through a performance bond or other appropriate means, the resources necessary to close, plug, or abandon the well and for post-closure care under subdivision 8.7.8.8, 14.7.g7, and 8.5.b2.;

~~a.20~~ 8.5.1.t. A satisfactory demonstration of mechanical integrity under subdivision 14.7.h8, and subsection 6.2;

~~a.21~~ 8.5.1.u. The calculated area of review;

~~a.22~~ 8.5.1.v. Owner/operator must have certification that the hazardous waste generator has a program to reduce the volume and toxicity of waste stream to the extent economically feasible; and injection of such waste minimizes the present and future threats to human health and the environment; and

~~a.23~~ 8.5.1.w. Such other information as the Director may reasonably require.

b8.5.2. Prior to granting approval for the plugging and abandonment of a Class 1 well the Director shall consider the following information:

b.1 8.5.2.a. The type and number of plugs to be used;

b.2 8.5.2.b. The placement of each plug including the elevation of the top and bottom;

b.3 8.5.2.c. The type and grade and quantity of cement to be used;

b.4 8.5.2.d. The method for placement of the plugs;

b.5 8.5.2.e. The procedure to be used to meet the requirements of subsection 8.3;

b.6 8.5.2.f. Any proposed test or measure to be made;

~~b-7~~ 8.5.2.g. The amount, size, and location (by depth) of casing and any other materials to be left in the well;

~~b-8~~ 8.5.2.h. The method and location where casing is to be parted, if applicable; and

~~b-9~~ 8.5.2.i. The estimated cost of closure;

8.6. Post-Closure Care

~~a~~8.6.1. The owner or operator of a Class 1 hazardous waste well shall prepare, maintain, and comply with a plan for post-closure care. The obligation to implement the plan survives the termination of a permit or the cessation of injection activities. The requirement to maintain an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit. Any revision to the plan must be submitted no later than the date of the closure report. The plan shall assure financial responsibility. The owner or operator shall submit the plan as a part of the permit application and, upon approval by the Director, such plan shall be a condition of any permit issued. The plan shall include the following information:

~~a-1~~ 8.6.1.a. The pressure in the injection zone before injection began;

~~a-2~~ 8.6.1.b. The anticipated pressure in the injection zone at the time of closure;

~~a-3~~ 8.6.1.c. The predicted time until pressure in the injection zone decays to the point that the well's cone of influence no longer intersects the base of the lowermost USDW;

~~a-4~~ 8.6.1.d. Predicted position of waste front at closure;

~~a-5~~ 8.6.1.e. The status of any cleanups; and

~~a-6~~ 8.6.1.f. The estimated cost of post-closure care.

~~a-6-A~~ 8.6.1.f.1. The Director may modify the post-closure plan after submission of the closure report: following the procedures in subdivision 14.18.

~~b~~8.6.2. Owners/operators shall:

~~b-1~~ 8.6.2.a. Continue any clean up actions and ground water monitoring until the cone of influence no longer intersects the base of the lowermost USDW;

~~b-2~~ 8.6.2.b. Retain records for 3 years; The Director shall require the owner or operator to deliver the records to the Director at the conclusion of the retention period, and the records shall thereafter be retained at a location designated by the Director for that purpose;

~~b-3~~ 8.6.2.c. Submit a survey plat to the local zoning authority as well as to the Regional Administrator indicating the location of the well;

~~b-4~~ 8.6.2.d. Notify appropriate State agencies responsible for drilling activities; and

~~b-5~~ 8.6.2.e. Include a note on the property deed that the land was used to manage hazardous waste; the type and volume of waste injected.

~~e~~8.6.3. Each owner of a Class I hazardous waste injection well, and the owner of the property on which the well is located, must record a notation on the deed to the facility property that will in perpetuity provide the following information:

~~e-1~~ 8.6.3.a. The fact that land has been used to manage hazardous waste;

~~e-2~~ 8.6.3.b. The name of the Agency or local authority with which the plat was filed; and

~~e-3~~ 8.6.3.c. The type and volume of waste injected, the injection interval or intervals into which it was injected, and the period over which injection occurred.

~~d~~8.6.4. The owner/operator must demonstrate and maintain financial responsibility for post-closure care by using a trust fund, surety bond, letter of credit, financial test, insurance or corporate guarantee that meets the specifications for the mechanisms and instruments revised as appropriate to cover closure and post-closure care in 47-13-8.7 and 47-13-8.8 . The amount of the funds available shall be no less than the amount identified in subdivision 8.6.1.f. The obligation to maintain financial responsibility for post-closure care survives the termination of a permit or the cessation of injection. This requirement is enforceable regardless of the fact that it is a permit condition.

8.7. Adoption of 40 CFR part 144, subpart f (financial responsibility: Class 1 hazardous waste injection wells):

Except as otherwise provided, the regulations of the United States environmental protection agency set forth in 40 CFR Part 144, Subpart F are hereby incorporated by reference.

8.8. Modifications, Exceptions, and Omissions. Except as otherwise provided, the following modifications, exceptions, and omissions are made to the incorporated federal regulations.

8.8.1. The following term defined in 40 CFR Section 144.61 has the meaning set forth herein, in lieu of the meaning set forth in 40 CFR Section 144.61: “plugging and abandonment plan” means the plan for plugging and abandonment prepared in accordance with the requirements of 47-13-14.7.6.

8.8.2. The following terms not defined in 40 CFR Part 144, Subsection F have the meanings set forth herein when the terms are used in this part:

8.8.2.a. “Administrator,” “regional administrator” and other similar variations means the director of the Division of the Water and Waste Management , Department of Environment Protection, West Virginia or his/her designee;

8.8.2.b. “United States environmental protection agency” or “EPA” means Division of the Water and Waste Management , Department of Environment Protection, West Virginia except when used in 40 CFR Section 144.70(f).

8.8.3. The following provisions of 40 CFR Part 144, Subpart F are modified in 47-13-8.8:

8.8.3.a. Cross references to 40 CFR Part 144 shall be replaced by cross references to 47-13-7 through 47-13-8;

8.8.3.b. The cross reference to Sections 144.28 and 144.51 in Section 144.62(a) shall be replaced by a cross reference to 47-13-14.7.6;

8.8.3.c. References to EPA identification numbers in financial assurance documents shall be replaced by references to API well numbers (US well numbers);

8.8.3.d. Trust agreements prepared in accordance with 40 CFR Section 144.70(a) must state that they will be administered, construed, and enforced according to the laws of West Virginia;

8.8.3.e. The cross references to 40 CFR Parts 264, Subpart H and 265, Subpart H shall be modified to include cross references to 40 CFR Parts 264, Subpart H and 265, Subpart H and 33 CSR 20, sections 33-20-7.5 and 33-20-8.3.

8.8.4. The following provisions of 40 CFR Part 144, Subpart F are omitted from 47-13-8.7.

8.8.4.a. Section 144.65;

8.8.4.b. Section 144.66;

8.8.4.c. the third sentence in 40 CFR Section 144.63(h).

8.9. The Provisions of 40 CFR 148 subpart A and B are hereby adopted and incorporated by reference with modifications, exceptions, and additions set forth in this section.

8.9.1. The following provisions of 40 C.F.R. Part 148, Subparts A and B are excepted from incorporation by reference:

8.9.1.a. Section 148.1(c)(2);

8.9.1.b. Section 148.10(e)(2);

8.9.1.c. Section 148.11(b)(2);

8.9.1.d. Section 148.12(c)(2);

8.9.1.e. Section 148.14(j)(2);

8.9.1.f. Section 148.15(g)(2);

8.9.1.g. Section 148.16(g)(2);

8.9.1.h. Section 148.17(e)(2); and

8.9.1.i. Section 148.18(m)(2).

§47-13-9. Criteria and Standards Applicable to Class 2 Wells.

9.1. General

a9.1.1. The criteria and standards applicable to Class 2 wells shall be those which are required pursuant to W. Va. Code §§22-6 et seq. and 22C-9-1 et seq. and the rules thereunder, including W. Va. Code of State Rules §35-4, this rule, and any other requirements that the Director considers reasonably necessary to ensure that no pollution of USDWs occurs.

b9.1.2. Owners and operators of Class 2 wells shall obtain permits in accordance with the requirements of this section and section 14 of this rule.

9.2. Construction Requirements.

a9.2.1. All new Class 2 wells shall be cased and cemented to prevent the migration of fluids into or between underground sources of drinking water. The casing and cement used in the construction of

each newly drilled well shall be designed for the life expectancy of the well. In determining and specifying casing and cementing requirements, the Director shall consider the following factors:

~~a.1~~ 9.2.1.a. Depth to the injection zone;

~~a.2~~ 9.2.1.b. Estimated maximum and average injection pressures; and

~~a.3~~ 9.2.1.c. Depth to the bottom of all USDWs.

~~b.9.2.2.~~ Appropriate logs and other tests shall be conducted during the drilling and construction of new Class 2 wells. A descriptive report interpreting the results of such logs and tests shall be prepared by a knowledgeable log analyst and submitted to the Director. The Director may specify, as may be needed, the logs and tests appropriate to each type of Class 2 well based on the intended function, depth, construction and other characteristics of the well, availability of similar data in the area of the drilling site and the need for additional information that may arise from time to time as the construction of the well progresses. At a minimum, such logs and tests to be considered by the Director, may, as appropriate, include:

~~b.1~~ 9.2.2.a. Deviation checks at sufficiently frequent intervals to assure no fluid movement.

~~b.2~~ 9.2.2.b. For surface casing intended to protect underground sources of drinking water:

~~b.2.A~~ 9.2.2.b.1. Resistivity, spontaneous potential, and caliper logs before the casing is installed; and

~~b.2.B~~ 9.2.2.b.2. A cement bond, temperature, or density log after casing is set and cemented.

~~b.3~~ 9.2.2.c. For intermediate and long strings of casing intended to facilitate injection:

~~b.3.A~~ 9.2.2.c.1. Resistivity, spontaneous potential, porosity, and gamma ray logs before the casing is installed;

~~b.3.B~~ 9.2.2.c.2. Fracture finder logs in appropriate situations as prescribed by the Director; and

~~b.3.C~~ 9.2.2.c.3. A cement bond, temperature, or density log after the casing is set and cemented.

~~e.9.2.3.~~ The following information concerning the injection zone shall be determined or calculated for new Class 2 wells or projects:

~~e.1~~ 9.2.3.a. Fluid pressure;

~~e.2~~ 9.2.3.b. Fracture pressure; and

~~e.3~~ 9.2.3.c. Physical and chemical characteristics of the formation fluids.

9.3. Abandonment of Class 2 Wells.

~~a.9.3.1.~~ Class 2 wells shall be abandoned in a manner, prescribed by the Director, under subdivision 14.7.~~£6~~, and W. Va. Code §22-6 et seq. and the rules thereunder. At a minimum the well shall be plugged

with cement in a manner which will not allow movement of fluids either into or between underground sources of drinking water. The Director may allow Class 2 wells to use other plugging materials if he is satisfied that such materials will prevent movement of fluids into or between underground sources of drinking water.

~~b~~9.3.2. Placement of the cement plugs shall be accomplished by one of the following:

~~b.1~~ 9.3.2.a. The Balance Method;

~~b.2~~ 9.3.2.b. The Dump Bailer Method;

~~b.3~~ 9.3.2.c. The Two-Plug Method; or

~~b.4~~ 9.3.2.d. An alternative method approved by the Director, which will reliably provide a comparable level of protection to underground sources of drinking water.

~~e~~9.3.3. The well to be abandoned shall be in a state of static equilibrium before plugging commences with the mud weight equalized top to bottom, either by circulating the mud in the well at least once or a comparable method prescribed by the Director, prior to the placement of the cement plug(s).

9.4. Operating, Monitoring, and Reporting Requirements

~~a~~9.4.1. Operating Requirements: The Director shall prescribe requirements governing the operation of injection wells in the permit. Requirements for Class 2 wells shall, at a minimum, include that:

~~a.1~~ 9.4.1.a. Except during well stimulation the injection pressure at the wellhead shall be calculated so as to assure that the pressure in the injection zone during injection does not initiate new fractures or propagate existing fractures in the injection zone. In no case shall injection pressure initiate fractures in the confining zone or cause the migration of injection or formation fluids into an underground source of drinking water; and

~~a.2~~ 9.4.1.b. Injection between the outermost casing protecting underground sources of drinking water and the well bore shall be prohibited.

~~b~~9.4.2. Monitoring Requirements:

~~b.1~~ 9.4.2.a. Monitoring of the nature of injected fluids with sufficient frequency to yield representative data on its characteristics. Whenever the injection fluid is modified to the extent that the analysis required by subparagraph 9.5.~~a.6~~~~B~~1.f.2. is incorrect or incomplete, a new analysis shall be provided to the Director;

~~b.2~~ 9.4.2.b. Monitoring of injection pressure, flow rate, and cumulative volume shall be conducted as follows: weekly for produced fluid disposal; monthly for enhanced recovery; daily during the injection of liquid hydrocarbons and injection for withdrawal of stored hydrocarbons; and daily during the injection phase of cyclic steam operations. Recording of one observation of injection pressure, flow rate, and cumulative volume shall be conducted at reasonable intervals not to exceed 30 days.

~~b.3~~ 9.4.2.c. Demonstration of mechanical integrity pursuant to subsection 6.2 shall be conducted at least every five (5) years during the life of the Class 2 injection well;

~~b.4~~ 9.4.2.d. Facilities must keep monitoring results until the next permit review; and

~~b-5~~ 9.4.2.e. All Class 2 hydrocarbon storage and enhanced recovery wells may be monitored on a field or project basis rather than an individual well basis by manifold monitoring. Manifold monitoring may be used in cases of facilities consisting of more than one injection well, operating with a common manifold. Separate monitoring systems for each well are not required provided the owner/operator demonstrates that manifold monitoring is comparable to individual well monitoring.

9.5. Information to be Considered by the Director Prior to the Issuance of a Permit.

a9.5.1. Prior to the issuance of a permit for an existing or new Class 2 well, the Director shall consider the following information at a minimum. For an existing Class 2 injection operation the Director may rely upon the existing permit file for these items of information listed below which are current and accurate in the State file. For a new Class 2 injection well, the Director shall require the submission of all the information listed below. For both existing and new Class 2 wells, paragraphs 9.5.a-21.b., 9.5.a-31.c. and 9.5.a-61.f. of this section may be included by reference if the maps are specifically identified and readily available to the Director:

~~a-1~~ 9.5.1.a. A map showing the injection well or project area for which a permit is sought and the applicable area of review. Within the area of review, the map must show the number or name and location of all existing producing wells, injection wells, abandoned wells, and water wells. The map should also show surface bodies of water, mines (surface and subsurface), quarries and other pertinent surface features including residence and roads, and faults if known. All new class 2 injection wells shall be sited in such a manner that they inject into a formation which is separated from any USDW by a confining zone that is free of known open faults or fractures within the area of review. Only information of public record and pertinent information known to the applicant is required to be included on this map;

~~a-2~~ 9.5.1.b. Geologic name and depth to bottom of all USDW's affected by the injection.

~~a-3~~ 9.5.1.c. Maps and cross sections detailing the geologic structure of the local area; and

~~a-4~~ 9.5.1.d. Generalized maps and cross sections illustrating the regional geologic setting.

~~a-5~~ 9.5.1.e. A tabulation of data reasonably available for public records or otherwise known to the applicant on wells within the area of review. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of plugging and completion, and any additional information the Director may require.

~~a-6~~ 9.5.1.f. Operating data:

~~a-6-A~~ 9.5.1.f.1. The anticipated average and maximum pressure and daily flow rate and injection volumes at which the permittee will operate;

~~a-6-B~~ 9.5.1.f.2. Characteristics and source of the injection fluid; and

~~a-6-C~~ 9.5.1.f.3. Geological data on the injection and confining zones.

~~a-7~~ 9.5.1.g. Schematic or other appropriate drawings of the surface and subsurface construction details of the well;

~~a-8~~ 9.5.1.h. The corrective action proposed to be taken under subsection 6.1;

~~a.9~~ 9.5.1.i. A certificate that the applicant has assured, through a performance bond or other appropriate means, the resources necessary to close, plug or abandon the well under subdivision 14.7.~~g~~7.; and

~~a.10~~ 9.5.1.j. A satisfactory demonstration of mechanical integrity for all new wells as required by subsection 6.2.

§47-13-10. Criteria and Standards Applicable to Class 3 Wells.

10.1. General. This section sets forth requirements for underground injection control programs to regulate Class 3 wells.

10.2. Construction Requirements. The Director shall prescribe requirements for the construction of Class 3 injection wells. Existing wells shall achieve compliance with such requirements according to a specific compliance schedule established by the Director as a condition of the permit. New wells shall be in compliance with construction requirements before injection operations begin. The owner or operator of a proposed injection well shall submit plans for testing, drilling and construction to the Director and obtain the approval of the Director of the initial plans as a condition of the permit. The Director's approval of any modifications of the plans shall be obtained before incorporating them into the construction of the injection well. At a minimum, such requirements shall specify that:

~~a~~10.2.1. All new Class 3 wells shall be cased and cemented to prevent the migration of fluids into or between underground sources of drinking water. The Director may waive the cementing requirements for new wells in existing projects or portions of existing projects where he has substantial evidence that no contamination of underground sources of drinking water would result. The casing and cement used in the construction of each newly drilled well shall be designed for the life expectancy of the well. In determining and specifying casing and cementing requirements, the Director shall consider the following factors:

~~a.1~~ 10.2.1.a. Depth to the injection zone;

~~a.2~~ 10.2.1.b. Injection pressure (external pressure, internal pressure, axial loading, etc.);

~~a.3~~ 10.2.1.c. Hole size;

~~a.4~~ 10.2.1.d. Size and grade of all casing strings (wall thickness, diameter, nominal weight, length, joint specification, construction material, etc.);

~~a.5~~ 10.2.1.e. Corrosiveness of injected and formation ~~fields~~; fluids;

~~a.6~~ 10.2.1.f. Lithology of possible injection and confining zones; and

~~a.7~~ 10.2.1.g. Type and grade of cement.

~~b~~10.2.2. All parts of Class 3 wells which will come into contact with corrosive fluids (whether injected or in the native environment) shall be constructed of corrosive resistant material.

~~e~~10.2.3. Appropriate logs and other tests shall be conducted during the drilling and construction of new Class 3 wells. A descriptive report interpreting the results of such logs and tests shall be prepared by a knowledgeable log analyst and submitted to the Director. The Director shall specify the logs and tests appropriate to each type of Class 3 well based on the intended function, depth, construction and other characteristics of the well, availability of similar data in the area of the drilling site and the need for

additional information that may arise from time to time as the construction of the well progresses. At a minimum, such logs and tests, shall, as appropriate, include:

~~e.1~~ 10.2.3.a. Deviation checks conducted on all holes where pilot holes and reaming are used, unless the hole will be cased and cemented by circulating cement to the surface. Where deviation checks are necessary, they shall be conducted at sufficiently frequent intervals to assure that vertical avenues for fluid migration in the form of diverging holes are not created during drilling;

~~e.2~~ 10.2.3.b. For surface casing intended to protect underground sources of drinking water:

~~e.2.A~~ 10.2.3.b.1. Resistivity, spontaneous potential, and caliper logs before the casing is installed; and

~~e.2.B~~ 10.2.3.b.2. A cement bond, temperature, or density log after casing is set and cemented.

~~e.3~~ 10.2.3.c. For intermediate and long strings of casing intended to facilitate injection:

~~e.3.A~~ 10.2.3.c.1. Resistivity, spontaneous potential, porosity, and gamma ray logs before the casing is installed;

~~e.3.B~~ 10.2.3.c.2. Fracture finder logs in appropriate situations as prescribed by the Director; and

~~e.3.C~~ 10.2.3.c.3. A cement bond, temperature, or density log after the casing is set and cemented.

~~d~~10.2.4. Where the injection zone is a formation which is naturally water bearing the following information concerning the injection zone shall be determined or calculated for new Class 3 wells or projects:

~~d.1~~ 10.2.4.a. Fluid pressure;

~~d.2~~ 10.2.4.b. Fracture pressure;

~~d.3~~ 10.2.4.c. Physical and chemical characteristics of the formation fluids; and

~~d.4~~ 10.2.4.d. The nature and volume of the injected fluid, the formation water and the process by-products.

~~e~~10.2.5. Where the injection formation is not a water bearing formation, the information in paragraph 10.2.~~d.24~~.b. of this section must be submitted.

~~f~~10.2.6. Where injection is into a formation which contains water with less than ten thousand (10,000) mg/l TDS monitoring wells shall be completed into the injection zone and into any underground sources of drinking water above the injection zone which could be affected by the mining operation. These wells shall be located in such a fashion as to detect any excursion of injection fluids, process by-products, or formation fluids outside the mining area or zone. If the operation may be affected by subsidence or catastrophic collapse the monitoring wells shall be located so that they will not be physically affected.

~~§~~10.2.7. Where injection is into a formation which does not contain water with less than ten thousand (10,000) mg/1 TDS, no monitoring wells are necessary in the injection stratum.

~~h~~10.2.8. Where the injection wells penetrate an USDW in an area subject to subsidence or catastrophic collapse an adequate number of monitoring wells shall be completed into the USDW to detect any movement of injected fluids, process by-products or formation fluids into the USDW. The monitoring wells shall be located outside the physical influence of the subsidence or catastrophic collapse.

~~i~~10.2.9. Determining the number, location, construction and frequency of monitoring of the monitoring wells the following criteria shall be considered:

~~i-1~~ 10.2.9.a. The population relying on the USDW affected or potentially affected by the injection operation;

~~i-2~~ 10.2.9.b. The proximity of the injection operation to points of withdrawal of drinking water;

~~i-3~~ 10.2.9.c. The local geology and hydrology;

~~i-4~~ 10.2.9.d. The operating pressures and whether a negative pressure gradient is being maintained;

~~i-5~~ 10.2.9.e. The nature and volume of the injected fluid, the formation water and the process by-products; and

~~i-6~~ 10.2.9.f. The injection well density.

