CR 85-195

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

*Carroll D. Besadny*
*Secretary*

BOX 7921
MADISON, WISCONSIN 53707

STATE OF WISCONSIN )
) ss
DEPARTMENT OF NATURAL RESOURCES )

TO ALL TO WHOM THESE PRESENTS SHALL COME, GREETINGS:

I, Bruce B. Braun, Deputy Secretary of the Department of Natural Resources and custodian of the official records of said Department, do hereby certify that the annexed copy of Natural Resources Board Order No. A-35-85 was duly approved and adopted by this Department on March 27, 1986. I further certify that said copy has been compared by me with the original on file in this Department and that the same is a true copy thereof, and of the whole of such original.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the official seal of the Department at General Executive Facility #2 in the City of Madison, this 30th day of May, 1986.

Bruce B. Braun
Bruce B. Braun, Deputy Secretary

(SEAL)

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10-1-86

ORDER OF THE STATE OF WISCONSIN
NATURAL RESOURCES BOARD
REPEALING, RENUMBERING, AMENDING AND CREATING RULES

IN THE MATTER OF repealing section NR 440.13(1)(a) and (b); renumbering section NR 440.44(5)(e), (f) and (g); renumbering and amending section NR 440.50(6)(b)2.; amending sections NR 440.13(1)(intro.), 440.19(6)(c)1., and (7)(a)2., 4. and 5., (c), (e), (f)2. and 3. (intro.) and a., (h)1., 3. and 4., and (i)1., 440.20(8)(a)1., 440.23(4)~~(a)~~, (5)(a)1. and (b), 440.30 (title), (1)(a) and (4)(a)3. and 4., 440.44(title), (1)(a) and (b), (2) (g), (3)(a)3. (intro.), a., b. and c., (5)(b) and (c) and (6)(a)1., 3. and 4., (b) and (c), NR 440.46(2)(b), (e)(h) and (k) and (7)(a)(intro.), 440.50(3)(d)(3)(d)(a) and 440.51 (1)(a), (2), (3)(a), (4) and (5); and creating sections NR 440.07(5), 440.11(6), 440.23 (5)(e), 44024(6)(e), 440.30(4)(a)5., 440.44(4)(c), (5)(e) and (i), (6)(a)5., (i) and (j) and (7), 440.445, 440.45(4) (a)1.f.and (6)(d)5., 440.46(2)(cm), (dm), (km) and (ks), (3)(d) and (e) and (7) (g), 440.50(6)(b)2.b., 440.60, 440.61, 440.62, 440.63, 440.64, 440.65, 440.66 440.67, 440.68 and 440.69 of the Wisconsin Administrative Code pertaining to the establishment and modification of new source performance standards for air contaminant sources

A-35-85

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Analysis Prepared by the Department of Natural Resources

Under section 111 of the federal Clean Air Act the Administrator of U.S. Environmental Protection Agency is required to adopt regulations establishing federal standards of performance for new sources (NSPS). As of March, 1985 NSPS have been adopted for 50 new source categories and these standards are set out in Title 40 of the Code of Federal Regulations, Part 60. Under section 111(c)(1) of the federal Clean Air Act, states may develop and submit to U.S. EPA procedures for implementing and enforcing the NSPS. If U.S. EPA finds the states procedures to be adequate, it may delegate to the state the authority to implement and enforce the standards.

Section 144.375(4)(a), Wisconsin Statutes states that if an NSPS is promulgated by U.S. EPA, the department shall promulgate by rule a similar standard which may not be more restrictive in terms of emission limits than the federal standard. In January, 1984, the department promulgated rules (ch. NR 440, Wis. Adm. Code) which adopted the NSPS that had been promulgated by U.S. EPA. The rules contained in this order adopt the changes to the federal NSPS that have occurred since the promulgation of ch. NR 440, Wis. Adm. Code. These include modifications to existing standards and the adoption of standards for new categories of sources. In accordance with section 227.024(1m), Wis. Stats., the format for these rules is based on the format used in 40 CFR Part 60 - the federal NSPS - on which the state's rules for NSPS are based.