10.3. Abandonment of Class 3 Wells.

~~a~~10.3.1. Class 3 wells shall be abandoned in a manner, prescribed by the Director, under subdivision 14.7.f. At a minimum the well shall be plugged with cement in a manner which will not allow movement of fluids either into or between underground sources of drinking water. The Director may allow Class 3 wells to use other plugging materials if he is satisfied that such materials will prevent movement of fluids into or between underground sources of drinking water.

~~b~~10.3.2. Placement of the cement plugs shall be accomplished by one of the following:

~~b-1~~ 10.3.2.a. The Balance Method;

~~b-2~~ 10.3.2.b. The Dump Bailer Method;

~~b-3~~ 10.3.2.c. The Two-Plug Method; or

~~b-4~~ 10.3.2.d. An alternative method approved by the Director, which will reliably provide a comparable level of protection to underground sources of drinking water.

~~e~~10.3.3. The well to be abandoned shall be in a state of static equilibrium with the mud weight equalized top to bottom, either by circulating the mud in the well at least once or a comparable method prescribed by the Director, prior to the placement of the cement plug(s).

~~d~~10.3.4. The owners and operators shall assure, through a performance bond or other appropriate means, the availability of resources necessary for the proper abandonment of the well as required under subdivision 14.7.f.

~~e~~10.3.5. The plugging and abandonment plan required in subdivision 14.7.~~f~~6. shall, in the case of a Class 3 project which underlies or is in an aquifer which has been exempted under section 3, also demonstrate adequate protection of USDWs. The Director shall prescribe aquifer cleanup and monitoring where he deems it necessary and feasible to insure adequate protection of USDWs.

10.4. Operating, Monitoring, and Reporting Requirements

~~a~~10.4.1. Operating Requirements: The Director shall prescribe requirements governing the operation of injection wells in the permit. Requirements for Class 3 wells shall, at a minimum, include that:

~~a.1~~ 10.4.1.a. Except during well stimulation the injection pressure at the wellhead shall be calculated so as to assure that the pressure in the injection zone during injection does not initiate new fractures or propagate existing fractures in the injection zone. In no case shall injection pressure initiate fractures in the confining zone or cause the migration of injection or formation fluids into an underground source of drinking water; and

~~a.2~~ 10.4.1.b. Injection between the outermost casing protecting underground sources of drinking water and the well bore shall be prohibited.

~~b~~10.4.2. Monitoring Requirements:

~~b.1~~ 10.4.2.a. Monitoring of the nature of injected fluids with sufficient frequency to yield representative data on its characteristics. Whenever the injection fluid is modified to the extent that the analysis required by subparagraph 10.5.~~a.6~~.B1.f.2. is incorrect or incomplete, a new analysis shall be provided to the Director;

~~b.2~~ 10.4.2.b. Monitoring of injection pressure and either flow rate or volume semi-monthly, or metering and daily recording of injected and produced fluid volumes as appropriate;

~~b.3~~ 10.4.2.c. Demonstration of mechanical integrity pursuant to subsection 6.2 at least every five (5) years during the life of the well for salt solution mining;

~~b.4~~ 10.4.2.d. Monitoring of the fluid level in the injection zone semi-monthly, where appropriate and monitoring of the parameters chosen to measure quality of water in the monitoring wells required by subdivision 10.2.f semi-monthly;

~~b.5~~ 10.4.2.e. Quarterly monitoring of wells required by subdivision 10.2.h; and

~~b.6~~ 10.4.2.f. All Class 3 wells may be monitored on a field or project basis rather than an individual well basis by manifold monitoring. Manifold monitoring may be used in cases of facilities consisting of more than one injection well, operating with a common manifold. Separate monitoring systems for each well are not required provided the owner/operator demonstrates that manifold monitoring is comparable to individual well monitoring.

~~e~~10.4.3. Reporting Requirements: The Director shall prescribe the form, manner, content, and frequency of reporting by the permittee. The permittee shall be required to identify the types of tests and methods used to generate the monitoring data. At a minimum, requirements shall include:

~~e-1~~ 10.4.3.a. Quarterly monitoring of wells;

~~e-2~~ 10.4.3.b. Results of mechanical integrity and any other periodic test required by the Director reported with the first regular quarterly report after the completion of the test;

~~e-3~~ 10.4.3.c. Written notice to the Director within thirty (30) days of any compliance schedule date of whether the permittee has or has not complied with the requirements in question; and

~~e-4~~ 10.4.3.d. Immediate reports to the Director on any violation of a permit condition or malfunction of the injection system which may cause fluid migration into underground sources of drinking water.

10.5. Information to be Considered by the Director Prior to the Issuance of a Permit.

~~a~~10.5.1. Prior to the issuance of a permit for an existing or new Class 3 well, the Director shall consider the following information. For an existing Class 3 injection operation the Director may rely upon the existing permit file for these items of information listed below which are current and accurate in the State file. For a new Class 3 injection well the Director shall require the submission of all the information listed below. For both existing and new Class 3 wells, paragraphs 10.5.~~a-2~~1.b., 10.5.~~a-3~~1.c., and 10.5.~~a-6~~1.f. of this section may be included by reference if the maps are specifically identified and readily available to the Director:

~~a-1~~ 10.5.1.a. A map showing the injection well or project area for which a permit is sought and the applicable area of review. Within the area of review, the map must show the number or name and location of all existing producing wells, injection wells, abandoned wells, ~~and~~ dry holes, public water systems and water wells. The map may also show surface bodies of water, mines (surface and subsurface), quarries and other pertinent surface features including residence and roads, and faults if known or suspected. Only information of public record and pertinent information known to the applicant is required to be included on this map;

~~a-1~~ 10.5.1.b. Maps and cross sections indicating the vertical and lateral limits of all underground sources of drinking water within the area of review, their position relative to the injection formation, and the direction of water movement, where known, in every underground source of drinking water which may be affected by the proposed injection.;

~~a-1~~ 10.5.1.c. Maps and cross sections detailing the geologic structure of the local area;

~~a-1~~ 10.5.1.d. Generalized maps and cross sections illustrating the regional geologic setting;

~~a-1~~ 10.5.1.e. A tabulation of data reasonably available for public records or otherwise known to the applicant on all wells within the area of review included on the map which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of plugging and completion, and any additional information the Director may require. In cases where the information may be repetitive and the wells are of similar age, type and construction the Director may elect to only require data on a representative number of wells;

~~a-1~~ 10.5.1.f. Operating data:

~~a-6-A~~ 10.5.1.f.1. The anticipated average and maximum pressure and flow rate at which the permittee will operate;

~~a.6.B~~ 10.5.1.f.2. Qualitative analysis and ranges in concentrations of all constituents of injected fluids. The applicant may request confidentiality;

If the information is proprietary an applicant may, in lieu of the ranges in concentrations, choose to submit maximum concentrations which shall not be exceeded. In such a case the applicant shall retain records of the undisclosed concentrations and provide them upon request to the Director as part of any enforcement investigation; and

~~a.6.C~~ 10.5.1.f.3. An analysis of the physical and chemical characteristics of the formation.

~~a.7~~ 10.5.1.g. Formation testing program;

~~a.7~~ 10.5.1.h. Stimulation program;

~~a.7~~ 10.5.1.i. Injection procedure;

~~a.7~~ 10.5.1.j. Schematic or other appropriate drawings of the surface and subsurface construction details of the well;

~~a.7~~ 10.5.1.k. Plans (including maps) for meeting the monitoring requirements of subdivision 10.4.b;

~~a.7~~ 10.5.1.l. Expected changes in pressure, native fluid displacement, direction of movement of injection fluid;

~~a.7~~ 10.5.1.m. Contingency plans to cope with all shut-ins or well failures so as to prevent the migration of contaminating fluids into underground sources of drinking water;

~~a.7~~ 10.5.1.n. All available logging and testing data on the well;

~~a.7~~ 10.5.1.o. The corrective action proposed to be taken under subsection 6.1;

~~a.7~~ 10.5.1.p. A certificate that the applicant has assured, through a performance bond or other appropriate means, the resources necessary to close, plug or abandon the well under subdivision 14.7.~~§6~~; and

~~a.7~~ 10.5.1.q. A satisfactory demonstration of mechanical integrity for all new wells and for all existing salt solution wells as required by subsection 6.2.

~~b~~10.5.2. Prior to granting approval for the plugging and abandonment of a Class 3 well the Director shall consider the following information:

~~b.1~~ 10.5.2.a. The type and number of plugs to be used;

~~b.2~~ 10.5.2.b. The placement of each plug including the elevation of the top and bottom;

~~b.3~~ 10.5.2.c. The type, grade and quantity of cement to be used;

~~b.4~~ 10.5.2.d. The method of placement of the plugs; and

~~b.5~~ 10.5.2.e. The procedure to be used to meet the requirements of subsection 10.3.

§47-13-11. Criteria and Standards Applicable to Class 4 Wells.

11.1. General.

a11.1.1. This section sets forth criteria and standards for underground injection control programs to regulate wells, including non-residential septic system wells, used by generators of hazardous wastes or owners and operators of hazardous waste management facilities to inject into or above strata that contain an underground source of drinking water.

b11.1.2. All new Class 4 wells are prohibited.

11.2. Notification by Owners and Operators. The owner or operator of an existing Class 4 well shall submit to the Director:

a11.2.1. Notice of the existence of any Class 4 well under his control; and

b11.2.2. Information regarding the well.

11.3. Closure of Class 4 Wells.

a11.3.1. The operation of any existing Class 4 well shall be prohibited six (6) months after the effective date of this rule.

b11.3.2. In determining the enforcement strategy and time allowed for closure, the Director shall consider the following criteria:

~~b.1~~ 11.3.2.a. Population relying on the underground source of drinking water affected or potentially affected by the injection;

~~b.2~~ 11.3.2.b. Local geology and hydrology;

~~b.3~~ 11.3.2.c. Toxicity and volume of injected fluid; and

~~b.4~~ 11.3.2.d. Injection well density.

e11.3.3. The owners or operators of Class 4 wells shall be notified by certified mail of the time by which closure must be accomplished as decided upon by the Director and, if appropriate, of a compliance schedule leading to closure.

d11.3.4. Nothing in this section is intended to limit the Director in taking immediate action necessary to protect the health of persons.

e11.3.5. Class 4 Wells should not be in operation unless as part of an EPA administered program. Therefore, closure shall follow federal rules 40 CFR 144.23.

11.4. Monitoring and Reporting Requirements. The Director shall prescribe monitoring and reporting requirements for existing Class 4 wells while they are operating.

a11.4.1. Monitoring requirements shall, at a minimum include:

~~a-1~~ 11.4.1.a. Record keeping as required in W. Va. Code §22-18 and rules thereunder.

~~a-3~~ 11.4.1.b. Weekly monitoring of existing water supply wells in the vicinity for parameters based upon the characteristics of the injection fluids.

~~a-3~~ 11.4.1.c. Maintenance of the results of monitoring under subdivision 14.6.b~~2~~ and paragraph 14.12.j-~~2~~10.b.

~~b~~11.4.2. Reporting requirements shall prescribe the form, manner, content and frequency of reports to the Director. The permittee shall be required to identify the types of tests and methods used to generate the monitoring data. At a minimum, the requirements shall include:

~~b-1~~ 11.4.2.a. Quarterly reporting of the results of monitoring required under subdivision 11.4.a~~1~~ of this section;

~~b-2~~ 11.4.2.b. Immediate notification to the Director of any change in the concentration of any parameter measured at an existing water supply well; and

~~b-3~~ 11.4.2.c. Written notification to the Director within thirty (30) days after any compliance schedule date of whether the owner or operator has or has not complied with the requirements in question.

§47-13-12. Criteria and Standards Applicable to Class 5 Injection Wells.

12.1. General. This section sets forth requirements for underground injection control programs to regulate all injection not regulated in sections 8, 9, 10, 11, and 13. Generally, wells covered in this section inject non-hazardous fluids into strata that contain underground sources of drinking water. It includes, but is not limited to, the following types of injection wells: Waste disposal wells, such as drainage wells, cooling water return flow wells, air conditioning return flow wells, salt water barrier wells and subsidence control wells (not associated with oil and gas production).

~~a~~12.1.1. All new large capacity cesspools are prohibited.

~~b~~12.1.2. All existing large capacity cesspools must be closed by April 5, 2005.

~~e~~12.1.3. All new motor vehicle waste disposal wells are prohibited.

~~d~~12.1.4. All existing motor vehicle waste disposal wells must be closed by January 1, 2005, or operated in compliance with Section 14.1.b.and d. of this rule such that the Director will require wells to be permitted and maintained.

~~e~~12.1.5. Applicants for permits for existing MVWDWs must meet MCLs at the point of injection while the permit application is under review. If a permit is issued for a MVWDW, the permittee must comply with permit requirements including requirements to meet MCLs and other health-based standards at the point of injection.

12.2. Inventory and Assessment.

~~a~~12.2.1. The owner or operator of any Class 5 well shall within one (1) year of the effective date of this rule notify the Director of the existence of any well meeting the definition of Class 5 under his control, and submit a description of:

- ~~a.1~~ 12.2.1.a. The construction features of the well;
- ~~a.2~~ 12.2.1.b. The nature and volume of injected fluids;
- ~~a.3~~ 12.2.1.c. The alternative means of disposal available to the operator;
- ~~a.4~~ 12.2.1.d. The environmental and economic consequences of well disposal and its alternatives;
- ~~a.5~~ 12.2.1.e. Facility name and location;
- ~~a.6~~ 12.2.1.f. Name and address of legal contact;
- ~~a.7~~ 12.2.1.g. Ownership of facility;
- ~~a.8~~ 12.2.1.h. Nature and type of injection wells; and
- ~~a.9~~ 12.2.1.i. Operating status of injection wells.

12.3. Requirement. If at any time the Director gains knowledge of a Class 5 well which presents a significant risk to the health of persons, he/she shall prescribe such action as necessary (including the immediate closure of the injection well) to remove such risk.

12.4. Wells Regulated by Rule and Permit.

~~a~~12.4.1. Certain Class 5 wells may be authorized by rule pursuant to subsection 14.2., unless the Director requires an individual permit. Permits shall be for continuous injection of Class 5 liquids such as septic system drain field discharges and stormwater. While rule authorization is intended for temporary (based on timing or number of injections) or limited injections, including but not limited to remediation treatment fluids.

~~b~~12.4.2. Information to be considered by the Director prior to issuance of a permit.

—12.4.b.1. (Reserved).

§47-13-13. Criteria and Standards Applicable to Class 6 Wells.

13.1. General. This section sets forth requirements for underground injection control programs to regulate Class 6 carbon dioxide geologic sequestration wells. This section establishes criteria and standards for underground injection control programs to regulate any Class 6 carbon dioxide geologic sequestration injection wells, for long-term containment of a gaseous, liquid, or supercritical carbon dioxide stream in subsurface geologic formations.

~~a~~13.1.1. This subpart also applies to owners or operators of permit or rule-authorized Class 1, Class 2, or Class 5 experimental carbon dioxide injection projects who seek to apply for a Class 6 geologic sequestration permit for their well or wells. Owners or operators seeking to convert existing Class 1, Class 2, or Class 5 experimental wells to Class 6 geologic sequestration wells must demonstrate to the Director that the wells were engineered and constructed to meet the requirements at subsection 13.3.~~a~~1 and ensure protection of USDWs, in lieu of requirements at subsection 13.3.~~b~~2., 13.3.~~b~~-12.a. and 13.5. By December 10, 2011, owners or operators of either Class 1 wells previously permitted for the

purpose of geologic sequestration or Class 5 experimental technology wells no longer being used for experimental purposes that will continue injection of carbon dioxide for the purpose of GS must apply for a Class 6 permit. A converted well must still meet all other requirements under section 13-13.

~~a.1~~ 13.1.1.a. The construction, operation or maintenance of any non-experimental Class V geologic sequestration well is prohibited.

~~a.2~~ 13.1.1.b. Owners or operators of Class 6 wells must obtain a permit. Class 6 wells cannot be authorized by rule to inject carbon dioxide.

~~b~~13.1.2. Existing well means a Class 6 well which was authorized prior to August 25, 1988 or a well which has become a Class 6 well as a result of a change in the definition of the injected waste into a waste hazardous waste.

~~e~~13.1.3. Transitioning to a Class 6 Well from a Class II Well. Owners or operators that are injecting carbon dioxide for the primary purpose of long-term storage into an oil and gas reservoir must apply for and obtain a Class 6 geologic sequestration permit when there is an increased risk to USDWs compared to Class II operations. In determining if there is an increased risk to USDWs, the owner or operator as well as the Director must consider:

- ~~e.1~~ 13.1.3.a. Increase in reservoir pressure within the injection zone(s);
- ~~e.2~~ 13.1.3.b. Increase in carbon dioxide injection rates;
- ~~e.3~~ 13.1.3.c. Decrease in reservoir production rates;
- ~~e.4~~ 13.1.3.d. Distance between the injection zone(s) and USDWs;
- ~~e.5~~ 13.1.3.e. Suitability of the Class II area of review delineation;
- ~~e.6~~ 13.1.3.f. Quality of abandoned well plugs within the area of review;
- ~~e.7~~ 13.1.3.g. The owner's or operator's plan for recovery of carbon dioxide at the cessation of injection;
- ~~e.8~~ 13.1.3.h. The source and properties of injected carbon dioxide; and
- ~~e.9~~ 13.1.3.i. Any additional site-specific factors as determined by the Director.

13.2. Minimum Criteria for Siting.

~~a~~13.2.1. Owners or operators of Class 6 wells must demonstrate to the satisfaction of the Director that the wells will be sited in areas with a suitable geologic system. The owners or operators must demonstrate that the geologic system comprises:

~~a.1~~ 13.2.1.a. An injection zone(s) of sufficient areal extent, thickness, porosity, and permeability to receive the total anticipated volume of the carbon dioxide stream;

~~a.2~~ 13.2.1.b. Confining zone(s) free of transmissive faults or fractures and of sufficient areal extent and integrity to contain the injected carbon dioxide stream and displaced formation fluids and

allow injection at proposed maximum pressures and volumes without initiating or propagating fractures in the confining zone(s).

~~b~~13.2.2. The Director may require owners or operators of Class 6 wells to identify and characterize additional zones that will impede vertical fluid movement, are free of faults and fractures that may interfere with containment, allow for pressure dissipation, and provide additional opportunities for monitoring, mitigation, and remediation.

13.3. Construction Requirements. The Director shall prescribe requirements for the construction of Class 6 injection wells. Existing wells shall achieve compliance with such requirements according to a specific compliance schedule established by the Director as a condition of the permit. New wells shall be in compliance with construction requirements before injection operations begin. The owner or operator of a proposed injection well shall submit plans to the Director for testing, drilling, and construction and obtain the approval of the initial plans as a condition of the permit. The Director's approval of any modifications of the plan shall be obtained before incorporating them into the construction of the injection well. At a minimum, such requirements shall prescribe that:

~~a~~13.3.1. Each Class 6 well is constructed and completed to:

~~a.1~~ 13.3.1.a. Prevent the movement of fluids into or between USDWs or into any unauthorized zones;

~~a.2~~ 13.3.1.b. Permit the use of appropriate testing devices and workover tools; and

~~a.3~~ 13.3.1.c. Permit continuous monitoring of the annulus space between the injection tubing and long string casing.

~~b~~13.3.2. Casing and cementing of Class 6 wells.

~~b.1~~ 13.3.2.a. Casing and cement or other materials used in the construction of each Class 6 well must have sufficient structural strength and be designed for the life of the geologic sequestration project. All well materials must be compatible with fluids with which the materials may be expected to come into contact and must meet or exceed standards developed for such materials by the American Petroleum Institute, ASTM International, or comparable standards acceptable to the Director. The casing and cementing program must be designed to prevent the movement of fluids into or between USDWs. In order to allow the Director to determine and specify casing and cementing requirements, the owner or operator must provide the following information:

~~b.1.A~~ 13.3.2.a.1. Depth to the injection zone(s);

~~b.1.B~~ 13.3.2.a.2. Injection pressure, external pressure, internal pressure, and axial loading;

~~b.1.C~~ 13.3.2.a.3. Hole size;

~~b.1.D~~ 13.3.2.a.4. Size and grade of all casing strings (wall thickness, external diameter, nominal weight, length, joint specification, and construction material);

~~b.1.E~~ 13.3.2.a.5. Corrosiveness of the carbon dioxide stream and formation fluids;

~~b.1.F~~ 13.3.2.a.6. Down-hole temperatures;

~~b.1.G~~ 13.3.2.a.7. Lithology of injection and confining zone(s);

~~b.1.H~~ 13.3.2.a.8. Type or grade of cement and cement additives; and

~~b.1.I~~ 13.3.2.a.9. Quantity, chemical composition, and temperature of the carbon dioxide stream.

~~b.2~~ 13.3.2.b. Surface casing must extend through the base of the lowermost USDW and be cemented to the surface through the use of a single or multiple strings of casing and cement.

~~b.3~~ 13.3.2.c. At least one long string casing, using a sufficient number of centralizers, must extend to the injection zone and must be cemented by circulating cement to the surface in one or more stages.

~~b.4~~ 13.3.2.d. Circulation of cement may be accomplished by staging. The Director may approve an alternative method of cementing in cases where the cement cannot be recirculated to the surface, provided the owner or operator can demonstrate by using logs that the cement does not allow fluid movement behind the well bore.

~~b.5~~ 13.3.2.e. Cement and cement additives must be compatible with the carbon dioxide stream and formation fluids and of sufficient quality and quantity to maintain integrity over the design life of the geologic sequestration project. The integrity and location of the cement shall be verified using technology capable of evaluating cement quality radially and identifying the location of channels to ensure that USDWs are not endangered.

~~e~~13.3.3. Tubing and packer.

~~e.1~~ 13.3.3.a. Tubing and packer materials used in the construction of each Class 6 well must be compatible with fluids with which the materials may be expected to come into contact and must meet or exceed standards developed for such materials by the American Petroleum Institute, ASTM International, or comparable standards acceptable to the Director.

~~e.2~~ 13.3.3.b. All owners or operators of Class 6 wells must inject fluids through tubing with a packer set at a depth opposite a cemented interval at the location approved by the Director.

~~e.3~~ 13.3.3.c. In order for the Director to determine and specify requirements for tubing and packer, the owner or operator must submit the following information:

~~e.3.A~~ 13.3.3.c.1. Depth of setting;

~~e.3.B~~ 13.3.3.c.2. Characteristics of the carbon dioxide stream (chemical content, corrosiveness, temperature, and density) and formation fluids;

~~e.3.C~~ 13.3.3.c.3. Maximum proposed injection pressure;

~~e.3.D~~ 13.3.3.c.4. Maximum proposed annular pressure;

~~e.3.F~~ 13.3.3.c.5. Proposed injection rate (intermittent or continuous) and volume and/or mass of the carbon dioxide stream;

~~e.3.G~~ 13.3.3.c.6. Size of tubing and casing; and

~~e.3.H~~ 13.3.3.c.7. Tubing tensile, burst, and collapse strengths.

13.4. Abandonment of Class 6 Wells. Owners and operators shall abandon Class 6 wells in a manner to be prescribed by the Director under sub-division 14.7.~~§6.~~, in addition to the following:

~~a~~13.4.1. Prior to the well plugging, the owner or operator must flush each Class 6 injection well with a buffer fluid, determine bottomhole reservoir pressure, and perform a final external mechanical integrity test.

~~b~~13.4.2. Well plugging plan. The owner or operator of a Class 6 well must prepare, maintain, and comply with a plan that is acceptable to the Director. The requirement to maintain and implement an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit. The well plugging plan must be submitted as part of the permit application and must include the following information:

~~b.1~~ 13.4.2.a. Appropriate tests or measures for determining bottomhole reservoir pressure;

~~b.2~~ 13.4.2.b. Appropriate testing methods to ensure external mechanical integrity as specified in section 6.2;

~~b.3~~ 13.4.2.c. The type and number of plugs to be used;

~~b.4~~ 13.4.2.d. The placement of each plug, including the elevation of the top and bottom of each plug;

~~b.5~~ 13.4.2.e. The type, grade, and quantity of material to be used in plugging. The material must be compatible with the carbon dioxide stream; and

~~b.6~~ 13.4.2.f. The method of placement of the plugs.

~~c~~13.4.3. Notice of intent to plug. The owner or operator must notify the Director in writing pursuant to subsection 13.6.~~e.1.~~~~E3.a.5.~~, at least 60 days before plugging of a well. At this time, if any changes have been made to the original well plugging plan, the owner or operator must also provide the revised well plugging plan. The Director may allow for a shorter notice period. Any amendments to the injection well plugging plan must be approved by the Director, must be incorporated into the permit, and are subject to the permit modification requirements at sections 14.18 and 14.20 of this rule, as appropriate.

~~d~~13.4.4. Plugging report. Within 60 days after plugging, the owner or operator must submit, pursuant to subsection 13.6.~~e.1.~~~~E3.a.5.~~, a plugging report to the Director. The report must be certified as accurate by the owner or operator and by the person who performed the plugging operation (if other than the owner or operator.) The owner or operator shall retain the well plugging report for 10 years following site closure.

13.5. Logging, Sampling, and Testing Prior to Injection Well Operation.

~~a~~13.5.1. During the drilling and construction of a Class 6 injection well, the owner or operator must run appropriate logs, surveys and tests to determine or verify the depth, thickness, porosity, permeability, and lithology of, and the salinity of any formation fluids in all relevant geologic formations to ensure conformance with the injection well construction requirements under section 13.3 and to establish accurate baseline data against which future measurements may be compared. The owner or operator must submit to the Director a descriptive report prepared by a knowledgeable log analyst that includes an interpretation of the results of such logs and tests. At a minimum, such logs and tests must include:

~~a.1~~ 13.5.1.a. Deviation checks during drilling on all holes constructed by drilling a pilot hole which is enlarged by reaming or another method. Such checks must be at sufficiently frequent intervals to determine the location of the borehole and to ensure that vertical avenues for fluid movement in the form of diverging holes are not created during drilling; and

~~a.2~~ 13.5.1.b. Before and upon installation of the surface casing:

~~a.2.A~~ 13.5.1.b.1. Resistivity, spontaneous potential, and caliper logs before the casing is installed; and

~~a.2.B~~ 13.5.1.b.2. A cement bond and variable density log to evaluate cement quality radially, and a temperature log after the casing is set and cemented.

~~a.3~~ 13.5.1.c. Before and upon installation of the long string casing:

~~a.3.A~~ 13.5.1.c.1. Resistivity, spontaneous potential, porosity, caliper, gamma ray, fracture finder logs, and any other logs the Director requires for the given geology before the casing is installed; and

~~a.3.B~~ 13.5.1.c.2. A cement bond and variable density log, and a temperature log after the casing is set and cemented.

~~a.4~~ 13.5.1.d. A series of tests designed to demonstrate the internal and external mechanical integrity of injection wells, which may include:

~~a.4.A~~ 13.5.1.d.1. A pressure test with liquid or gas;

~~a.4.B~~ 13.5.1.d.2. A tracer survey such as oxygen-activation logging;

~~a.4.C~~ 13.5.1.d.3. A temperature or noise log;

~~a.4.D~~ 13.5.1.d.4. A casing inspection log; and

~~a.5~~ 13.5.1.e. Any alternative methods that provide equivalent or better information and that are required by and/or approved of by the Director.

~~b~~13.5.2. The owner or operator must take whole cores or sidewall cores of the injection zone and confining system and formation fluid samples from the injection zone(s), and must submit to the Director a detailed report prepared by a log analyst that includes: Well log analyses (including well logs), core analyses, and formation fluid sample information. The Director may accept information on cores from nearby wells if the owner or operator can demonstrate that core retrieval is not possible and that such cores are representative of conditions at the well. The Director may require the owner or operator to core other formations in the borehole.

~~c~~13.5.3. The owner or operator must record the fluid temperature, pH, conductivity, reservoir pressure, and static fluid level of the injection zone(s).

~~d~~13.5.4. At a minimum, the owner or operator must determine or calculate the following information concerning the injection and confining zone(s):

~~d.1~~ 13.5.4.a. Fracture pressure;

~~d.2~~ 13.5.4.b. Other physical and chemical characteristics of the injection and confining zone(s);
and

~~d.3~~ 13.5.4.c. Physical and chemical characteristics of the formation fluids in the injection zone(s).

~~e~~13.5.5. Upon completion, but prior to operation, the owner or operator must conduct the following tests to verify hydrogeologic characteristics of the injection zone(s):

- ~~—e.1~~ 13.5.5.a. A pressure fall-off test; and,
- ~~—e.2~~ 13.5.5.b. A pump test; or

~~e.3~~ 13.5.5.c. Injectivity tests.

§13.5.6. The owner or operator must provide the Director with the opportunity to witness all logging and testing by this subpart. The owner or operator must submit a schedule of such activities to the Director 30 days prior to conducting the first test and submit any changes to the schedule 30 days prior to the next scheduled test.

13.6. Operating, Monitoring, and Reporting Requirements.

~~a~~13.6.1. Operating Requirements: The Director shall, under subdivision 14.7.~~e~~3., prescribe requirements governing the operation of injection wells in the permit. Requirements for Class 6 wells shall, at a minimum, specify that:

~~a.1~~ 13.6.1.a. Except during stimulation, the owner or operator must ensure that injection pressure does not exceed 90 percent of the fracture pressure of the injection zone(s) so as to ensure that the injection does not initiate new fractures or propagate existing fractures in the injection zone(s). In no case may injection pressure initiate fractures in the confining zone(s) or cause the movement of injection or formation fluids that endangers a USDW. Pursuant to requirements at subsection 13.8.~~a.9~~1.i., all stimulation programs must be approved by the Director as part of the permit application and incorporated into the permit.

~~a.2~~ 13.6.1.b. Injection between the outermost casing protecting underground sources of drinking water and the well bore is prohibited; and

~~a.2.A~~ 13.6.1.b.1. The owner or operator must fill the annulus between the tubing and the long string casing with a non-corrosive fluid approved by the Director. The owner or operator must maintain on the annulus a pressure that exceeds the operating injection pressure, unless the Director determines that such requirement might harm the integrity of the well or endanger USDWs.

~~a.3~~ 13.6.1.c. Other than during periods of well workover (maintenance) approved by the Director in which the sealed tubing-casing annulus is disassembled for maintenance or corrective procedures, the owner or operator must maintain mechanical integrity of the injection well at all times.

~~a.4~~ 13.6.1.d. The owner or operator must install and use:

~~a.4.A~~ 13.6.1.d.1. Continuous recording devices to monitor: The injection pressure; the rate, volume and/or mass, and temperature of the carbon dioxide stream; and the pressure on the annulus between the tubing and the long string casing and annulus fluid volume; and

~~a.4.B~~ 13.6.1.d.2. Alarms and automatic surface shut-off systems or, at the discretion of the Director, down-hole shut-off systems (e.g., automatic shut-off, check valves) for onshore wells or, other mechanical devices that provide equivalent protection; and

~~a.4.C~~ 13.6.1.d.3. Alarms and automatic down-hole shut-off systems for wells located offshore but within State territorial waters, designed to alert the operator and shut-in the well when

operating parameters such as annulus pressure, injection rate, or other parameters diverge beyond permitted ranges and/or gradients specified in the permit.

~~a.5~~ 13.6.1.e. If a shutdown (*i.e.*, down-hole or at the surface) is triggered or a loss of mechanical integrity is discovered, the owner or operator must immediately investigate and identify as expeditiously as possible the cause of the shutoff. If, upon such investigation, the well appears to be lacking mechanical integrity, or if monitoring required under paragraph (e) of this section otherwise indicates that the well may be lacking mechanical integrity, the owner or operator must:

~~a.5.A~~ 13.6.1.e.1. Immediately cease injection;

~~a.5.B~~ 13.6.1.e.2. Take all steps reasonably necessary to determine whether there may have been a release of the injected carbon dioxide stream or formation fluids into any unauthorized zone;

~~a.5.C~~ 13.6.1.e.3. Notify the Director within 24 hours;

~~a.5.D~~ 13.6.1.e.4. Restore and demonstrate mechanical integrity to the satisfaction of the Director prior to resuming injection; and

~~a.5.E~~ 13.6.1.e.5. Notify the Director when injection can be expected to resume.

~~b~~13.6.2. Testing and monitoring requirements. The owner or operator of a Class 6 well must prepare, maintain, and comply with a testing and monitoring plan to verify that the geologic sequestration project is operating as permitted and is not endangering USDWs. The requirement to maintain and implement an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit. The testing and monitoring plan must be submitted with the permit application, for Director approval, and must include a description of how the owner or operator will meet the requirements of this section, including accessing sites for all necessary monitoring and testing during the life of the project. Testing and monitoring associated with geologic sequestration projects must, at a minimum, include:

~~b.1~~ 13.6.2.a. Analysis of the carbon dioxide stream with sufficient frequency to yield data representative of its chemical and physical characteristics;

~~b.2~~ 13.6.2.b. Installation and use, except during well workovers as defined in subsection 13.6.a.3., of continuous recording devices to monitor injection pressure, rate, and volume; the pressure on the annulus between the tubing and the long string casing; and the annulus fluid volume added;

~~b.3~~ 13.6.2.c. Corrosion monitoring of the well materials for loss of mass, thickness, cracking, pitting, and other signs of corrosion, which must be performed on a quarterly basis to ensure that the well components meet the minimum standards for material strength and performance set forth in subsection 13.3.~~b.2~~ and 13.3.~~b.12.a.~~, by:

~~b.3.A~~ 13.6.2.c.1. Analyzing coupons of the well construction materials placed in contact with the carbon dioxide stream; or

~~b.3.B~~ 13.6.2.c.2. Routing the carbon dioxide stream through a loop constructed with the material used in the well and inspecting the materials in the loop; or

~~b.3.C~~ 13.6.2.c.3. Using an alternative method approved by the Director;

~~b.4~~ 13.6.2.d. Periodic monitoring of the ground water quality and geochemical changes above the confining zone(s) that may be a result of carbon dioxide movement through the confining zone(s) or additional identified zones including:

~~b.4.A~~ 13.6.2.d.1. The location and number of monitoring wells based on specific information about the geologic sequestration project, including injection rate and volume, geology, the presence of artificial penetrations, and other factors; and

~~b.4.A~~ 13.6.2.d.2. The monitoring frequency and spatial distribution of monitoring wells based on baseline geochemical data that has been collected under subsection 13.8.a.61.f. and on any modeling results in the area of review evaluation required by subsection 14.9.c.

~~b.5~~ 13.6.2.e. A demonstration of external mechanical integrity pursuant to subsection 6.2.e3. at least once per year until the injection well is plugged; and, if required by the Director, a casing inspection log pursuant to requirements at subsection 6.2.e.5-A3.e.1. at a frequency established in the testing and monitoring plan;

~~b.6~~ 13.6.2.f. A pressure fall-off test at least once every five years unless more frequent testing is required by the Director based on site-specific information;

~~b.7~~ 13.6.2.g. Testing and monitoring to track the extent of the carbon dioxide plume and the presence or absence of elevated pressure (e.g., the pressure front) by using:

~~b.7.A~~ 13.6.2.g.1. Direct methods in the injection zone(s); and,

~~b.7.B~~ 13.6.2.g.2. Indirect methods (e.g., seismic, electrical, gravity, or electromagnetic surveys and/or down-hole carbon dioxide detection tools), unless the Director determines, based on site-specific geology, that such methods are not appropriate;

~~b.8~~ 13.6.2.h. The Director may require surface air monitoring and/or soil gas monitoring to detect movement of carbon dioxide that could endanger a USDW.

~~b.8.A~~ 13.6.2.h.1. Design of Class 6 surface air and/or soil gas monitoring must be based on potential risks to USDWs within the area of review;

~~b.8.B~~ 13.6.2.h.2. The monitoring frequency and spatial distribution of surface air monitoring and/or soil gas monitoring must be decided using baseline data, and the monitoring plan must describe how the proposed monitoring will yield useful information on the area of review delineation and/or compliance with standards under § 47 CSR 13-14.1.;

~~b.8.C~~ 13.6.2.h.3. If an owner or operator demonstrates that monitoring employed under § 40 CFR 98.440 to 98.449 of this chapter (Clean Air Act, 42 U.S.C. 7401 *et seq.*) accomplishes the goals of 13.6.b.8.A2.h.1., and 13.6.b.8.B2.h.2. above, and meets the requirements pursuant to 13.6.e.1.C.v3.a.3.E., a Director that requires surface air/soil gas monitoring must approve the use of monitoring employed under § 40 CFR 98.440 to 98.449 of this chapter. Compliance with § 40 CFR 98.440 to 98.449 of this chapter pursuant to this provision is considered a condition of the Class 6 permit;

~~b.9~~ 13.6.2.i. Any additional monitoring, as required by the Director, necessary to support, upgrade, and improve computational modeling of the area of review evaluation required under subsection 14.9.e3. and to determine compliance with standards under section 14.1 of this rule;

~~b.10~~ 13.6.2.j. The owner or operator shall periodically review the testing and monitoring plan to incorporate monitoring data collected under this subpart, operational data collected under section 13.6., and the most recent area of review reevaluation performed under subsection 14.9.e5. In no case shall the owner or operator review the testing and monitoring plan less often than once every five years. Based on this review, the owner or operator shall submit an amended testing and monitoring plan or demonstrate to the Director that no amendment to the testing and monitoring plan is needed. Any amendments to the testing

and monitoring plan must be approved by the Director, must be incorporated into the permit, and are subject to the permit modification requirements at sections 14.8 and 14.20 of this rule, as appropriate. Amended plans or demonstrations shall be submitted to the Director as follows:

~~b.10.A~~ 13.6.2.j.1. Within one year of an area of review reevaluation;

~~b.10.B~~ 13.6.2.j.2. Following any significant changes to the facility, such as addition of monitoring wells or newly permitted injection wells within the area of review, on a schedule determined by the Director; or

~~b.10.C~~ 13.6.2.j.3. When required by the Director.

~~b.11~~ 13.6.2.k. A quality assurance and surveillance plan for all testing and monitoring requirements.

e13.6.3. Reporting requirements: The Director shall prescribe the form, manner, content, and frequency of reporting by the operator. The operator shall be required to identify the types of tests and methods used to generate the monitoring data. At a minimum, requirements shall include:

~~e.1~~ 13.6.3.a. The owner or operator must, at a minimum, provide, as specified in 13.6.~~e.1.E~~3.a.5., the following reports to the Director, for each permitted Class 6 well:

~~e.1.A.~~ 13.6.3.a.1. Semi-annual reports containing:

~~e.1.A.i~~ 13.6.3.a.1.A. Any changes to the physical, chemical, and other relevant characteristics of the carbon dioxide stream from the proposed operating data;

~~e.1.A.ii~~ 13.6.3.a.1.B. Monthly average, maximum, and minimum values for injection pressure, flow rate and volume, and annular pressure;

~~e.1.A.iii~~ 13.6.3.a.1.C. A description of any event that exceeds operating parameters for annulus pressure or injection pressure specified in the permit;

~~e.1.A.iv~~ 13.6.3.a.1.D. A description of any event which triggers a shut-off device required pursuant to subsection 13.6.~~a.4~~1.d. and the response taken;

~~e.1.A.v~~ 13.6.3.a.1.E. The monthly volume and/or mass of the carbon dioxide stream injected over the reporting period and the volume injected cumulatively over the life of the project;

~~e.1.A.vi~~ 13.6.3.a.1.F. Monthly annulus fluid volume added; and

~~e.1.A.vii~~ 13.6.3.a.1.G. The results of monitoring prescribed under subsection 13.6.b2.

~~e.1.B~~ 13.6.3.a.2. Report, within 30 days, the results of:

~~e.1.B.i~~ 13.6.3.a.2.A. Periodic tests of mechanical integrity;

~~e.1.B.ii~~ 13.6.3.a.2.B. Any well workover; and,

~~e.1.B.iii~~ 13.6.3.a.2.C. Any other test of the injection well conducted by the permittee if required by the Director.

~~e.1.C~~ 13.6.3.a.3. Report, within 24 hours:

~~e.1.C.i~~ 13.6.3.a.3.A. Any evidence that the injected carbon dioxide stream or associated pressure front may cause an endangerment to a USDW;

~~e.1.C.ii~~ 13.6.3.a.3.B. Any noncompliance with a permit condition, or malfunction of the injection system, which may cause fluid migration into or between USDWs;

~~e.1.C.iii~~ 13.6.3.a.3.C. Any triggering of a shut-off system (*i.e.*, down-hole or at the surface);

~~e.1.C.iv~~ 13.6.3.a.3.D. Any failure to maintain mechanical integrity; or.

~~e.1.C.v~~ 13.6.3.a.3.E. Pursuant to compliance with the requirement at subsection 13.6.b.82.h. for surface air/soil gas monitoring or other monitoring technologies, if required by the Director, any release of carbon dioxide to the atmosphere or biosphere.

~~e.1.D~~ 13.6.3.a.4. Owners or operators must notify the Director in writing 30 days in advance of:

~~e.1.D.i~~ 13.6.3.a.4.A. Any planned well workover;

13.6.3.a.4.B. Any planned stimulation activities, other than stimulation for formation testing conducted under subsection 13.8.e.43.d., and

~~e.1.D.ii~~ 13.6.3.a.4.C. Any other planned test of the injection well conducted by the permittee.

~~e.1.E~~ 13.6.3.a.5. Regardless of whether a State has primary enforcement responsibility, owners or operators must submit all required reports, submittals, and notifications under subpart H of § 40 CFR 146 to EPA in an electronic format approved by EPA.

~~e.1.F~~ 13.6.3.a.6. Records shall be retained by the owner or operator as follows:

~~e.1.F.i~~ 13.6.3.a.6.A. All data collected under §47-13-13.8. for Class permit applications shall be retained throughout the life of the geologic sequestration project and for 10 years following site closure.

~~e.1.F.ii~~ 13.6.3.a.6.B. Data on the nature and composition of all injected fluids collected pursuant to subsection 13.6.b.1. shall be retained until 10 years after site closure. The Director may require the owner or operator to deliver the records to the Director at the conclusion of the retention period.

~~e.1.F.iii~~ 13.6.3.a.6.C. Monitoring data collected pursuant to subsections 13.6.b.22.b. through 13.6.b.9. shall be retained for 10 years after it is collected.

~~e.1.F.iv~~ 13.6.3.a.6.D. Well plugging reports, post-injection site care data, including, if appropriate, data and information used to develop the demonstration of the alternative post-injection site care timeframe, and the site closure report collected pursuant to requirements at subsections 13.9.46. and 13.9.48. shall be retained for 10 years following site closure.

~~e.1.F.v~~ 13.6.3.a.6.E. The Director has authority to require the owner or operator to retain any records required in this subpart for longer than 10 years after site closure.