Pursuant to the authority vested in the State of Wisconsin Natural Resources Board by ss. 144.31, 144.375(4), 144.38, 227.014(2) and 227.024(1m), Stats., the State of Wisconsin Natural Resources Board hereby repeals, renumbers, amends and creates rules interpreting s. 144.31(1)(f), Stats. and implementing s. 144.375(4)(a), Stats., and revising the State Implementation Plan (SIP) developed under s. 144.31(1)(f), Stats., as follows:

SECTION 1. NR 440.07(5) is created to read:

NR 440.07(5) Individual sections of this chapter may include specific provisions which clarify or make inapplicable the provisions set forth in this section.

SECTION 2. NR 440.11(6) is created to read:

NR 440.11(6) Special provisions set forth under an applicable section of this chapter shall supersede any conflicting provisions of this section.

SECTION 3. NR 440.13(1)(intro.) is amended to read:

NR 440.13(1)(intro) For the purposes of this section, all continuous monitoring systems required under applicable sections of this chapter shall be subject to the provisions of this section upon promulgation of performance specifications for continuous monitoring systems under 40 C.F.R. pt. 60, Appendix B, incorporated by reference in s. NR 440.17, unless ~~:~~ otherwise specified in an applicable section or by the department.

SECTION 4. NR 440.13(1)(a) and (b) are repealed.

SECTION 5. NR 440.19(6)(c)1. is amended to read:

NR 440.19(6)(c)1. ~~Reference~~ Methods 6 or ~~7~~ 6C and 7, 7A, 7C, 7D, or 7E of 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17, as applicable, shall be used for conducting performance evaluations of sulfur dioxide and nitrogen oxides continuous monitoring systems.

SECTION 6. NR 440.19(7)(a)2., 4. and 5. are amended to read:

NR 440.19(7)(a)2. Method 3 or 3A for gas analysis to be used when applying Reference Methods 5, 6 ~~and~~ or 6C, and 7, 7A, 7C, 7D, or 7E.

4. Method 6 or 6C for concentration of $SO_2$. ~~but~~ Method 6A may be used whenever Methods 6 or 6C and 3 or 3A data are used to determine the $SO_2$ emission rate in ng/J, and

5. Method 7, 7A, 7C, 7D, or 7E for concentration of $NO_x$.

SECTION 7. NR 440.19(7)(c) and (e) are amended to read:

NR 440.19(7)(c) For Methods 6, or 6C, and 7, 7A, 7C, 7D, or 7E of 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17, the sampling site shall be the same as that selected for Method 5. The sampling point in the duct shall be at the centroid of the cross section or at a point no closer to the walls than 1 m (3.28 ft). For Method 6~~,~~ the samples shall be extracted at a rate proportional to the gas velocity at the sampling point.

(e) For Method 7, 7A, 7C, 7D, or 7E of 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17, each run shall consist of at least 4 grab samples taken at approximately 15-minute intervals. The arithmetic mean of the sample shall constitute the run value. For Method 7C or 7D each run shall consist of a 1-hour sample.

SECTION 8. NR 440.19(7)(f)2. and 3. (intro.) and a. are amended to read:

NR 440.19(7)(f) 2. C = pollutant concentration, ng/dscm (lb/dscf), determined by Method 5, 6, 6C, ~~or~~ 7, 7A, 7C, 7D, or 7E.

3. (Intro.) Percent $O_2$ = Oxygen content by volume (expressed as percent), dry basis. Percent oxygen shall be determined by using the integrated or grab sampling and analysis procedures of Method 3 of 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17, as applicable, or by using Method 3C. ~~The~~ Oxygen samples shall be obtained as follows:

a. For determination of sulfur dioxide by Method 6 or 6C and nitrogen oxides emissions by Method 7, 7A, 7C, 7D, or 7E, the oxygen sample shall be obtained simultaneously at the same point in the duct ~~as-used-to-obtain-the-samples-for-Method-6-and-7-determinations,-respectively-(par.(c))~~. For Method 7 or 7A the oxygen sample shall be obtained using the grab sampling and analysis procedures of Method 3 or 3C.

SECTION 9. NR 440.20(7)(h)1., 3., and 4. are amended to read:

NR 440.20(7)(h) 1. Reference Methods 3 or 3A, 6 or 6C and 7, 7A, 7C, 7D, or 7E, as applicable, shall be used. Method 6B may be used whenever Methods 6 or 6C and 3 or 3A data are required to determine the $SO_2$ emission rate in ng/J. The sampling location or locations shall be the same as those specified for the continuous emission monitoring system.