13.7. Emergency and Remedial Response.

a13.7.1. As part of the permit application, the owner or operator must provide the Director with an emergency and remedial response plan that describes actions the owner or operator must take to address movement of the injection or formation fluids that may cause an endangerment to a USDW during

construction, operation, and post-injection site care periods. The requirement to maintain and implement an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit.

~~b~~13.7.2. If the owner or operator obtains evidence that the injected carbon dioxide stream and associated pressure front may cause an endangerment to a USDW, the owner or operator must:

~~b.1~~ 13.7.2.a. Immediately cease injection;

~~b.2~~ 13.7.2.b. Take all steps reasonably necessary to identify and characterize any release;

~~b.3~~ 13.7.2.c. Notify the Director within 24 hours; and

~~b.4~~ 13.7.2.d. Implement the emergency and remedial response plan approved by the Director.

~~c~~13.7.3. The Director may allow the operator to resume injection prior to remediation if the owner or operator demonstrates that the injection operation will not endanger USDWs.

~~d~~13.7.4. The owner or operator shall periodically review the emergency and remedial response plan developed under paragraph (a) of this section. In no case shall the owner or operator review the emergency and remedial response plan less often than once every five years. Based on this review, the owner or operator shall submit an amended emergency and remedial response plan or demonstrate to the Director that no amendment to the emergency and remedial response plan is needed. Any amendments to the emergency and remedial response plan must be approved by the Director, must be incorporated into the permit, and are subject to the permit modification requirements at sections 14.8 and 14.20 of this rule, as appropriate. Amended plans or demonstrations shall be submitted to the Director as follows:

~~d.1~~ 13.7.4.a. Within one year of an area of review reevaluation;

~~d.2~~ 13.7.4.b. Following any significant changes to the facility, such as addition of injection or monitoring wells, on a schedule determined by the Director; or

~~d.3~~ 13.7.4.c. When required by the Director.

13.8. Required Class 6 Permit Information.

~~a~~13.8.1. Prior to the issuance of a permit for the construction of a new Class 6 well or the conversion of an existing Class 1, Class 2, or Class 5 well to a Class 6 well, the owner or operator shall submit, pursuant to 13.6.~~e.1~~~~E3.a.5.~~, and the Director shall consider the following:

~~a.1~~ 13.8.1.a. Information required in section 10.~~d4~~. of this rule;

~~a.2~~ 13.8.1.b. A map showing the injection well for which a permit is sought and the applicable area of review consistent with section 5.4. and subsection 14.9.~~b.52.e~~. Within the area of review, the map must show the number or name, and location of all injection wells, producing wells, abandoned wells, plugged wells or dry holes, deep stratigraphic boreholes, State- or EPA-approved subsurface cleanup sites, surface bodies of water, springs, mines (surface and subsurface), quarries, water wells, other pertinent surface features including structures intended for human occupancy, State, Tribal, and Territory boundaries, and roads. The map should also show faults, if known or suspected. Only information of public record is required to be included on this map;

~~a.3~~ 13.8.1.c. Information on the geologic structure and hydrogeologic properties of the proposed storage site and overlying formations, including:

~~a.3.A~~ 13.8.1.c.1. Maps and cross sections of the area of review;

~~a.3.B~~ 13.8.1.c.2. The location, orientation, and properties of known or suspected faults and fractures that may transect the confining zone(s) in the area of review and a determination that they would not interfere with containment;

~~a.3.C~~ 13.8.1.c.3. Data on the depth, areal extent, thickness, mineralogy, porosity, permeability, and capillary pressure of the injection and confining zone(s); including geology/facies changes based on field data which may include geologic cores, outcrop data, seismic surveys, well logs, and names and lithologic descriptions;

~~a.3.D~~ 13.8.1.c.4. Geo-mechanical information on fractures, stress, ductility, rock strength, and in situ fluid pressures within the confining zone(s);

~~a.3.E~~ 13.8.1.c.5. Information on the seismic history including the presence and depth of seismic sources and a determination that the seismicity would not interfere with containment; and

~~a.3.F~~ 13.8.1.c.6. Geologic and topographic maps and cross sections illustrating regional geology, hydrogeology, and the geologic structure of the local area.

~~a.4~~ 13.8.1.d. A tabulation of all wells within the area of review which penetrate the injection or confining zone(s). Such data must include a description of each well's type, construction, date drilled, location, depth, record of plugging and/or completion, and any additional information the Director may require;

~~a.5~~ 13.8.1.e. Maps and stratigraphic cross sections indicating the general vertical and lateral limits of all USDWs, water wells and springs within the area of review, their positions relative to the injection zone(s), and the direction of water movement, where known;

~~a.6~~ 13.8.1.f. Baseline geochemical data on subsurface formations, including all USDWs in the area of review;

~~a.7~~ 13.8.1.g. Proposed operating data for the proposed geologic sequestration site:

~~a.7.A~~ 13.8.1.g.1. Average and maximum daily rate and volume and/or mass and total anticipated volume and/or mass of the carbon dioxide stream;

~~a.7.B~~ 13.8.1.g.2. Average and maximum injection pressure;

~~a.7.C~~ 13.8.1.g.3. The source(s) of the carbon dioxide stream; and

~~a.7.D~~ 13.8.1.g.4. An analysis of the chemical and physical characteristics of the carbon dioxide stream.

~~a.8~~ 13.8.1.h. Proposed pre-operational formation testing program to obtain an analysis of the chemical and physical characteristics of the injection zone(s) and confining zone(s) and that meets the requirements at section 13.5.;

~~a.9~~ 13.8.1.i. Proposed stimulation program, a description of stimulation fluids to be used and a determination that stimulation will not interfere with containment;

~~a.10~~ 13.8.1.j. Proposed procedure to outline steps necessary to conduct injection operation;

~~a.11~~ 13.8.1.k. Schematics or other appropriate drawings of the surface and subsurface construction details of the well;

~~a-12~~ 13.8.1.l. Injection well construction procedures that meet the requirements of section 13.3;

~~a-13~~ 13.8.1.m. Proposed area of review and corrective action plan that meets the requirements under section 5.4. and subsection 14.9.b.52.e.;

~~a-14~~ 13.8.1.n. A demonstration, satisfactory to the Director, that the applicant has met the financial responsibility requirements under subsection 14.7.g7.;

~~a-15~~ 13.8.1.o. Proposed testing and monitoring plan required by subsection 13.6.b2.;

~~a-16~~ 13.8.1.p. Proposed injection well plugging plan required by subsection 13.4.b2.;

~~a-17~~ 13.8.1.q. Proposed post-injection site care and site closure plan required by subsection 13.9.a1.;

~~a-18~~ 13.8.1.r. At the Director's discretion, a demonstration of an alternative post-injection site care timeframe required by subsection 13.9.e3.;

~~a-19~~ 13.8.1.s. Proposed emergency and remedial response plan required by subsection 13.7.a1.;

~~a-20~~ 13.8.1.t. A list of contacts, submitted to the Director, for those States, Tribes, and Territories identified to be within the area of review of the Class 6 project based on information provided in subsection 13.8.a21.b. of this section; and

~~a-21~~ 13.8.1.u. Any other information requested by the Director.

~~b~~13.8.2. The Director shall notify, in writing, any States, Tribes, or Territories within the area of review of the Class 6 project based on information provided in paragraphs (a)(2) and (a)(20) of this section of the permit application and pursuant to the requirements at § 40CFR 145.23(f)(13).

~~e~~13.8.3. Prior to granting approval for the operation of a Class 6 well, the Director shall consider the following information:

~~e-1~~ 13.8.3.a. The final area of review based on modeling, using data obtained during logging and testing of the well and the formation as required by subsections 13.8.e23.b., 13.8.e33.c., 13.8.e43.d., 13.8.e63.f., 13.8.e73.g., and 13.8.e103.j.;

~~e-2~~ 13.8.3.b. Any relevant updates, based on data obtained during logging and testing of the well and the formation as required by subsections 13.8.e33.c., 13.8.e43.d., 13.8.e63.f., 13.8.e73.g., and 13.8.e103.j., to the information on the geologic structure and hydrogeologic properties of the proposed storage site and overlying formations, submitted to satisfy the requirements of subsection 13.8.a31.c.;

~~e-3~~ 13.8.3.c. Information on the compatibility of the carbon dioxide stream with fluids in the injection zone(s) and minerals in both the injection and the confining zone(s), based on the results of the formation testing program, and with the materials used to construct the well;

~~e-4~~ 13.8.3.d. The results of the formation testing program required at subsection 13.8.a81.h.;

~~e-5~~ 13.8.3.e. Final injection well construction procedures that meet the requirements of section 13.3.;

~~e-6~~ 13.8.3.f. The status of corrective action on wells in the area of review;

~~e-7~~ 13.8.3.g. All available logging and testing program data on the well required by section 13.5.;

~~e-8~~ 13.8.3.h. A demonstration of mechanical integrity pursuant to section 6.2;

~~e-9~~ 13.8.3.i. Any updates to the proposed area of review and corrective action plan, testing and monitoring plan, injection well plugging plan, post-injection site care and site closure plan, or the emergency and remedial response plan submitted under subsection 13.8.a1., which are necessary to address new information collected during logging and testing of the well and the formation as required by all paragraphs of this section, and any updates to the alternative post-injection site care timeframe demonstration submitted under subsection 13.8.a1., which are necessary to address new information collected during the logging and testing of the well and the formation as required by all paragraphs of this section; and

~~e-10~~ 13.8.3.j. Any other information requested by the Director.

~~d~~13.8.4. Owners or operators seeking a waiver of the requirement to inject below the lowermost USDW must also refer to subsection 14.8.d. and submit a supplemental report, as required at subsection 14.8.d-14.a. The supplemental report is not part of the permit application.

13.9. Post-injection Site Care and Site Closure.

~~a~~13.9.1. The owner or operator of a Class 6 well must prepare, maintain, and comply with a plan for post-injection site care and site closure that meets the requirements of subsection 13.9.a-21.b. and is acceptable to the Director. The requirement to maintain and implement an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit.

~~a-1~~ 13.9.1.a. The owner or operator must submit the post-injection site care and site closure plan as a part of the permit application to be approved by the Director.

~~a-2~~ 13.9.1.b. The post-injection site care and site closure plan must include the following information:

~~a-2-A~~ 13.9.1.b.1. The pressure differential between pre-injection and predicted post-injection pressures in the injection zone(s);

~~a-2-B~~ 13.9.1.b.2. The predicted position of the carbon dioxide plume and associated pressure front at site closure as demonstrated in the area of review evaluation required under subsection 14.9.c.1.;

~~a-2-C~~ 13.9.1.b.3. A description of post-injection monitoring location, methods, and proposed frequency;

~~a-2-D~~ 13.9.1.b.4. A proposed schedule for submitting post-injection site care monitoring results to the Director pursuant to subsection 13.6.c.1.E.; and,

~~a-2-E~~ 13.9.1.b.5. The duration of the post-injection site care timeframe and, if approved by the Director, the demonstration of the alternative post-injection site care timeframe that ensures non-endangerment of USDWs.

~~a-3~~ 13.9.1.c. Upon cessation of injection, owners or operators of Class 6 wells must either submit an amended post-injection site care and site closure plan or demonstrate to the Director through

monitoring data and modeling results that no amendment to the plan is needed. Any amendments to the post-injection site care and site closure plan must be approved by the Director, be incorporated into the permit, and are subject to the permit modification requirements at sections 14.18 and 14.20 of this rule, as appropriate.

~~a.4~~ 13.9.1.d. At any time during the life of the geologic sequestration project, the owner or operator may modify and resubmit the post-injection site care and site closure plan for the Director's approval within 30 days of such change.

~~b.13.9.2.~~ The owner or operator shall monitor the site following the cessation of injection to show the position of the carbon dioxide plume and pressure front and demonstrate that USDWs are not being endangered.

~~b.1~~ 13.9.2.a. Following the cessation of injection, the owner or operator shall continue to conduct monitoring as specified in the Director-approved post-injection site care and site closure plan for at least 50 years or for the duration of the alternative timeframe approved by the Director pursuant to requirements in subsection 13.9.e3., unless he/she makes a demonstration under subsection 13.9.b.2.2.b. The monitoring must continue until the geologic sequestration project no longer poses an endangerment to USDWs and the demonstration under subsection 13.9.b.22.b. is submitted and approved by the Director.

~~b.2~~ 13.9.2.b. If the owner or operator can demonstrate to the satisfaction of the Director before 50 years or prior to the end of the approved alternative timeframe based on monitoring and other site-specific data, that the geologic sequestration project no longer poses an endangerment to USDWs, the Director may approve an amendment to the post-injection site care and site closure plan to reduce the frequency of monitoring or may authorize site closure before the end of the 50-year period or prior to the end of the approved alternative timeframe, where he or she has substantial evidence that the geologic sequestration project no longer poses a risk of endangerment to USDWs.

~~b.3~~ 13.9.2.c. Prior to authorization for site closure, the owner or operator must submit to the Director for review and approval a demonstration, based on monitoring and other site-specific data, that no additional monitoring is needed to ensure that the geologic sequestration project does not pose an endangerment to USDWs.

~~b.4~~ 13.9.2.d. If the demonstration in subsection 13.9.b.32.c. cannot be made (*i.e.*, additional monitoring is needed to ensure that the geologic sequestration project does not pose an endangerment to USDWs) at the end of the 50-year period or at the end of the approved alternative timeframe, or if the Director does not approve the demonstration, the owner or operator must submit to the Director a plan to continue post-injection site care until a demonstration can be made and approved by the Director.

~~e.13.9.3.~~ Demonstration of alternative post-injection site care timeframe. At the Director's discretion, the Director may approve, in consultation with EPA, an alternative post-injection site care timeframe other than the 50 year default, if an owner or operator can demonstrate during the permitting process that an alternative post-injection site care timeframe is appropriate and ensures non-endangerment of USDWs. The demonstration must be based on significant, site-specific data and information including all data and information collected pursuant to section 13.8. and subsection 13.2.a1., and must contain substantial evidence that the geologic sequestration project will no longer pose a risk of endangerment to USDWs at the end of the alternative post-injection site care timeframe.

~~e.1~~ 13.9.3.a. A demonstration of an alternative post-injection site care timeframe must include consideration and documentation of:

~~e.1.A~~ 13.9.3.a.1. The results of computational modeling performed pursuant to delineation of the area of review under section 5.4.;

~~e.1.B~~ 13.9.3.a.2. The predicted timeframe for pressure decline within the injection zone, and any other zones, such that formation fluids may not be forced into any USDWs; and/or the timeframe for pressure decline to pre-injection pressures;

~~e.1.C~~ 13.9.3.a.3. The predicted rate of carbon dioxide plume migration within the injection zone, and the predicted timeframe for the cessation of migration;

~~e.1.D~~ 13.9.3.a.4. A description of the site-specific processes that will result in carbon dioxide trapping including immobilization by capillary trapping, dissolution, and mineralization at the site;

~~e.1.E~~ 13.9.3.a.5. The predicted rate of carbon dioxide trapping in the immobile capillary phase, dissolved phase, and/or mineral phase;

~~e.1.G~~ 13.9.3.a.6. The results of laboratory analyses, research studies, and/or field or site-specific studies to verify the information required in subsections 13.9.~~e.1.D~~3.a.4. and 13.9.~~e.1.E~~3.a.5.;

~~e.1.H~~ 13.9.3.a.7. A characterization of the confining zone(s) including a demonstration that it is free of transmissive faults, fractures, and micro-fractures and of appropriate thickness, permeability, and integrity to impede fluid (e.g., carbon dioxide, formation fluids) movement;

~~e.1.I~~ 13.9.3.a.8. The presence of potential conduits for fluid movement including planned injection wells and project monitoring wells associated with the proposed geologic sequestration project or any other projects in proximity to the predicted/modeled, final extent of the carbon dioxide plume and area of elevated pressure;

~~e.1.J~~ 13.9.3.a.9. A description of the well construction and an assessment of the quality of plugs of all abandoned wells within the area of review;

~~e.1.K~~ 13.9.3.a.10. The distance between the injection zone and the nearest USDWs above and/or below the injection zone; and

~~e.1.L~~ 13.9.3.a.11. Any additional site-specific factors required by the Director.

~~e.2~~ 13.9.3.b. Information submitted to support the demonstration in subsection 13.9.~~e.1~~3.a. must meet the following criteria:

~~e.2.A~~ 13.9.3.b.1. All analyses and tests performed to support the demonstration must be accurate, reproducible, and performed in accordance with the established quality assurance standards;

~~e.2.B~~ 13.9.3.b.2. Estimation techniques must be appropriate and EPA-certified test protocols must be used where available;

~~e.2.C~~ 13.9.3.b.3. Predictive models must be appropriate and tailored to the site conditions, composition of the carbon dioxide stream and injection and site conditions over the life of the geologic sequestration project;

~~e.2.D~~ 13.9.3.b.4. Predictive models must be calibrated using existing information (e.g., at Class 1, Class 2, or Class 5 experimental technology well sites) where sufficient data are available;

~~e.2.E~~ 13.9.3.b.5. Reasonably conservative values and modeling assumptions must be used and disclosed to the Director whenever values are estimated on the basis of known, historical information instead of site-specific measurements;

~~e.2.F~~ 13.9.3.b.6. An analysis must be performed to identify and assess aspects of the alternative post-injection site care timeframe demonstration that contribute significantly to uncertainty. The owner or operator must conduct sensitivity analyses to determine the effect that significant uncertainty may contribute to the modeling demonstration.

~~e.2.G~~ 13.9.3.b.7. An approved quality assurance and quality control plan must address all aspects of the demonstration; and,

~~e.2.H~~ 13.9.3.b.8. Any additional criteria required by the Director.

~~d~~13.9.4. Notice of intent for site closure. The owner or operator must notify the Director in writing at least 120 days before site closure. At this time, if any changes have been made to the original post-injection site care and site closure plan, the owner or operator must also provide the revised plan. The Director may allow for a shorter notice period.

~~e~~13.9.5. After the Director has authorized site closure, the owner or operator must plug all monitoring wells in a manner which will not allow movement of injection or formation fluids that endangers a USDW.

~~f~~13.9.6. The owner or operator must submit a site closure report to the Director within 90 days of site closure, which must thereafter be retained at a location designated by the Director for 10 years. The report must include:

~~f.1~~ 13.9.6.a. Documentation of appropriate injection and monitoring well plugging as specified in section 13.4. and subsection 13.9.e. The owner or operator must provide a copy of a survey plat which has been submitted to the local zoning authority designated by the Director. The plat must indicate the location of the injection well relative to permanently surveyed benchmarks. The owner or operator must also submit a copy of the plat to the Regional Administrator of the appropriate EPA Regional Office;

~~f.2~~ 13.9.6.b. Documentation of appropriate notification and information to such State, local and Tribal authorities that have authority over drilling activities to enable such State, local, and Tribal authorities to impose appropriate conditions on subsequent drilling activities that may penetrate the injection and confining zone(s); and

~~f.3~~ 13.9.6.c. Records reflecting the nature, composition, and volume of the carbon dioxide stream.

~~g~~13.9.7. Each owner or operator of a Class 6 injection well must record a notation on the deed to the facility property or any other document that is normally examined during title search that will in perpetuity provide any potential purchaser of the property the following information:

~~g.1~~ 13.9.7.a. The fact that land has been used to sequester carbon dioxide;

~~g.2~~ 13.9.7.b. The name of the State agency, local authority, and/or Tribe with which the survey plat was filed, as well as the address of the Environmental Protection Agency Regional Office to which it was submitted; and

~~g-3~~ 13.9.7.c. The volume of fluid injected, the injection zone or zones into which it was injected, and the period over which injection occurred.

~~h~~13.9.8. The owner or operator must retain for 10 years following site closure, records collected during the post-injection site care period. The owner or operator must deliver the records to the Director at the conclusion of the retention period, and the records must thereafter be retained at a location designated by the Director for that purpose.

§47-13-14. Injection Well Permitting Program.

14.1. General Prohibition and Prohibition of Movement of Fluid into Underground Sources of Drinking Water.

~~a~~14.1.1. Underground injection is prohibited unless authorized by permit or rule. The construction of any well required to have a permit is prohibited until the permit has been issued.

~~b~~14.1.2. No owner or operator shall construct, operate, maintain, convert, plug, abandon or conduct any other underground injection activity in a manner which causes or allows the movement of fluid containing any contaminant into underground sources of drinking water, if the presence of that contaminant may cause a violation of any primary drinking water regulation under 40 CFR Part 142 or promulgated pursuant to W. Va. Code §16-1-1 et seq., or may otherwise adversely affect the health of persons. The applicant for a permit shall have the burden of showing that the requirements of this paragraph are met.

~~e~~14.1.3. For Class 1, 2, 3, and 6 wells, if any water quality monitoring of an USDW indicates the movement of any contaminant into USDW except as authorized under this rule, the Director shall prescribe such additional requirements for construction, corrective action, operation, monitoring, or reporting (including closure of the injection well) as are necessary to prevent such movement. In the case of wells authorized by permit, these additional requirements shall be imposed by modifying the permit or the permit may be revoked if cause exists, or appropriate enforcement action may be taken if the permit has been violated. In the case of wells authorized by rule, see subsection 14.2.

~~d~~14.1.4. For Class 5 wells, if at any time the Director learns that a Class 5 well may cause a violation of primary drinking water rules under 40 CFR Part 142 or W. Va. Code §16-1-1 et seq., he or she shall:

~~d-1~~ 14.1.4.a. Require the injector to obtain an individual permit;

~~d-2~~ 14.1.4.b. Order the injector to take such actions (including where required closure of the injection well) as may be necessary to prevent the violation; or

~~d-3~~ 14.1.4.c. Take enforcement action.

~~e~~14.1.5. Whenever the Director learns that a Class 5 well may be otherwise adversely affecting the health of persons, he or she may prescribe such actions as may be necessary to prevent the adverse effect, including any action authorized under subdivision 14.2.~~d4~~ of this section.

~~f~~14.1.6. Notwithstanding any other provision of this section, the Director may take emergency action under W. Va. Code §22-11-19 upon receipt of information that a contaminant which is present in or

is likely to enter a public water system or USDW may present an imminent and substantial endangerment to health of persons.

14.2. Authorization of Underground Injection by Rule.

~~a~~14.2.1. Types of underground injection which may be authorized by rule. Facilities may be authorized by rule under this rule as outlined in this paragraph. Underground injections not authorized by rule or permit are prohibited:

~~a.1~~ 14.2.1.a. Injection into existing or new Class 5 wells may be authorized by rule for periods up to one (1) year from the effective date of this rule. Rule authorizations may be reissued annually; however, all such wells must be issued permits within five (5) years or close down at the end of the fifth year's authorization period.

~~a.2~~ 14.2.1.b. Class 5 rule authorization is limited to groundwater remediation agent injections; and

~~a.3~~ 14.2.1.c. In the case of Class 5 wells, at the time of application for injection approval, the applicability of this rule is undetermined, such as:

~~a.3.A~~ 14.2.1.c.1. Septic systems which receive solely sanitary wastes and the number of people the system has the capacity to serve has not been determined; especially existing systems that must be evaluated by the health department for capacity, however authorization by rule terminates upon establishing the system is incapable of serving at least 20 people in a day; or

~~a.3.B~~ 14.2.1.c.2. For systems deemed capable of serving 20 or more people unless an application for permit is submitted in accordance with 14.3.b2.

~~a.4~~ 14.2.1.d. An existing or new Class 5 septic system capable of serving less than 20 people but which receives an alternate waste stream may be authorized by rule while a determination of the applicability of this rule is made, such as in the case of:

~~a.4.A~~ 14.2.1.d.1. Meat processing facilities, kennels, beauty salons, or other facilities with waste streams, other than sanitary waste.

~~a.5~~ 14.2.1.e. However, the Director has authority to withdraw the authorization if required under this section. Remediation related injections that are not expected to be continuous are typically authorized by rule, while most septic system and stormwater discharges are authorized by permit.

b14.2.2. Requirements of Rules. Any facility authorized by rule pursuant to this section shall meet the following requirements no later than one (1) year after authorization by such rules:

~~b.1~~ 14.2.2.a. Subdivision 14.6.a1. - (exemption from rule where authorized by temporary permits);

~~b.2~~ 14.2.2.b. Subdivision 14.6.b2. - (retention of records);

~~b.3~~ 14.2.2.c. Subdivision 14.6.d4. - (immediate reporting);

~~b.4~~ 14.2.2.d. Subdivision 14.6.e5. - (notice of abandonment);

~~b.5~~ 14.2.2.e. Subdivision 14.7.~~f.6~~, and subsections 8.3, 9.3, and 10.3. - (plugging and abandonment);

~~e~~14.2.3. Requiring a permit.

~~e.1~~ 14.2.3.a. The Director may require any Class 1, 2, 3, or 5 injection well authorized by rule to apply for and obtain an individual or area UIC permit. Under no circumstances may a Class 6 well be authorized to inject by rule. Cases where individual or area UIC permits may be required include, but are not limited to:

~~e.1.A~~ 14.2.3.a.1. The injection well is not in compliance with any requirement of the rule;

(Note: Any underground injection which violates any rule under this section is subject to appropriate enforcement action).

~~e.1.B~~ 14.2.3.a.2. The injection well is not or no longer is within the category of wells and types of well operations authorized in the rule;

~~e.1.C~~ 14.2.3.a.3. The protection of USDWs requires that the injection operation be regulated by requirements, such as for corrective action, monitoring and reporting, or operation, which are not contained in the rule; and

~~e.1.D~~ 14.2.3.a.4. As a part of the orderly implementation of the UIC Program during the period of authorization by rule.

~~e.2~~ 14.2.3.b. Any owner or operator authorized by a rule may request to be excluded from the coverage of the rule by applying for an individual or area UIC permit. The owner or operator shall submit an application under subsection 14.3 with reasons supporting the request to the Director. The Director may grant any such request.

~~d~~14.2.4. Inventory requirements. All injection wells covered by rule shall submit inventory information to the Director. Any rule under this section shall provide for the automatic termination of authorization for any well which fails to comply within the time specified in paragraph 14.2.~~d.3~~4.c of this section.

~~d.1~~ 14.2.4.a. Contents. The Director shall require:

~~d.1.A~~ 14.2.4.a.1. Information regarding pollutant loads and schedules for attaining compliance with water quality standards;

~~d.1.B~~ 14.2.4.a.2. Facility name and location;

~~d.1.C~~ 14.2.4.a.3. Name and address of legal contact;

~~d.1.D~~ 14.2.4.a.4. Ownership of facility;

~~d.1.E~~ 14.2.4.a.5. Nature and type of injection wells; and

~~d.1.F~~ 14.2.4.a.6. Operating status of injection wells.

~~d.2~~ 14.2.4.b. Notice. Upon approval of the State UIC Program, the Director shall notify owners or operators of injection wells of their duty to submit inventory information. The method of notification selected by the Director must assure that the owners or operators will be made aware of the inventory requirement.

~~d.3~~ 14.2.4.c. Deadlines. Owners or operators of injection wells must submit inventory information no later than one (1) year after authorization by rule. The Director need not require inventory information from any facility with interim status under W. Va. Code §22-18.

14.3. Application for a Permit; Authorization by Permit.

~~a~~14.3.1. Permit application. Except as provided in subsection 14.2 (authorization by rule), all underground injections into Class 1, 2, 3, or 6 wells shall be prohibited unless authorized by permit. Those authorized by a rule under subsection 14.2 must still apply for a permit under this section unless authorization was for the life of the well or project. Rules authorizing well injections for which permit applications have been submitted shall lapse for a particular well injection or project upon the effective date of the permit or permit denial for that well injection or project. Expiration will be effective following effective date of a permit, after closure (plugging and abandonment), or after conversion of the well.

~~b~~14.3.2. Time to apply. Any person who performs or proposes an underground injection for which a permit is or will be required shall submit an application to the Director in accordance with the State UIC Program as follows:

~~b.1~~ 14.3.2.a. For existing injection wells as expeditiously as practicable and in accordance with the schedule contained in the State UIC Program description, but no later than four (4) years from the effective date of this rule or as required under subsection 7.3 for wells injecting hazardous waste.

~~b.2~~ 14.3.2.b. For new injection wells, except new wells in projects authorized under paragraph 14.2.~~a.1~~1.a or covered by an existing area permit under subdivision 14.4.~~e3~~3, a reasonable time before construction is expected to begin.

~~e~~14.3.3. Contents of UIC application.

(Reserved)

14.4. Area Permits.

~~a~~14.4.1. The Director may issue a permit on an area basis, rather than for each well individually, provided that the permit is for injection wells:

~~a.1~~ 14.4.1.a. Described and identified by location in permit application(s) if they are existing wells, except that the Director may accept a single description of wells with substantially the same characteristics;

~~a.2~~ 14.4.1.b. Within the same well field, facility site, reservoir project, or similar unit in the State;

~~a.3~~ 14.4.1.c. Operated by a single owner or operator;

~~a.4~~ 14.4.1.d. Used to inject other than hazardous waste; and

~~a.5~~ 14.4.1.e. Other than Class 6 Wells.

~~b~~14.4.2. Area permits shall specify:

~~b.1~~ 14.4.2.a. The area within which underground injections are authorized; and

~~b.2~~ 14.4.2.b. The requirements for construction, monitoring, reporting, operation, and abandonment, for all wells authorized by the permit.

~~c~~14.4.3. The area permit may authorize the permittee to construct and operate, convert, or plug and abandon wells within the permit area provided:

~~c.1~~ 14.4.3.a. The permittee notifies the Director at such time as the permit requires;

~~c.2~~ 14.4.3.b. The additional well satisfies the criteria in subdivision 14.4.a1 of this section and meets the requirements specified in the permit under subdivision 14.4.b of this section; and

~~c.3~~ 14.4.3.c. The cumulative effects of drilling and operation of additional injection wells are considered by the Director during evaluation of the area permit application and are acceptable to the Director.

~~d~~14.4.4. If the Director determines that any well constructed pursuant to subdivision 14.4.c of this section does not satisfy any of the requirements of paragraphs 14.4.e-13.a and 14.4.e-23.b of this section, the Director may modify the permit under subsection 14.18, revoke under subsection 14.19, or take enforcement action. If the Director determines that cumulative effects are unacceptable, the permit may be modified under subsection 14.18.

14.5. Emergency Permits.

~~a~~14.5.1. Coverage. Notwithstanding any other provision of this rule, the Director may temporarily permit a specific underground injection which has not otherwise been authorized by rule or permit if:

~~a.1~~ 14.5.1.a. An imminent and substantial endangerment to the health of persons will result unless a temporary emergency permit is granted; or

~~a.2~~ 14.5.1.b. A substantial or irretrievable loss of oil or gas resources will occur unless a temporary emergency permit is granted to a Class 2 well; and

~~a.2.A~~ 14.5.1.b.1. Timely application for a permit could not practicably have been made; and

~~a.2.B~~ 14.5.1.b.2. The injection will not result in the movement of fluids into underground sources of drinking water; or

~~a.3~~ 14.5.1.c. A substantial delay in production of oil or gas resources will occur unless a temporary emergency permit is granted to a new Class 2 well and the temporary authorization will not result in the movement of fluids into an underground source of drinking water.

~~b~~14.5.2. Requirements for issuance.

~~b.1~~ 14.5.2.a. Any temporary permit under paragraph 14.5.a.1.a. of this section shall be for no longer term than required to prevent the hazard.

~~b.2~~ 14.5.2.b. Any temporary permit under paragraph ~~14.5.b.2~~ 14.5.a.21.b of this section shall be for no longer term than ninety (90) days, except that if a permit application has been submitted prior to the expiration date of the ninety (90) day period, the Director may extend the temporary permit until final action on the application.

~~b.3~~ 14.5.2.c. Any temporary permit under paragraph 14.5.a.31.c of this section shall be issued only after a complete permit application has been submitted and shall be effective until final action on the application.

~~b.4~~ 14.5.2.d. Notice of any temporary permit under this paragraph shall be published within ten (10) days of the issuance of the permit. Public Notice follows subsections 14.24 and 14.25.

~~b.5~~ 14.5.2.e. The temporary permit under this section may be either oral or written. If oral, it must be followed within five (5) calendar days by a written temporary emergency permit.

~~b.6~~ 14.5.2.f. The Director shall condition the temporary permit in any manner he or she determines is necessary to ensure that the injection will not result in the movement of fluids into an underground source of drinking water.

14.6. Additional Conditions Applicable to all UIC Permits. The following conditions, in addition to those set forth in subsection 14.12, apply to all UIC permits and shall be incorporated into all permits either expressly or by reference. If incorporated by reference, a specific citation to this rule must be given in the permit.

a14.6.1. In addition to subdivision 14.12.a1 (duty to comply): the permittee need not comply with the provisions of this permit to the extent and for the duration such non-compliance is authorized in a temporary emergency permit under subsection 14.5.

b14.6.2. In addition to paragraph 14.12.j.210.b (monitoring and records): the permittee shall retain all records concerning the nature and composition of injected fluids until three (3) years after completion of any plugging and abandonment procedures specified under subdivision 14.7.f6. The Director may require the owner or operator to deliver the records to the Director at the conclusion of the retention period.

e14.6.3. In addition to paragraph 14.12.i.112.a (notice of planned changes): except for all new wells authorized by an area permit under subdivision 14.4.e3., a new injection well may not commence injection until construction is complete, and:

~~e.1~~ 14.6.3.a. The permittee has submitted notice of completion of construction to the Director; and

~~e.1.A~~ 14.6.3.a.1. The Director has inspected or otherwise reviewed the new injection well and finds it is in compliance with the conditions of the permit; or

~~e.1.B~~ 14.6.3.a.2. The permittee has not received notice from the Director of his or her intent to inspect or otherwise review the new injection well within thirteen (13) days of the date of the notice in paragraph 14.12.e.13.a of this section, in which case prior inspection or review is waived and the permittee may commence injection. The Director shall include in the notice a reasonable time period in which he or she shall inspect the well.

~~d~~14.6.4. The following shall be included as information which must be reported immediately under paragraph 14.12.~~f~~12.f:

14.6.4.a. Any monitoring or other information which indicates that any contaminant may cause an endangerment to USDWs; and

14.6.4.b. Any non-compliance with a permit condition or malfunction of the injection system which may cause fluid migration into or between the USDWs.

~~e~~14.6.5. The permittee shall notify the Director as such times as the permit requires before conversion or abandonment of the well or in the case of area permits before closure of the project.

~~f~~14.6.6. If a loss of mechanical integrity is discovered based on alarm shut off or during periodic mechanical integrity testing, the owner or operator shall:

~~f.1~~ 14.6.6.a. Immediately cease injection of waste fluids;

~~f.2~~ 14.6.6.b. Take steps to determine whether there may have been a release of hazardous wastes into any unauthorized zone;

~~f.3~~ 14.6.6.c. Notify the Director within 24 hours;

~~f.4~~ 14.6.6.d. Notify the Director when injection can be expected to resume; and

~~f.5~~ 14.6.6.e Restore and demonstrate mechanical integrity to the satisfaction of the Director prior to resuming injection.

~~g~~14.6.7. Whenever the owner or operator obtains evidence that there may have been a release of injected wastes into an unauthorized zone, he shall:

~~g.1~~ 14.6.7.a. Immediately cease injection of waste fluids,

~~g.2~~ 14.6.7.b. Notify the Director within 24 hours of obtaining such evidence;

~~g.3~~ 14.6.7.c. Take steps to identify and characterize the extent of any release;

~~g.4~~ 14.6.7.d. Comply with any remediation plan specified by the Director;

~~g.5~~ 14.6.7.e. Implement any remediation plan approved by the Director; and

~~g.6~~ 14.6.7.f. Where such release is into a USDW currently serving as a water supply, place a notice in a newspaper of general circulation.

~~h~~14.6.8. Pursuant to 14.6.~~f~~6. and 14.6.~~g~~7. The Director may allow the operator to resume injection prior to completing cleanup if the injection operation will not endanger USDWs.

~~i~~14.6.9. When the Director determines that a Class 1, 2, 3 or 6 well lacks mechanical integrity he/she shall give written notice of his/her determination to the owner or operator. Unless the Director requires immediate cessation, the owner or operator shall cease injection into the well within 48 hours of receipt of the Director's determination. The Director may allow plugging of the well pursuant to the

requirements of 14.7.~~§6~~. of this chapter or require the permittee to perform such additional construction, operation, monitoring, reporting and corrective action as is necessary to prevent the movement of fluid into or between USDWs caused by the lack of mechanical integrity. The owner or operator may resume injection upon written notification from the Director that the owner or operator has demonstrated mechanical integrity pursuant to 14.6.~~§6~~. and 14.6.~~§7~~. of this chapter. The Director may allow the owner or operator of a well which lacks mechanical integrity to continue or resume injection, if the owner or operator has made a satisfactory demonstration that there are no leaks in the casing/tubing/packer and no movement of fluid into or between USDWs.

14.7. Establishing UIC Permit Conditions. In addition to conditions required in all permits (subsections 14.6 and 14.12), the Director shall establish conditions in permits as required on a case-by-case basis, to provide for and assure compliance with all applicable requirements of the SDWA and State Act and rules. An applicable requirement is a State statutory or regulatory requirement which takes effect prior to final administrative disposition of a permit and is also any requirement which takes effect prior to the modification or revocation and reissuance of a permit. Each permit shall include conditions meeting the following requirements when applicable:

~~a~~14.7.1. Construction requirements as set forth in subsections 8.2, 9.2 and 10.2. Existing wells shall achieve compliance with such requirements according to a compliance schedule established as a permit condition. The owner or operator of a proposed new injection well shall submit plans for testing, drilling, and construction as part of the permit application. Except as authorized by an area permit, no construction may commence until a permit has been issued containing construction requirements. New wells shall be in compliance with these requirements prior to commencing injection operations. Changes in construction plans during construction may be approved by the Director as minor modification. No such changes may be physically incorporated into construction of the well prior to approval of the modification by the Director.

~~b~~14.7.2. Corrective action as set forth in subsections 6.1 and 14.9.

~~c~~14.7.3. Operation requirements as set forth in subsections 8.4, 9.4 and 10.4. The permit shall establish any maximum injection volumes and/or pressure necessary to assure that fractures are not initiated in the confining zone, that injected fluids do not migrate into any underground source of drinking water, that formation fluids are not displaced into any underground source of drinking water, and to assure compliance with operation requirements.

~~d~~14.7.4. Requirements for wells managing hazardous waste, as set forth in sections 7 and 11.

~~e~~14.7.5. Monitoring and reporting requirements as set forth in subsections 8.4, 9.4 and 10.4. The permittee shall be required to identify types of tests and methods used to generate the monitoring data.

~~f~~14.7.6. Plugging and abandonment. Any Class 1, 2, 3, or 6 permit shall include, and any Class 5 permit may include, conditions to ensure that plugging and abandonment of the well will not allow the movement of fluids either into an underground source of drinking water or from one underground source of drinking water to another. Any applicant for a UIC permit shall be required to submit a plan for plugging and abandonment. Where the plugging and abandonment plan meets the requirements of this paragraph, the Director shall incorporate it into the permit as a condition. Where the Director's review of an application indicates that the permittee's plan is inadequate, the Director shall require the applicant to revise the plan, prescribe conditions meeting the requirements of this paragraph, or deny the application. For purposes of this paragraph, temporary intermittent cessation of injection operations is not abandonment. The owner or operator shall submit revisions to the method of closure no later than the date on which closure notification is required. The Director should be notified at least 45 days prior to the abandonment of any Class 5 injection well.

~~f.1~~ 14.7.6.a. An owner or operator of a Class I hazardous waste injection well who ceases injection temporarily, may keep the well open provided he has received authorization from the Director and has described actions to be taken to ensure that the well will not endanger USDWs during disuse. These actions include compliance with the technical requirements applicable to active injection wells unless waived by the Director.

~~f.2~~ 14.7.6.b. The owner or operator of a well shall plug and abandon their well(s) within two (2) years of cessation, following their plan, unless:

14.7.6.b.1. The owner/operator provides notice to the Director;

14.7.6.b.2. Describes actions or procedures, satisfactory to the Director, that the owner or operator will take to ensure that the well will not endanger USDWs during the period of temporary abandonment. These actions and procedures shall include compliance with the technical requirements applicable to active injection wells unless waived by the Director.

14.7.6.c Class 1 hazardous waste injection wells, the obligation to implement the closure plan survives the termination of a permit or the cessation of injection activities. The requirement to maintain and implement an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit.

14.7.6.d. The owner or operator of a Class 1 hazardous waste injection well that has ceased operations for more than two years shall notify the Director 30 days prior to resuming operation of the well.

~~g.1~~ 14.7.7. Financial responsibility. The permit shall require the permittee, including the transferor of a permit, to demonstrate and maintain financial responsibility and resources to close, plug, and abandon underground injection wells in a manner prescribed by the Director until: the well has been plugged and abandoned and the report submitted; or the well has been converted; or the transferor of the permit receives notice that the transferee has demonstrated financial responsibility. The permittee must show evidence of financial responsibility to the Director by submission of a surety bond, or other adequate assurance, such as a financial statement or other material acceptable to the Director. The owner or operator of a well injecting hazardous waste must comply with the financial responsibility requirements of subdivision 47-13-8.7 and 47-13-8.8 For Class 6 permits the following provisions also apply:

~~g.1~~ 14.7.7.a. The permittee must show evidence of financial responsibility to the Director by submission of a surety bond, trust fund, insurance, irrevocable standby letter of credit, escrow account, or other adequate assurance, such as a financial statement or other material acceptable to the Director.

~~g.2~~ 14.7.7.b. The qualifying instrument(s) must be sufficient to cover the cost of:

~~g.2.A~~ 14.7.7.b.1. Corrective action (that meets the requirements of section 14.9.);

~~g.2.B~~ 14.7.7.b.2. Injection well plugging (that meets the requirements of section 13.4);

~~g.2.C~~ 14.7.7.b.3. Post injection site care and site closure (that meets the requirements of 13.9.); and

~~g.2.D~~ 14.7.7.b.4. Emergency and remedial response (that meets the requirements of 13.7).

~~g-3~~ 14.7.7.c. The financial responsibility instrument(s) must be sufficient to address endangerment of underground sources of drinking water.

~~g-4~~ 14.7.7.d. The qualifying financial responsibility instrument(s) must comprise protective conditions of coverage.

~~g-4.A~~ 14.7.7.d.1. Protective conditions of coverage must include at a minimum cancellation, renewal, and continuation provisions, specifications on when the provider becomes liable following a notice of cancellation if there is a failure to renew with a new qualifying financial instrument, and requirements for the provider to meet a minimum rating, minimum capitalization, and ability to pass the bond rating when applicable.

~~g-5~~ 14.7.7.e. Cancellation - for purposes of this part, an owner or operator must provide that their financial mechanism may not cancel, terminate or fail to renew except for failure to pay such financial instrument. If there is a failure to pay the financial instrument, the financial institution may elect to cancel, terminate, or fail to renew the instrument by sending notice by certified mail to the owner or operator and the Director. The cancellation must not be final for 120 days after receipt of cancellation notice. The owner or operator must provide an alternate financial responsibility demonstration within 60 days of notice of cancellation, and if an alternate financial responsibility demonstration is not acceptable (or possible), any funds from the instrument being cancelled must be released within 60 days of notification by the Director.

~~g-6~~ 14.7.7.f. Renewal - for purposes of this part, owners or operators must renew all financial instruments, if an instrument expires, for the entire term of the geologic sequestration project. The instrument may be automatically renewed as long as the owner or operator has the option of renewal at the face amount of the expiring instrument. The automatic renewal of the instrument must, at a minimum, provide the holder with the option of renewal at the face amount of the expiring financial instrument.

~~g-7~~ 14.7.7.g. Cancellation, termination, or failure to renew may not occur and the financial instrument will remain in full force and effect in the event that on or before the date of expiration: The Director deems the facility abandoned; or the permit is terminated or revoked or a new permit is denied; or closure is ordered by the Director or a U.S. district court or other court of competent jurisdiction; or the owner or operator is named as debtor in a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code; or the amount due is paid.

~~g-8~~ 14.7.7.h. The qualifying financial responsibility instrument(s) must be approved by the Director.

~~g-8.A~~ 14.7.7.h.1. The Director shall consider and approve the financial responsibility demonstration for all the phases of the geologic sequestration project prior to issue a Class 6 permit (13.8).

~~g-8.B~~ 14.7.7.h.2. The owner or operator must provide any updated information related to their financial responsibility instrument(s) on an annual basis and if there are any changes, the Director must evaluate, within a reasonable time, the financial responsibility demonstration to confirm that the instrument(s) used remain adequate for use. The owner or operator must maintain financial responsibility requirements regardless of the status of the Director's review of the financial responsibility demonstration.

~~g-8.C~~ 14.7.7.h.3. The Director may disapprove the use of a financial instrument if he determines that it is not sufficient to meet the requirements of this section.

~~g-9~~ 14.7.7.i. The owner or operator may demonstrate financial responsibility by using one or multiple qualifying financial instruments for specific phases of the geologic sequestration project.

~~g-9-A~~ 14.7.7.i.1. In the event that the owner or operator combines more than one instrument for a specific geologic sequestration phase (e.g., well plugging), such combination must be limited to instruments that are not based on financial strength or performance (*i.e.*, self-insurance or performance bond), for example trust funds, surety bonds guaranteeing payment into a trust fund, letters of credit, escrow account, and insurance. In this case, it is the combination of mechanisms, rather than the single mechanism, which must provide financial responsibility for an amount at least equal to the current cost estimate.

~~g-10~~ 14.7.7.j. When using a third-party instrument to demonstrate financial responsibility, the owner or operator must provide a proof that the third-party providers either have passed financial strength requirements based on credit ratings; or have met a minimum rating, minimum capitalization, and ability to pass the bond rating when applicable.

~~g-10-A~~ 14.7.7.j.1. An owner or operator using certain types of third-party instruments must establish a standby trust to enable the Department and/or EPA to be party to the financial responsibility agreement without the Department and/or EPA being the beneficiary of any funds. The standby trust fund must be used along with other financial responsibility instruments (e.g., surety bonds, letters of credit, or escrow accounts) to provide a location to place funds if needed.

~~g-11~~ 14.7.7.k. An owner or operator may deposit money to an escrow account to cover financial responsibility requirements; this account must segregate funds sufficient to cover estimated costs for Class 6 (geologic sequestration) financial responsibility from other accounts and uses.

~~g-12~~ 14.7.7.l. An owner or operator or its guarantor may use self-insurance to demonstrate financial responsibility for geologic sequestration projects. In order to satisfy this requirement the owner or operator must meet a Tangible Net Worth of an amount approved by the Director, have a Net working capital and tangible net worth each at least six times the sum of the current well plugging, post injection site care and site closure cost, have assets located in the United States amounting to at least 90 percent of total assets or at least six times the sum of the current well plugging, post injection site care and site closure cost, and must submit a report of its bond rating and financial information annually. In addition the owner or operator must either: Have a bond rating test of AAA, AA, A, or BBB as issued by Standard & Poor's or Aaa, Aa, A, or Baa as issued by Moody's; or meet all of the following five financial ratio thresholds: A ratio of total liabilities to net worth less than 2.0; a ratio of current assets to current liabilities greater than 1.5; a ratio of the sum of net income plus depreciation, depletion, and amortization to total liabilities greater than 0.1; A ratio of current assets minus current liabilities to total assets greater than -0.1; and a net profit (revenues minus expenses) greater than 0.

~~g-12-A~~ 14.7.7.l.a. An owner or operator who is not able to meet corporate financial test criteria may arrange a corporate guarantee by demonstrating that its corporate parent meets the financial test requirements on its behalf. The parent's demonstration that it meets the financial test requirement is insufficient if it has not also guaranteed to fulfill the obligations for the owner or operator.

~~g-13~~ 14.7.7.m. An owner or operator may obtain an insurance policy to cover the estimated costs of geologic sequestration activities requiring financial responsibility. This insurance policy must be obtained from a third-party provider.

~~g-14~~ 14.7.7.n. The requirement to maintain adequate financial responsibility and resources is directly enforceable regardless of whether the requirement is a condition of the permit.

~~g-14-A~~ 14.7.7.n.1. The owner or operator must maintain financial responsibility and resources until:

~~g.14.A.i~~ 14.7.7.n.1.A. The Director receives and approves the completed post-injection site care and site closure plan; and

~~g.14.A.ii~~ 14.7.7.n.1.B. The Director approves site closure.

~~g.14.B~~ 14.7.7.n.2. The owner or operator may be released from a financial instrument in the following circumstances:

~~g.14.B.i~~ 14.7.7.n.2.A. The owner or operator has completed the phase of the geologic sequestration project for which the financial instrument was required and has fulfilled all its financial obligations as determined by the Director, including obtaining financial responsibility for the next phase of the GS project, if required; or

~~g.14.B.ii~~ 14.7.7.n.2.B. The owner or operator has submitted a replacement financial instrument and received written approval from the Director accepting the new financial instrument and releasing the owner or operator from the previous financial instrument.

~~g.15~~ 14.7.7.o. The owner or operator must have a detailed written estimate, in current dollars, of the cost of performing corrective action on wells in the area of review, plugging the injection well(s), post-injection site care and site closure, and emergency and remedial response.

~~g.15.A~~ 14.7.7.o.1. The cost estimate must be performed for each phase separately and must be based on the costs to the regulatory agency of hiring a third party to perform the required activities. A third party is a party who is not within the corporate structure of the owner or operator.

~~g.15.B~~ 14.7.7.o.2. During the active life of the geologic sequestration project, the owner or operator must adjust the cost estimate for inflation within 60 days prior to the anniversary date of the establishment of the financial instrument(s) used to comply with paragraph (a) of this section and provide this adjustment to the Director. The owner or operator must also provide to the Director written updates of adjustments to the cost estimate within 60 days of any amendments to the area of review and corrective action plan (6.1), the injection well plugging plan (13.4), the post-injection site care and site closure plan (13.9), and the emergency and remedial response plan (13.7).

~~g.15.C~~ 14.7.7.o.3. The Director must approve any decrease or increase to the initial cost estimate. During the active life of the geologic sequestration project, the owner or operator must revise the cost estimate no later than 60 days after the Director has approved the request to modify the area of review and corrective action plan (6.1), the injection well plugging plan (13.4), the post-injection site care and site closure plan (13.9), and the emergency and response plan (13.7), if the change in the plan increases the cost. If the change to the plans decreases the cost, any withdrawal of funds must be approved by the Director. Any decrease to the value of the financial assurance instrument must first be approved by the Director. The revised cost estimate must be adjusted for inflation as specified at 14.7.~~g.15.B~~7.o.2 of this section.

~~g.15.D~~ 14.7.7.o.4. Whenever the current cost estimate increases to an amount greater than the face amount of a financial instrument currently in use, the owner or operator, within 60 days after the increase, must either cause the face amount to be increased to an amount at least equal to the current cost estimate and submit evidence of such increase to the Director, or obtain other financial responsibility instruments to cover the increase. Whenever the current cost estimate decreases, the face amount of the financial assurance instrument may be reduced to the amount of the current cost estimate only after the owner or operator has received written approval from the Director.

~~g-16~~ 14.7.7.p. The owner or operator must notify the Director by certified mail of adverse financial conditions such as bankruptcy that may affect the ability to carry out injection well plugging and post-injection site care and site closure.

~~g-16-A~~ 14.7.7.p.1. In the event that the owner or operator or the third party provider of a financial responsibility instrument is going through a bankruptcy, the owner or operator must notify the Director by certified mail of the commencement of a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code, naming the owner or operator as debtor, within 10 days after commencement of the proceeding.

~~g-16-B~~ 14.7.7.p.2. A guarantor of a corporate guarantee must make such a notification to the Director if he/she is named as debtor, as required under the terms of the corporate guarantee.

~~g-16-C~~ 14.7.7.p.3. An owner or operator who fulfills the requirements of 14.7.g. of this section by obtaining a trust fund, surety bond, letter of credit, escrow account, or insurance policy will be deemed to be without the required financial assurance in the event of bankruptcy of the trustee or issuing institution, or a suspension or revocation of the authority of the trustee institution to act as trustee of the institution issuing the trust fund, surety bond, letter of credit, escrow account, or insurance policy. The owner or operator must establish other financial assurance within 60 days after such an event.

~~g-17~~ 14.7.7.q. The owner or operator must provide an adjustment of the cost estimate to the Director within 60 days of notification by the Director, if the Director determines during the annual evaluation of the qualifying financial responsibility instrument(s) that the most recent demonstration is no longer adequate to cover the cost of corrective action (as required by section 6.1), injection well plugging (as required by section 13.4), post-injection site care and site closure (as required by section 13.9), and emergency and remedial response (as required by section 13.7).

~~g-18~~ 14.7.7.r. The Director must approve the use and length of pay-in-periods for trust funds or escrow accounts.

~~h~~14.7.8. Mechanical integrity. The permittee of a Class 1, 2, 3, or 6 well shall establish and maintain mechanical integrity. A permit for any Class 1, 2, 3, or 6 well or injection project which lacks mechanical integrity shall include, and for any Class 5 well may include, a condition prohibiting injection operations until the permittee shows to the satisfaction of the Director under subsection 6.2 that the well has mechanical integrity.

~~i~~14.7.9. Additional conditions. The Director shall impose on a case-by-case basis such additional conditions as are necessary to prevent the migration of fluids into underground sources of drinking water.

14.8. Waiver of Requirements by the Director.

~~a~~14.8.1. When injection does not occur into, through, or above an underground source of drinking water, the Director may authorize a well or project with less stringent requirements for area of review, construction, mechanical integrity, operation, monitoring, and reporting than required in section 8, 9, 10, and subsection 14.7 to the extent that the reduction in requirements will not result in an increased risk of movement of fluids into an underground source of drinking water.

~~b~~14.8.2. For wells other than Class 6, when injection occurs through or above an underground source of drinking water, but the radius of endangering influence when computed under subdivision 5.3.a1 is smaller or equal to the radius of the well, the Director may authorize a well or project with less stringent requirements for operation, monitoring, and reporting in sections 8, 10, and subsection 14.7 to the extent

that the reduction in requirements will not result in an increased risk of movement of fluids into an underground source of drinking water.

~~e~~14.8.3. When reducing requirements under subdivision 14.8.a or 14.8.b of this section, the Director shall explain the reason for the action by preparing a fact sheet under subsection 14.31.

~~d~~14.8.4. When an owner or operator submits a waiver of the Class 6 injection depth requirements, the Director must consult with all affected Public Water System Directors and the Regional Administrator after considering the following:

~~d.1~~ 14.8.4.a. Owner/Operator Requirements. In seeking a waiver of the requirement to inject below the lowermost USDW, the owner or operator must submit a supplemental report concurrent with permit application. The supplemental report must include the following,

~~d.1.A~~ 14.8.4.a.1. A demonstration that the injection zone(s) is/are laterally continuous, is not a USDW, and is not hydraulically connected to USDWs; does not outcrop; has adequate injectivity, volume, and sufficient porosity to safely contain the injected carbon dioxide and formation fluids; and has appropriate geochemistry.

~~d.1.B~~ 14.8.4.a.2. A demonstration that the injection zone(s) is/are bounded by laterally continuous, impermeable confining units above and below the injection zone(s) adequate to prevent fluid movement and pressure buildup outside of the injection zone(s); and that the confining unit(s) is/are free of transmissive faults and fractures. The report shall further characterize the regional fracture properties and contain a demonstration that such fractures will not interfere with injection, serve as conduits, or endanger USDWs.

~~d.1.C~~ 14.8.4.a.3. A demonstration, using computational modeling, that USDWs above and below the injection zone will not be endangered as a result of fluid movement. This modeling should be conducted in conjunction with the area of review determination, as described in 5.4 and 14.9, and is subject to requirements, as described in 14.9.c., and periodic reevaluation, as described in 14.9.e.

~~d.1.D~~ 14.8.4.a.4. A demonstration that well design and construction, in conjunction with the waiver, will ensure isolation of the injectate in lieu of requirements at 13.3.a.1. and will meet well construction requirements in 14.8.d.6. of this section.

~~d.1.E~~ 14.8.4.a.5. A description of how the monitoring and testing and any additional plans will be tailored to the geologic sequestration project to ensure protection of USDWs above and below the injection zone(s), if a waiver is granted.

~~d.1.F~~ 14.8.4.a.6. Information on the location of all the public water supplies affected, reasonably likely to be affected, or served by USDWs in the area of review.

~~d.1.G~~ 14.8.4.a.7. Any other information requested by the Director to inform the Regional Administrator's decision to issue a waiver.

~~d.2~~ 14.8.4.b. Consultation. The Director must inform the Regional Administrator of a pending decision on whether to grant a waiver of the injection depth requirements at section 4.6, 14.8.~~d.6~~~~4.f.~~, and 13.3.a.~~1~~~~1.a.~~ the Director must submit, to the Regional Administrator, documentation of the following:

~~d.2.A~~ 14.8.4.b.1. An evaluation of the following information as it relates to siting, construction, and operation of a geologic sequestration project with a waiver:

~~d.2.A.i~~ 14.8.4.b.1.A. The integrity of the upper and lower confining units;

~~d.2.A.ii~~ 14.8.4.b.1.B. The suitability of the injection zone(s) (e.g., lateral continuity; lack of transmissive faults and fractures; knowledge of current or planned artificial penetrations into the injection zone(s) or formations below the injection zone);

~~d.2.A.iii~~ 14.8.4.b.1.C. The potential capacity of the geologic formation(s) to sequester carbon dioxide, accounting for the availability of alternative injection sites;

~~d.2.A.iv~~ 14.8.4.b.1.D. All other site characterization data, the proposed emergency and remedial response plan, and a demonstration of financial responsibility;

~~d.2.A.v~~ 14.8.4.b.1.E. Community needs, demands, and supply from drinking water resources;

~~d.2.A.vi~~ 14.8.4.b.1.F. Planned needs, potential and/or future use of USDWs and non-USDWs in the area;

~~d.2.A.vii~~ 14.8.4.b.1.G. Planned or permitted water, hydrocarbon, or mineral resource exploitation potential of the proposed injection formation(s) and other formations both above and below the injection zone to determine if there are any plans to drill through the formation to access resources in or beneath the proposed injection zone(s)/formation(s);

~~d.2.A.viii~~ 14.8.4.b.1.H. The proposed plan for securing alternative resources or treating USDW formation waters in the event of contamination related to the Class 6 injection activity; and,

~~d.2.A.ix~~ 14.8.4.b.1.I. Any other applicable considerations or information requested by the Director.

~~d.2.B~~ 14.8.4.b.2. Consultation with the Public Water System Supervision Directors of all States and Tribes having jurisdiction over lands within the area of review of a well for which a waiver is sought.

~~d.2.B.i~~ 14.8.4.b.2.A. Any written waiver-related information submitted by the Public Water System Supervision Director(s) to the (UIC) Director.

~~d.3~~ 14.8.d.34.c. Procedures.

~~d.3.A~~ 14.8.4.c.1. Pursuant to requirements at 47 CSR 10-12 and concurrent with the Class 6 permit application notice process, the Director shall give public notice that a waiver application has been submitted. The notice shall clearly state:

~~d.3.A.i~~ 14.8.4.c.1.A. The depth of the proposed injection zone(s);

~~d.3.A.ii~~ 14.8.4.c.1.B. The location of the injection well(s);

~~d.3.A.iii~~ 14.8.4.c.1.C. The name and depth of all USDWs within the area of review;

~~d.3.A.iv~~ 14.8.4.c.1.D. A map of the area of review;

~~d.3.A.v~~ 14.8.4.c.1.E. The names of any public water supplies affected, reasonably likely to be affected, or served by USDWs in the area of review; and,

~~d.3.A.vi~~ 14.8.4.c.1.F. The results of UIC-Public Water System Supervision consultation required under 14.8.~~d.2.B~~4.b.2.

~~d.3.B~~ 14.8.4.c.2. Following public notice, the Director shall provide all information received through the waiver application process to the Regional Administrator. Based on the information provided, the Regional Administrator shall provide written concurrence or non-concurrence regarding waiver issuance.

~~d.3.B.i~~ 14.8.4.c.2.A. If the Regional Administrator determines that additional information is required to support a decision, the Director shall provide the information. At his or her discretion, the Regional Administrator may require that public notice of the new information be initiated.

~~d.3.C~~ 14.8.4.c.3. In no case shall a Director of a State-approved program issue a waiver without receipt of written concurrence from the Regional Administrator.

~~d.3.D~~ 14.8.4.c.4. If a waiver is issued, within 30 days of waiver issuance, the Director shall post the following information on the Department's Division of Water and Waste Management's web site:

~~d.3.D.i~~ 14.8.4.c.4.A. The depth of the proposed injection zone(s);

~~d.3.D.ii~~ 14.8.4.c.4.B. The location of the injection well(s);

~~d.3.D.iii~~ 14.8.4.c.4.C. The name and depth of all USDWs within the area of review;

~~d.3.D.iv~~ 14.8.4.c.4.D. A map of the area of review;

~~d.3.D.v~~ 14.8.4.c.4.E. The names of any public water supplies affected, reasonably likely to be affected, or served by USDWs in the area of review; and

~~d.3.D.vi~~ 14.8.4.c.4.F. The date of waiver issuance.

~~d.4~~ 14.8.4.d. Additional requirements. Upon receipt of a waiver of the requirement to inject below the lowermost USDW for geologic sequestration, the owner or operator of the Class 6 well must comply with:

~~d.4.A~~ 14.8.4.d.1. All requirements at 14.9.~~b.5~~2.e., 14.7.~~g~~7., 13.5, 13.6., 6.2., 13.6.~~e.1.~~, 13.4., and 13.7. of this rule;

~~d.4.B~~ 14.8.4.~~2d~~2. All requirements at section 13.3. with the following modified requirements:

~~d.4.B.i~~ 14.8.4.d.2.A. The owner or operator must ensure that Class 6 wells with a waiver are constructed and completed to prevent movement of fluids into any unauthorized zones including USDWs, in lieu of requirements at 13.3.~~a.1~~1.a.

~~d.4.B.ii~~ 14.8.4.d.2.B. The casing and cementing program must be designed to prevent the movement of fluids into any unauthorized zones including USDWs in lieu of requirements at 13.3.~~b.1.A~~2.a.1.

~~d.4.B.iii~~ 14.8.4.d.2.C. The surface casing must extend through the base of the nearest USDW directly above the injection zone and be cemented to the surface; or, at the Director's

discretion, another formation above the injection zone and below the nearest USDW above the injection zone.

~~d.4.C~~ 14.8.4.d.3. All requirements at 13.6.b. with the following modified requirements:

~~d.4.C.i~~ 14.8.4.d.3.A. The owner or operator shall monitor the groundwater quality, geochemical changes, and pressure in the first USDWs immediately above and below the injection zone(s); and in any other formations at the discretion of the Director.

~~d.4.C.ii~~ 14.8.4.d.3.B. Testing and monitoring to track the extent of the carbon dioxide plume and the presence or absence of elevated pressure (e.g., the pressure front) by using direct methods to monitor for pressure changes in the injection zone(s); and, indirect methods (e.g., seismic, electrical, gravity, or electromagnetic surveys and/or down-hole carbon dioxide detection tools), unless the Director determines, based on site-specific geology, that such methods are not appropriate.

~~d.4.D~~ 14.8.4.d.4. All requirements at 13.9. with the following, modified post-injection site care monitoring requirements:

~~d.4.D.i~~ 14.8.4.d.4.A. The owner or operator shall monitor the groundwater quality, geochemical changes and pressure in the first USDWs immediately above and below the injection zone; and in any other formations at the discretion of the Director.

~~d.4.D.ii~~ 14.8.4.d.4.B. Testing and monitoring to track the extent of the carbon dioxide plume and the presence or absence of elevated pressure (e.g., the pressure front) by using direct methods in the injection zone(s); and indirect methods (e.g., seismic, electrical, gravity, or electromagnetic surveys and/or down-hole carbon dioxide detection tools), unless the Director determines based on site-specific geology, that such methods are not appropriate;

~~d.4.E~~ 14.8.4.d.5. Any additional requirements requested by the Director designed to ensure protection of USDWs above and below the injection zone(s).

14.9. Corrective Action

~~a~~14.9.1. Applicants for Class 1, 2 (other than existing wells) or 3 injection well permits shall identify the location of all known wells within the injection well's area of review which penetrate the injection zone (or for Class 2, all wells penetrating formations affected by an increase in pressure) and/or confining zone. For such wells which are improperly sealed, completed, or abandoned, the applicant shall also submit a plan consisting of such steps or modifications as are necessary to prevent movement of fluid into underground sources of drinking water ("corrective action") under subsection 6.1. Where the plan is adequate, the Director shall incorporate it into the permit as a condition. Where the Director's review of an application indicates that the permittee's plan is inadequate, he or she shall require the applicant to revise the plan, prescribe a plan for corrective action as a condition of the permit under subdivision 14.9.~~b~~2 of this section, or deny the application.

~~b~~14.9.2. Requirements.

~~b.1~~ 14.9.2.a. Existing injection wells. Any permit issued for an existing injection well (other than Class 2) requiring corrective action shall include a compliance schedule requiring any corrective action accepted or prescribed under subdivision 14.9.~~a~~1 of this section to be completed as soon as possible.

~~b.2~~ 14.9.2.b. New injection wells. No permit for a new injection well may authorize injection until all required corrective action has been taken.

~~b.3~~ 14.9.2.c. Injection pressure limitation. The Director may require as a permit condition that pressure be so limited that pressure in the injection zone does not exceed hydrostatic pressure at the site of any improperly completed or abandoned well within the area of review. This pressure limitation shall satisfy the corrective action requirement. Alternatively, such injection pressure limitation can be part of a compliance schedule and last until all other required corrective action has been taken.

~~b.4~~ 14.9.2.d. Class 3 wells only. When setting corrective action requirements, the Director shall consider the overall effect of the project on the hydraulic gradient in potentially affected USDW's, and the corresponding changes in potentiometric surface(s) and flow direction(s) rather than the discrete effect of each well. If a decision is made that corrective action is not necessary based on the determinations above, the monitoring program required in subdivision 10.4.~~b.2~~ shall be designed to verify the validity of such determinations.

~~b.5~~ 14.9.2.e. Class 6 wells only. When setting corrective action requirements, the Director shall require the owner or operator of the well to prepare, maintain, and comply with a plan to delineate the area of review for a proposed geologic sequestration project, periodically reevaluate the delineation, and perform corrective action that meets the requirements of this section and is acceptable to the Director. The requirement to maintain and implement an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit. As a part of the permit application for approval by the Director, the owner or operator must submit an area of review and corrective action plan that includes the following information:

~~b.5.A~~ 14.9.2.e.1. The method for delineating the area of review that meets the requirements of 14.9.c. of this section, including the model to be used, assumptions that will be made, and the site characterization data on which the model will be based;

~~b.5.B~~ 14.9.2.e.2. A description of:

~~b.5.B.i~~ 14.9.2.e.2.A. The minimum fixed frequency, not to exceed five years, at which the owner or operator proposes to reevaluate the area of review;

~~b.5.B.ii~~ 14.9.2.e.2.B. The monitoring and operational conditions that would warrant a reevaluation of the area of review prior to the next scheduled reevaluation as determined by the minimum fixed frequency established in 14.9.~~b.5.B.i~~2.e.2.A. of this section.

~~b.5.B.iii~~ 14.9.2.e.2.C. How monitoring and operational data (e.g., injection rate and pressure) will be used to inform an area of review reevaluation; and

~~b.5.B.iv~~ 14.9.2.e.2.D. How corrective action will be conducted to meet the requirements of 14.9.d. of this section, including what corrective action will be performed prior to injection and what, if any, portions of the area of review will have corrective action addressed on a phased basis and how the phasing will be determined; how corrective action will be adjusted if there are changes in the area of review; and how site access will be guaranteed for future corrective action.

~~e~~14.9.3. Owners or operators of Class 6 wells must perform the following actions to delineate the area of review and identify all wells that require corrective action:

~~e.1~~ 14.9.3.a. Predict, using existing site characterization, monitoring and operational data, and computational modeling, the projected lateral and vertical migration of the carbon dioxide plume and formation fluids in the subsurface from the commencement of injection activities until the plume movement ceases, until pressure differentials sufficient to cause the movement of injected fluids or formation fluids into a USDW are no longer present, or until the end of a fixed time period as determined by the Director. The model must:

~~e.1.A~~ 14.9.3.a.1. Be based on detailed geologic data collected to characterize the injection zone(s), confining zone(s) and any additional zones; and anticipated operating data, including injection pressures, rates, and total volumes over the proposed life of the geologic sequestration project;

~~e.1.B~~ 14.9.3.a.2. Take into account any geologic heterogeneities, other discontinuities, data quality, and their possible impact on model predictions; and

~~e.1.C~~ 14.9.3.a.3. Consider potential migration through faults, fractures, and artificial penetrations.

~~e.2~~ 14.9.3.b. Using methods approved by the Director, identify all penetrations, including active and abandoned wells and underground mines, in the area of review that may penetrate the confining zone(s). Provide a description of each well's type, construction, date drilled, location, depth, record of plugging and/or completion, and any additional information the Director may require; and

~~e.3~~ 14.9.3.c. Determine which abandoned wells in the area of review have been plugged in a manner that prevents the movement of carbon dioxide or other fluids that may endanger USDWs, including use of materials compatible with the carbon dioxide stream.

~~d~~14.9.4. Owners or operators of Class 6 wells must perform corrective action on all wells in the area of review that are determined to need corrective action, using methods designed to prevent the movement of fluid into or between USDWs, including use of materials compatible with the carbon dioxide stream, where appropriate.

~~e~~14.9.5. At the minimum fixed frequency, not to exceed five years, as specified in the area of review and corrective action plan, or when monitoring and operational conditions warrant, owners or operators must:

~~e.1~~ 14.9.5.a. Reevaluate the area of review in the same manner specified in 14.9.~~e.1~~3.a. of this section;

~~e.1~~ 14.9.5.b. Identify all wells in the reevaluated area of review that require corrective action in the same manner specified in 14.9.~~e.3~~. of this section;

~~e.1~~ 14.9.5.c. Perform corrective action on wells requiring corrective action in the reevaluated area of review in the same manner specified in 14.9.~~d~~4. of this section; and

~~e.1~~ 14.9.5.d. Submit an amended area of review and corrective action plan or demonstrate to the Director through monitoring data and modeling results that no amendment to the area of review and corrective action plan is needed. Any amendments to the area of review and corrective action plan must be approved by the Director, must be incorporated into the permit, and are subject to the permit modification requirements at sections 14.18 or 14.20, as appropriate.

~~f~~14.9.6. The emergency and remedial response plan (as required by section 13.7.) and the demonstration of financial responsibility (as described by 14.7.~~g~~7.) must account for the area of review delineated as specified in 14.9.~~e~~13.a. of this section or the most recently evaluated area of review delineated under 14.9.~~e~~5. of this section, regardless of whether or not corrective action in the area of review is phased.

~~g~~14.9.7. All modeling inputs and data used to support area of review reevaluations under 14.9.~~e~~5. of this section shall be retained for 10 years.

14.10. Application for a Permit. This section shall apply in addition to the requirements of subsections 8.5, 9.5, 10.5, and 14.3.

~~a~~14.10.1. Permit application. Any person who is required to have a permit (including new applicants and permittees with expiring permits) shall complete, sign, and submit an application to the Director as described in this section. Persons currently authorized with UIC authorization by rule shall apply for permits when required by the Director.

~~b~~14.10.2. Who applies. When a facility or activity is owned by one person but is operated by another person, it is the operator's duty to obtain a permit.

~~c~~14.10.3. Completeness. The Director shall not issue a permit under a program before receiving a complete application, except for an emergency permit. An application for a permit under a program is complete when the Director receives an application form and any supplemental information which are completed to his or her satisfaction.

~~d~~14.10.4. Information requirements. All applicants for UIC permits shall provide the following information to the Director, using the application form provided by the Director. Class 6 applicants shall follow the requirements of 13.8.:

~~d.1~~ 14.10.4.a. The activities conducted by the applicant which require it to obtain permits under UIC.

~~d.2~~ 14.10.4.b. Name, mailing address, and location of the facility for which the application is submitted.

~~d.3~~ 14.10.4.c. Up to four (4) SIC codes which best reflect the principal products or services provided by the facility.

~~d.4~~ 14.10.4.d. The operator's name, address, telephone number, ownership status, and status as Federal, State, private, public, or other entity.

~~d.5~~ 14.10.4.e. A listing of all permits or construction approvals received or applied for under any of the following programs:

~~d.5.A~~ 14.10.4.e.1. Hazardous Waste Management Program under RCRA and W. Va. Code §22-18-1 et seq.

~~d.5.B~~ 14.10.4.e.2. NPDES program under CWA and State Act.

~~d.5.C~~ 14.10.4.e.3. Prevention of Significant Deterioration (PSD) program under the Clean Air Act.

~~d.5.D~~ 14.10.4.e.4. Nonattainment program under the Clean Air Act.

~~d.5.E~~ 14.10.4.e.5. National Emission Standards for Hazardous Pollutants (NESHAPS) pre-construction approval under the Clean Air Act.

~~d.5.F~~ 14.10.4.e.6. Dredge or fill permits under section 404 of CWA.

~~d.5.G~~ 14.10.4.e.7. Other relevant environmental permits, including State permits.

~~d.6~~ 14.10.4.f. A topographic map extending one (1) mile beyond the property boundaries of the source, depicting the facility and each of its intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, each well where fluids from the facility are injected underground and those wells, springs, other surface water bodies, and drinking water wells listed in public records or otherwise known to the applicant in the map area.

~~d.6.A~~ 14.10.4.f.1. Map requirements for Class 6 permits shall include the injection well for which a permit is sought and the applicable area of review consistent with 5.4 and 14.9.b.52.e. Within the area of review, the map must show the number or name, and location of all injection wells, producing wells, abandoned wells, plugged wells or dry holes, deep stratigraphic boreholes, State- or EPA-approved subsurface cleanup sites, surface bodies of water, springs, mines (surface and subsurface), quarries, water wells, other pertinent surface features including structures intended for human occupancy, State, Tribal, and Territory boundaries, and roads. The map should also show faults, if known or suspected. Only information of public record is required to be included on this map.

~~d.7~~ 14.10.4.g. A brief description of the nature of the business.

~~e~~14.10.5. Record keeping. Applicants shall keep records of all data used to complete permit applications and any supplemental information submitted under subsection 14.3 for a period of at least three (3) years from the date the application is signed.

14.11. Signatories to Permit Applications and Reports.

~~A~~14.11.1. Applications. All permit applications, except those submitted for Class 2 wells under the UIC program, shall be signed as follows:

~~a.1~~ 14.11.1.a. For a corporation: by a principal officer of at least the level of vice-president;

~~a.2~~ 14.11.1.b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

~~a.3~~ 14.11.1.c. For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official.

~~b~~14.11.2. Reports. All reports required by permits, other information requested by the Director, and all permit applications submitted for Class 2 wells shall be signed by a person described in subdivision 14.11.a above in this section, or by a duly authorized representative of that person. A person is a duly authorized representative if:

~~b.1~~ 14.11.2.a. The authorization is made in writing by a person described in subdivision 14.11.a1. of this section;

~~b.2~~ 14.11.2.b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, or position of equivalent responsibility. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and

~~b.3~~ 14.11.2.c. The written authorization is submitted to the Director.

~~e~~14.11.3. Changes to Authorization. If an authorization under subdivision 14.11.b~~2~~ of this section is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of subdivision 14.11.b of this section must be submitted to the Director prior to or together with any reports, information, or applications to be signed by an authorized representative.

~~d~~14.11.4. Certification. Any person signing a document under subdivision 14.11.a~~1~~ or 14.11.b~~2~~ of this section shall make the following certification:

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

14.12. Conditions Applicable to All permits. The following conditions are applicable to all permits, and shall be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to this rule must be given in the permit.

~~a~~14.12.1. Duty to comply. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the SDWA and the State Act and is grounds for enforcement action; for permit suspension or revocation, revocation and reissuance, or modification; or for denial of a permit renewal application.

~~b~~14.12.2. Duty to Reapply. If the permittee wishes to continue activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit.

~~e~~14.12.3. Duty to reduce or halt activity. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

~~d~~14.12.4. Duty to mitigate. The permittee shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this permit.

~~e~~14.12.5. Proper operation and maintenance. The permittee shall at all times, properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

~~f~~14.12.6. Permit actions. This permit may be modified, revoked and reissued, suspended, or revoked for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, suspension or revocation, or notification of planned changes or anticipated noncompliance, does not stay any permit condition. All requests shall be in writing and shall contain facts or reasons supporting the request.

~~g~~14.12.7. Property rights. This permit does not convey any property rights of any sort, or any exclusive privilege.

~~h~~14.12.8. Duty to provide information. The permittee shall furnish to the Director within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or revoking this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

~~i~~14.12.9. Inspection and entry. The permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as maybe required by law, to:

~~i-1~~ 14.12.9.a. Enter upon the permittees premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

~~i-2~~ 14.12.9.b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

~~i-3~~ 14.12.9.c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

~~i-4~~ 14.12.9.d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the SDWA and State Act, any substances or parameters at any location.

~~j~~14.12.10. Monitoring and records.

~~j-1~~ 14.12.10.a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

~~j-2~~ 14.12.10.b. The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.

~~j-3~~ 14.12.10.c. Records of monitoring information shall include:

~~j-3-A~~ 14.12.10.c.1. The date, exact place, and time of sampling or measurements;

~~j-3-B~~ 14.12.10.c.2. The individual(s) who performed the sampling or measurements;

~~j-3-C~~ 14.12.10.c.3. The date(s) analysis(es) were performed;

~~j-3-D~~ 14.12.10.c.4. The individual(s) who performed the analyses;

~~j.3.E~~ 14.12.10.c.5. The analytical techniques or methods used; and

~~j.3.F~~ 14.12.10.c.6. The results of such analyses.

~~k~~14.12.11. Signatory requirement. All applications, reports, or information submitted to the Director shall be signed and certified, as required under subsection 14.11.

~~l~~14.12.12. Reporting requirements.

~~l~~1 14.12.12.a. Planned changes. The permittee shall give notice to the Director as soon as possible of any planned significant physical alterations or additions to the permitted facility, or any planned significant changes in the operation of the facility.

~~l~~1 14.12.12.b. Anticipated noncompliance. The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with the permit requirements.

~~l~~1 14.12.12.c. Transfers. This permit is not transferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the SDWA and the State Act and rules. In some cases, modification or revocation and reissuance is mandatory (see subsection 14.17).

~~l~~1 14.12.12.d. Monitoring reports. Monitoring results shall be reported at the intervals specified elsewhere in this permit.

~~l~~1 14.12.12.e. Compliance schedules. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than thirty (30) days following each schedule date.

~~l~~1 14.12.12.f. Immediate reporting. The permittee shall report any noncompliance which may endanger health or the environment immediately after becoming aware of the circumstances by using the Water Resources Emergency Notification Number, 1-800-642-3074. Written submission shall also be provided within five (5) days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and the steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

~~l~~1 14.12.12.g. Other noncompliance. The permittee shall report all instances of noncompliance not reported under paragraphs 14.12.1-12.a., 14.12.1-412.d., 14.12.1-512.e., and 14.12.1-612.f of this section, at the time monitoring reports are submitted. The report shall contain the information listed in paragraph 14.12.1.6 of this section.

~~l~~1 14.12.12.h. Other information. Where a permittee becomes aware that he/she failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, he/she shall promptly submit such facts or information.

~~l~~1 14.12.12.i. Owners or operators of Class 6 wells shall retain records as specified in 47 CSR 13, including subparts 14.4.d4., 14.6.e.1-F3.a.6., 14.9.f6., 14.9.g7., and 14.9.h8.

14.13. Duration of Permits. UIC permits for Class 1,~~2,3~~, 5 and 6 wells shall be effective for a fixed term not to exceed five (5) years. Reevaluation is required to determine whether it should be modified, revoked and reissued, terminated or a minor modification made.

~~a~~14.13.1. The term of a permit shall not be extended by modification beyond the maximum duration specified in this section.

~~b~~14.13.2. The Director may issue any permit for a duration that is less than the full allowable term under this section.

14.14. Schedules of Compliance.

• ~~a~~14.14.1. The permit may, when appropriate, specify a schedule of compliance leading to compliance with the SDWA, the State Act and rules.

~~a.1~~ 14.14.1.a. Time for compliance. Any schedules for compliance under this section shall require compliance as soon as possible.

~~a.2~~ 14.14.1.b. In addition, a schedule of compliance shall require compliance no later than three (3) years after the effective date of the permit.

~~a.3~~ 14.14.1.c. Interim dates. Except as provided in subparagraph 14.14.~~b.1.B~~2.a.2. of this section, if a permit establishes a schedule of compliance which exceeds one (1) year from the date of permit issuance, the schedule shall set forth interim requirements and the dates for their achievement.

~~a.3.A~~ 14.14.1.c.1. The time between interim dates shall not exceed one (1) year.

~~a.3.B~~ 14.14.1.c.2. If the time necessary for completion of any interim requirement (such as the construction of a control facility) is more than one (1) year and is not readily divisible into stages for completion, the permit shall specify interim dates for the submission of reports of progress toward completion of the interim requirements and indicate a projected completion date.

~~a.4~~ 14.14.1.d. Reporting. The permit shall be written to require that no later than thirty (30) days following each interim date and the final date of compliance, the permittee shall notify the Director in writing of its compliance or noncompliance with the interim or final requirements.

~~b~~14.14.2. Alternative schedules of compliance. A UIC permit applicant or permittee may cease conducting regulated activities (by plugging and abandonment) rather than continue to operate and meet permit requirements as follows:

~~b.1~~ 14.14.2.a. If the permittee decides to cease conducting regulated activities at a given time within the term of a permit which has already been issued:

~~b.1.A~~ 14.14.2.a.1. The permit may be modified to contain a new or additional schedule leading to timely cessation of activities; or

14.14.2.a.2. The permittee shall cease conducting permitted activities before noncompliance with any interim or final compliance schedule requirement already specified in the permit.

~~b.2~~ 14.14.2.b. If the decision to cease conducting regulated activities is made before issuance of a permit whose term will include the termination date, the permit shall contain a schedule leading to termination which will ensure timely compliance with applicable requirements.

~~b.3~~ 14.14.2.c. If the permittee is undecided whether to cease conducting regulated activities, the Director may issue or modify a permit to contain two schedules as follows:

~~b.3.A~~ 14.14.2.c.1. Both schedules shall contain an identical interim deadline requiring a final decision on whether to cease conducting regulated activities no later than a date which ensures sufficient time to comply with applicable requirements in a timely manner if the decision is to continue conducting regulated activities.

~~b.3.B~~ 14.14.2.c.2. One schedule shall lead to timely compliance with applicable requirements;

~~b.3.C~~ 14.14.2.c.3. The second schedule shall lead to cessation of regulated activities by a date which will ensure timely compliance with applicable requirements; and

~~b.3.D~~ 14.14.2.c.4. Each permit containing two (2) schedules shall include a requirement that after the permittee has made a final decision under subparagraph 14.14.b.1.A2.a.1. of this section it shall follow the schedule leading to compliance if the decision is to continue conducting regulated activities, and follow the schedule leading to termination if the decision is to cease conducting regulated activities.

~~b.4~~ 14.14.2.d. The applicant's or permittee's decision to cease conducting regulated activities shall be evidenced by a firm public commitment satisfactory to the Director, such as a resolution of the board of directors of a corporation.

14.15. Requirements for Recording and Reporting of Monitoring Results. All permits shall specify:

~~a~~14.15.1. Requirements concerning the proper use, maintenance, and installation, when appropriate, of monitoring equipment or methods (including biological monitoring methods when appropriate);

~~b~~14.15.2. Required monitoring including type, intervals, and frequency sufficient to yield data which are representative of the monitored activity including, when appropriate, continuous monitoring; and

~~e~~14.15.3. Applicable reporting requirements based upon the impact of the regulated activity and as specified elsewhere by this rule.

14.16. Effect of a Permit.

~~a~~14.16.1. The issuance of a permit does not convey any property rights of any sort, or any exclusive privilege.

~~b~~14.16.2. The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, or any infringement of State or local law or rules.

~~e~~14.16.3. Except for Class 2 and 3 wells, compliance with a permit during its term constitutes compliance, for purposes of enforcement, with Part C of SDWA. However, a permit may be modified, revoked, and reissued, suspended or revoked during its term for cause as set forth in subsections 14.18 and 14.19.

14.17. Transfer of Permits.

~~a~~14.17.1. Transfers by modification. Except as provided in subdivision 14.17.~~b~~2 of this section, a permit may be transferred by the permittee to a new owner or operator only if the permit has been modified or revoked and reissued, or a minor modification made to identify the new permittee and incorporate such other requirements as may be necessary under the SDWA and the State Act and rules.

~~b~~14.17.2. Automatic transfers. As an alternative to transfers under subdivision 14.17.~~a~~1 of this section, any UIC permit for a well not injecting hazardous waste or injecting carbon dioxide may be automatically transferred to a new permittee if:

~~b-1~~ 14.17.2.a. The current permittee notifies the Director at least thirty (30) days in advance of the proposed transfer date in paragraph 14.17.~~b-2~~2.b of this section;

~~b-2~~ 14.17.2.b. The notice includes a written agreement between the existing and new permittees containing a specific date for transfer of permit responsibility coverage, and liability between them and, in the case of UIC permits, the notice demonstrates that the financial responsibility requirements of subdivision 14.7.~~g~~7 will be met by new permittee; and

~~b-3~~ 14.17.2.c. The Director does not notify the existing permittee and the proposed new permittee of his or her intent to modify or revoke and reissue the permit. A modification under this section may also be a minor modification under subsection 14.20. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph 14.17.~~b-2~~2.b of this section.

14.18. Modification or Revocation and Reissuance of Permits. When the Director receives any information (for example, inspects the facility, receives information submitted by the permittee as required in the permit, receives a request for modification or revocation and reissuance, or conducts a review of the permit file) he or she may determine whether or not one or more of the causes listed in subdivisions 14.18.a and 14.18.b of this section for modification or revocation and reissuance or both exists. If cause exists, the Director may modify or revoke and reissue the permit accordingly, subject to the limitations of subdivision 14.18.c of this section and request an updated application. When a permit is modified, only the conditions subject to modification are reopened. If a permit is revoked and reissued, the entire permit is reopened and subject to revision and the permit is reissued for a new term. If cause does not exist under this section or subsection 14.20, the Director shall not modify or revoke and reissue the permit. If a permit modification satisfies the criteria in subsection 14.20 for "minor modifications" the permit may be modified without a draft permit or public review. Otherwise, a draft permit must be prepared. Notice of intent to revoke a permit will require a draft permit.

~~a~~14.18.1. Cause for modification. The following are causes for modification but not revocation and reissuance of permits, except for Class 1, 2 and 3 wells in which case the following may be causes for revocation and reissuance as well as modification.—

~~a-1~~ 14.18.1.a. Alterations. There are material and substantial alterations or additions to the permitted facility or activity which occurred after permit issuance which justify the application of permit conditions that are different or absent in the existing permit.

~~a-2~~ 14.18.1.b. Information. The Director has received information. Permits other than for Class 2 and 3 wells may be modified during their terms for this cause only if the information was not available at the time of permit issuance (other than revised rules, guidance, or test methods) and would have

justified the application of different permit conditions at the time of issuance. For UIC area permits, this cause shall include any information indicating that cumulative effects on the environment are unacceptable.

~~a.3~~ 14.18.1.c. New rules. The standards or rules on which the permit was based have been changed by promulgation of amended standards or rules or by judicial decision after the permit was issued. Permits other than for Class 2 or 3 wells may be modified during their terms for this cause only as follows:

~~a.3.A~~ 14.18.1.c.1. For promulgation of amended standards or rules, when:

~~a.3.A.1~~ 14.18.1.c.1.A. The permit condition to be modified was based on a State regulation requiring compliance with forty (40) CFR Part 146; and

~~a.3.A.2~~ 14.18.1.c.1.B. The State has revised, withdrawn, or modified that portion of the regulation on which the permit condition was based.

~~a.3.B~~ 14.18.1.c.2. For judicial decisions, a court of competent jurisdiction has remanded and stayed State promulgated rules if the remand and stay concern that portion of the rules on which the permit condition was based.

~~a.4~~ 14.18.1.d. Compliance schedules. The Director determines good cause exists for modification of a compliance schedule, such as an act of God, strike, flood, or materials shortage or other events over which the permittee has little or no control and for which there is no reasonably available remedy.

~~a.5~~ 14.18.1.e. For Class 6 wells. Whenever the Director determines that permit changes are necessary based on area of review reevaluations or any amendments to the testing and monitoring plan, injection well plugging plan, post injection site care and site closure plan, or emergency and remedial response plan; or a review of monitoring and/or testing results conducted in accordance with permit requirements.

~~b.1~~ 14.18.2. Cause for modification or revocation and reissuance. The following are causes to modify or, alternatively, revoke and reissue a permit:

~~b.1~~ 14.18.2.a. Cause exists for revocation under subsection 14.19 and the Director determines that modification or revocation and reissuance is appropriate.

~~b.2~~ 14.18.2.b. The Director has received notification of a proposed transfer of the permit. A permit may also be modified to reflect a transfer after the effective date of an automatic transfer under subdivision 14.17.b but will not be revoked and reissued after the effective date of the transfer except upon the request of the new permittee-unless the permit is up for reissuance or meets a qualification for revocation under 14.19.

~~e.1~~ 14.18.3. Facility siting. Suitability of the facility location will not be considered at the time of permit modification or revocation and reissuance unless new information or standards indicate that a threat to human health or the environment exists which was unknown at the time of permit issuance.

14.19. Revocation and Suspension of Permits.

~~a.1~~ 14.19.1. The Director may revoke or suspend a permit during its term or deny a permit renewal application for the following causes:

~~a.1~~ 14.19.1.a. Noncompliance by the permittee with any condition of the permit;

~~a.2~~ 14.19.1.b. The permittee's failure in the application or during the permit issuance process to disclose fully all relevant facts, or the permittee's misrepresentation of any relevant facts at any time; or

~~a.3~~ 14.19.1.c. A determination that the permitted activity endangers human health or the environment and can only be regulated to acceptable levels by permit modification or revocation. Such as the waste being injected ~~in~~ is now a hazardous waste.

14.20. Minor Modifications of Permits. Upon the consent of the permittee, the Director may modify a permit to make the corrections or allowances for changes in the permitted activity listed in this section. Any permit modification not processed as a minor modification under this section must be made for cause and with a draft permit and public notice as required in subsection 14.18. Minor modifications may only:

~~a~~14.20.1. Correct typographical errors;

~~b~~14.20.2. Require more frequent monitoring or reporting by the permittee;

~~e~~14.20.3. Change an interim compliance date in a schedule of compliance, provided the new date is not more than one hundred-twenty (120) days after the date specified in the existing permit and does not interfere with attainment of the final compliance date requirement;

~~d~~14.20.4. Allow for a change in ownership or operational control of a facility where the Director determines that no other change in the permit is necessary, provided that a written agreement containing a specific date for transfer of permit responsibility, coverage, and liability between the current and new permittees has been submitted to the Director; or

~~e~~14.20.5. Allow the following:

~~e.1~~ 14.20.5.a. Change quantities or types of fluids injected which are within the capacity of the facility as permitted, and in the judgement of the Director would not interfere with the operation of the facility or its ability to meet conditions prescribed in the permit, and would not change its classification;

~~e.2~~ 14.20.5.b. Change construction requirements approved by the Director pursuant to subdivision 14.7.a, provided that any such alteration shall comply with the requirements of this rule; and

~~e.3~~ 14.20.5.c. Amend a plugging and abandonment plan which has been updated under subdivision 14.6.~~e~~5.

~~e.4~~ 14.20.5.d. Amend a Class 6 injection well testing and monitoring plan, plugging plan, post-injection site care and site closure plan, or emergency and remedial response plan where the modifications merely clarify or correct the plan.

14.21. Confidentiality of Information.

~~a~~14.21.1. Any information submitted to the State pursuant to this rule may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission in the manner prescribed on the application form or instructions or, in the case of other submissions, by stamping the words "CONFIDENTIAL BUSINESS INFORMATION" on each page containing such information. If no

claim is made at the time of submission, the State may make the information available to the public without further notice.

~~b~~14.21.2. Claims of confidentiality for the following information will be denied:

~~b-1~~ 14.21.2.a. The name and address of any permit applicant or permittee.

~~b-2~~ 14.21.2.b. Information which deals with the existence, absence, or level of contaminants in drinking water.

14.22. Identification of Underground Sources of Drinking Water and Exempted Aquifers.

~~a~~14.22.1. The Director may identify (by narrative description, illustrations, maps, or other means) and shall protect, except where exempted under subdivision 14.22.~~b~~2 of this section, as an underground source of drinking water, all aquifers or parts of aquifer which meet the definition of an "underground source of drinking water" in section 2. Even if an aquifer has not been specifically identified by the Director, it is an underground source of drinking water if it meets the definition in section 2 or an expansion to the areal extent of an existing Class II EOR/EGR aquifer exemption for the exclusive purpose of Class 6 injection for geologic sequestration. Other than EPA approved aquifer exemption expansions or exemptions following 40 CFR_144.7(a)., new aquifer exemptions shall not be issued for Class 6 injection wells.

~~b~~14.22.2. The Director may identify (by narrative description, illustrations, maps, or other means) and describe in geographic and/or geometric terms, such as vertical and lateral limits and gradient, which are clear and definite, all aquifers or parts thereof which the Director proposes to designate as exempted aquifers using the criteria in section 3.

~~e~~14.22.3. No designation of an exempted aquifer submitted as a part of a UIC Program shall be final until approved by the Director of the U.S. EPA as part of the State program.

~~e-1~~ 14.22.3.a. No designation of an expansion to the areal extent of a Class II EOR/EGR aquifer exemption for the exclusive purpose of Class 6 injection for geologic sequestration shall be final until approved by the Director of the U.S. EPA as part of the State Program.

~~e-2~~ 14.22.3.b. In order to make a request to the Director to approve an expansion to the areal extent of existing Class II aquifer exemptions for Class 6 wells, the owner or operator of a Class II EOR/EGR must define and describe all aquifers that are requested to be designated as exempted in 40 CFR 146.4. Requests must be treated as a substantial program revision under the approved State UIC program and will not be final until approved by EPA. The Director must determine that the request meets the criteria in 40 CFR 146.4 and consider: 1 - Current and potential future use of the USDWs to be exempted as drinking water resources; 2 - The predicted extent of the injected CO₂ plume and any mobilized fluids that may degrade of water quality, over the GS project lifetime, as informed by computational modeling in 14.9.~~e-13~~3.a.; 3 - Whether the areal extent of the expanded aquifer exemption is of sufficient size to account for any possible revisions to the computational model during reevaluation of the area of review, pursuant to 14.9.~~e-45~~4.d.; and 4 -Any information submitted to support a waiver request made by the owner or operator under 14.8.d., if appropriate.

~~d~~14.22.4. For Class 3 wells, the Director shall require an applicant for a permit which necessitates an aquifer exemption under paragraph 3.1.~~b-12~~2.a to furnish the data necessary to demonstrate that the aquifer is expected to be mineral or hydrocarbon producing. Information contained in the mining plan for the proposed project, such as a map and general description of the mining zone, general information on the

mineralogy and geochemistry of the mining zone, analysis of the amenability of the mining zone to the proposed mining method, and a time-table of planned development of the mining zone shall be considered by the Director in addition to the information required by subsection 14.3.

~~e~~14.22.5. For Class 2 wells, a demonstration of commercial producibility shall be made as follows:

~~e-1~~ 14.22.5.a1. For a Class 2 well to be used for enhanced oil recovery processes in a field or project containing aquifers from which hydrocarbons were previously produced, commercial productibility shall be presumed by the Director upon a demonstration by the applicant of historical production having occurred in the project area or field.

~~e-2~~ 14.22.5.2. For Class 2 wells not located in a field or project containing aquifers from which hydrocarbons were previously produced, information such as logs, core data, formation description, formation depth, formation thickness and formation parameters such as permeability and porosity shall be considered by the Director, to the extent such information is available.

14.23. Public Access to Information.

~~a~~14.23.1. Any records, reports, or information contained under this rule and any permits, permit applications, and related documentation shall be available to the public for inspection and copying in accordance with Series 8, West Virginia Legislative Rules (Freedom of Information Act); provided, however, that upon a satisfactory showing to the Director that such records, reports, permit documentation, or information (other than that listed in subdivision 14.21.b2), would, if made public, divulge methods or processes entitled to protection as trade secrets, the Director shall consider, treat and protect such records as confidential.

~~b~~14.23.2. It shall be the responsibility of the person claiming information as confidential under the provisions of subdivision 14.23.a1 above to clearly mark each page containing such information with the word "CONFIDENTIAL" and to submit an affidavit setting forth the reasons that said person believes that such information is entitled to protection.

~~e~~14.23.3. Any document submitted to the Director which contains information for which claim of confidential information is made shall be submitted in a sealed envelope marked "CONFIDENTIAL" and addressed to the Director. The document shall be submitted in two (2) separate parts. The first part shall contain all information which is not deemed by the person preparing the report as confidential and shall include appropriate cross-references to the second part which contains data, words, phrases, paragraphs, or pages and appropriate affidavits containing or relating to information which is claimed to be confidential.

~~d~~14.23.4. No information shall be protected as confidential information by the Director unless it is submitted in accordance with the provisions of subdivision 14.23.e3 above and no information which is submitted in accordance with the provisions of subdivision 14.23.e3 above shall be afforded protection as confidential information unless the Director finds that such protection is necessary to protect trade secrets and that such protection will not hide from public view the characteristics of waste materials and probable effects of the introduction of such wastes or by-products into the environment. The person who submits information claimed as confidential shall receive written notice from the Director as to whether the information has been accepted as confidential or not.

~~e~~14.23.5. All information which meets the tests of subdivision 14.23.d4 above shall be marked with the term "ACCEPTED" and shall be protected as confidential information. If said person fails to satisfactorily demonstrate to the Director that such information in the form presented him meets the criteria of subdivision 14.23.d4 above, the Director shall mark the information "REJECTED" and promptly return such information to the person submitting such information.

~~f~~14.23.6. Nothing contained herein shall be construed so as to restrict the release of relevant confidential information during situations declared to be emergencies by the Director or his designee.

~~g~~14.23.7. Nothing in this section may be construed as limiting the disclosure of information by the Water Resources section to any officer, employee or authorized representative of the State or Federal government concerned with the State UIC program.

14.24. Public Participation in Permit Process.

~~a~~14.24.1. Scope. Public notice shall be given that the following actions have occurred:

~~a.1~~ 14.24.1.a. A draft permit has been prepared; or

~~a.2~~ 14.24.1.b. A hearing time has been scheduled.

~~b~~14.24.2. Timing.

~~b.1~~ 14.24.2.a. Public notice of the preparation of the draft permit required under this section shall allow at least thirty (30) days for public comment.

~~b.1~~ 14.24.2.b. Public notice of a hearing shall be given at least thirty (30) days before the hearing.

~~e~~14.24.3. Methods. Public notice of activities described in this section shall be given by the following methods:

~~e.1~~ 14.24.3.a. By mailing a copy of a notice to the following persons (any person otherwise entitled to receive notice under this paragraph may waive the right to receive notice for any classes and categories of permits):

~~e.1.A~~ 14.24.3.a.1. The applicant;

~~e.1.B~~ 14.24.3.a.2. Any other agency including EPA which the Director knows has issued or is required to issue a RCRA, PSD, NPDES permit for the same facility or activity;

~~e.1.C~~ 14.24.3.a.3. Federal and State and interstate agencies with jurisdiction over fish and wildlife resources, public health, the State Historic Preservation Unit of the Department of Culture and History, and other appropriate government authorities, including any affected states;

~~e.1.D~~ 14.24.3.a.4. Persons on a mailing list developed by:

~~e.1.D.1~~ 14.24.3.a.4.A. Including those who request in writing to be on the list;

~~e.1.D.2~~ 14.24.3.a.4.B. Soliciting persons for "area lists" from participants in past permit proceedings in that area; and

~~e.1.D.3~~ 14.24.3.a.4.C. Notifying the public of the opportunity to be put on the mailing list through periodic publication in the public press and in appropriate publications of the State.

~~e.1.E~~ 14.24.3.a.5. By mailing a copy to each agency having authority under State law with respect to the construction or operation of such facility; and to any unit of local government having jurisdiction over the area where the facility is proposed to be located;

~~e.1.E~~ 14.24.3.a.6. State and local oil and gas agencies for Class 6 UIC Permits.

~~e.2~~ 14.24.3.b. For any permit, and all major permits, the Director shall send the public notice to the applicant who shall be responsible for publication of a Class 1 legal advertisement by a date, and in a paper specified by the Director. Upon publication, the applicant shall send the Director a copy of the certificate of publication. The costs of publication shall be borne by the applicant; and

~~e.3~~ 14.24.3.c. Any other method reasonably calculated to give actual notice of the action in question to the persons potentially affected by it, including press releases or any other forum or medium to elicit public participation.

14.25. Contents of a Public Notice.

~~a~~14.25.1. All public notices issued under this section shall contain the following minimum information:

~~a.1~~ 14.25.1.a. Name and address of the office processing the permit action for which notice is being given.

~~a.2~~ 14.25.1.b. Name and address of the permittee or permit applicant and, if different, of the facility or activity regulated by the permit.

~~a.3~~ 14.25.1.c. A brief description of the business conducted at the facility described in the permit application or the draft permit.

~~a.4~~ 14.25.1.d. The name, address, and telephone number of a person from whom interested persons may obtain further information, including copies of the draft permit or fact sheet, and the application.

~~a.5~~ 14.25.1.e. A brief description of the comment procedures required by subsections 14.26 and 14.27 and the time and place of any hearing that will be held, including a statement of procedures to request a hearing unless already scheduled, and other procedures by which the public may participate in the final permit decision.

~~b~~14.25.2. In addition to the general public notice described in subdivision 14.25.a1., the public notice of a hearing shall contain the following information:

~~b.1~~ 14.25.2.a. Reference to the date of previous public notices relating to the permit;

~~b.2~~ 14.25.2.b. Date, time and place of the hearing; and

~~b.3~~ 14.25.2.c. A brief description of the nature and purposes of the hearing, including the applicable rules and procedures.

~~e~~14.25.3. In addition to the general public notice, all persons identified in subparagraphs 14.24.e.1.A3.a.1, 14.24.e.1.B3.a.2, and 14.24.e.1.C3.a.3 shall be mailed a copy of the fact sheet, the permit application and the draft permit.

14.26. Public Comment and Requests for Public Hearings. During the public comment period provided, any interested person may submit written comments on the draft permit and may request a public hearing if no hearing has already been scheduled. A request for a public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing. All comments shall be considered in making the final decision and shall be answered as provided in subsection 14.30.

14.27. Public Hearings.

~~a~~14.27.1. The Director shall hold a public hearing whenever he or she finds, on the basis of requests, a significant degree of public interest of issues relevant to the draft permit(s). The Director also may hold a public hearing at his or her discretion, whenever, for instance, such a hearing might clarify one or more issues involved in the permit decision.

~~b~~14.27.2. Any person may submit oral or written statements and data concerning the draft permit. Reasonable limits may be set upon the time allowed for oral statements, and the submission of statements in writing may be required. The public comment period under paragraph 14.24.b.12.a shall automatically be extended to ten (10) days after the close of any public hearing under this section.

~~e~~14.27.3. A tape recording or written transcript of the hearing shall be made available to the public, upon request.

14.28. Obligation to Raise Issues and Provide Information During the Public Comment Period. All persons, including applicants, who believe any condition of a draft permit is inappropriate or that the Director tentative decision to prepare a draft permit is inappropriate, shall raise all reasonably ascertainable issues and submit all reasonably available arguments and factual grounds supporting their position, including all supporting material, by the close of the public comment period. All supporting materials shall be included in full and not be incorporated by reference, unless they are already part of the administrative record in the same proceeding, or consist of State or Federal statutes and rules, documents of general applicability, or other generally available reference materials. Submitters of comments shall make supporting material not already included in the administrative record available to the State as directed by the Director.

14.29. Reopening of the Public Comment Period.

~~a~~14.29.1. If any data, information or arguments submitted during the public comment period appear to raise substantial new questions concerning a permit, the Director may take one or more of the following actions:

~~a.1~~ 14.29.1.a. Prepare a new draft permit, appropriately modified;

~~a.1~~ 14.29.1.b. Prepare a revised fact sheet and reopen the comment period under this section;

or

~~a.1~~ 14.29.1.c. Reopen or extend the comment period to give interested persons an opportunity to comment on the information or arguments submitted.

~~b~~14.29.2. Comments filed during the reopened comment period shall be limited to the substantial new questions that caused its reopening. The public notice shall define the scope of the reopening.

14.30. Response to Comments.

~~a~~14.30.1. Any time that any final permit is issued, the Director shall prepare a response to comments. This response shall:

~~a.1~~ 14.30.1.a. Specify which provisions, if any, of the draft permit have been changed in the final permit decision, and the reasons for the change; and

~~a.2~~ 14.30.1.b. Briefly describe and respond to all significant comments on the draft permit raised during the public comment period, or during any hearing.

~~b~~14.30.2. The response to comments shall be available to the public.

14.31. Fact Sheet.

~~a~~14.31.1. A fact sheet shall be prepared for every draft permit for a major facility or activity and for every draft permit which the Director finds is the subject of widespread public interest or raises major issues. The fact sheet shall briefly set forth the principal facts and the significant factual, legal, methodological and policy questions considered in preparing the draft permit. The Director shall send this fact sheet to the applicant and, on request, to any other person and to the persons required under subparagraphs 14.24.~~e.1.A~~3.a.1, 14.24.~~e.1.B~~3.a.2, and 14.24.~~e.1.C~~3.a.3. A major facility is classified as such by the Regional Administrator in conjunction with the State Director.

~~b~~14.31.2. The fact sheet shall include, when applicable:

~~b.1~~ 14.31.2.a. A brief description of the type of facility or activity which is the subject of the draft permit;

~~b.2~~ 14.31.2.b. The type and quantity of fluids, which are proposed to be or are being injected;

~~b.3~~ 14.31.2.c. A brief summary of the basis for the draft permit conditions including references to applicable statutory or regulatory provisions;

~~b.3.A~~ 14.31.2.c.1. Justified or unjustified variances;

~~b.4~~ 14.31.2.d. A description of the procedures for reaching a final decision on the draft permit including:

~~b.4.A~~ 14.31.2.d.1. The beginning and ending dates of the public comment period and the address where comments will be received;

~~b.4.B~~ 14.31.2.d.2. Procedures for requesting a hearing and the nature of that hearing;

~~b.4.C~~ 14.31.2.d.3. Any other procedures by which the public may participate in the final decision; and

~~b.4.D~~ 14.31.2.d.4. Name and telephone number of a person to contact for additional information.

14.32. Draft Permits.

~~a~~14.32.1. Once an application is complete, the Director shall tentatively decide whether to prepare a draft permit or to deny the application.

~~b~~14.32.2. If the Director decides to prepare a draft permit, it shall contain the following information:

~~b.1~~ 14.32.2.a. All conditions under subsections 14.6, 14.7, and 14.12;

~~b.2~~ 14.32.2.b. All compliance schedules; and

~~b.3~~ 14.32.2.c. All monitoring requirements.

Figure 47-13-5

Zone of Endangering Influence

$$r = \sqrt{\frac{2.25KHt}{S10^x}}$$

where:

$$x = \frac{4\pi KH(h_w - h_{bo})S_p G_b}{2.3Q}$$