3. For Method 7, 7A, 7C, 7D, or 7E samples shall be taken at approximately 30 minute intervals. The arithmetic average of these consecutive samples represent a one-hour average. For Method 7C or 7D each run shall consist of a 1-hour sample.

4. For Method 3 the oxygen or carbon dioxide sample shall be taken for each hour when continuous $SO_2$ and $NO_x$ data are taken or when Methods 6 or 6C and 7, 7A, 7C, 7D, or 7E are required. Each sample shall be taken for a minimum of 30 minutes in each hour using the integrated bag method specified in Method 3. Each sample represents a one-hour average.

SECTION 10. NR 440.20(7)(i)1. is amended to read:

NR 440.20(7)(i) 1. ~~Reference~~ Method 6, 6C, ~~or~~ 7, 7A, 7C, 7D, or 7E of 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17, as applicable, shall be used for conducting performance evaluation of sulfur dioxide and nitrogen oxides continuous monitoring systems.

SECTION 11. NR 440.20(8)(a)1. is amended to read:

NR 440.20(8)(a) 1. Method 3 or 3A is used for gas analysis when applying Method 5 or ~~Method~~ 17, and

SECTION 12. NR 440.23(4)(a) is amended to read:

NR 440.23(4)(a) A continuous monitoring system for the measurement of nitrogen oxides shall be installed, calibrated, maintained and operated by the owner or operator. The pollutant gas used to prepare calibration gas mixtures under Performance Specification 2 of 40 C.F.R. pt. 60, Appendix B, incorporated by reference in s. NR 440.17, and for calibration checks under s. NR 440.13 shall be nitrogen dioxide ($NO_2$). The span shall be set at 500 ppm of nitrogen dioxide. Reference Method 7, 7A, 7B, 7C, or 7D of 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17, shall be used for conducting monitoring system performance evaluations under s. NR 440.13(3).

SECTION 13. NR 440.23(5)(a)1. is amended to read:

NR 440.23(5)(a) 1. Method 7, 7A, 7B, 7C, or 7D for the concentration of $NO_x$;

SECTION 14. NR 440.23(5)(b) is amended to read:

NR 440.23(5)(b) For Method 7, 7A, 7B, 7C or 7D in 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17, the sample site shall be selected according to Method 1 and the sampling point shall be the centroid of the stack or duct or at a point no closer to the walls than 1 m (3.28 ft). Each run shall consist of at least 4 grab samples taken at approximately 15-minute intervals. The arithmetic mean of the samples shall constitute the run value. A velocity traverse shall be performed once per run. For Methods 7C or 7D each run shall consist of a 1-hour sample.

SECTION 15. NR 440.24(5)(d) is created to read:

NR 440.24(5)(d) Alternatively, a source that processes elemental sulfur or an area that contains elemental sulfur and uses air to supply oxygen may use the following continuous emission monitoring approach and calculation procedures in determining $SO_2$ emission rates in terms of the standard. This procedure is not required but is an alternative that would alleviate problems encountered in the measurement of gas velocities or production rate. Continuous emission monitoring of $SO_2$, $O_2$ and $CO_2$ (if required) shall be installed, calibrated, maintained and operated by the owner or operator and subjected to the certification procedures in Performance Specifications 2 and 3. The calibration procedure and span value for this $SO_2$ monitor shall be as specified in par. (b). The span value for $CO_2$ (if required) shall be 10 percent and for $O_2$ shall be 20.9 percent (air). A conversion factor based on process rate data is not necessary. Calculate the $SO_2$ emission rate as follows:

$$E_{SO_2} = C_{SO_2} \quad S \qquad \frac{1}{0.265 - 0.0126\ (O_2) - A(CO_2)}$$

where E $SO_2$ is the $SO_2$ emission rate in Kg/t acid (lb/ton acid); C $SO_2$ is the $SO_2$ concentration in Kg/dscm (lb/dscf) (see table below); S is the acid production rate factor equal to 368 dscm/t acid for metric unit, or 11800 dscf/ton acid for English units; $O_2$ is the $O_2$ concentration in percent; A is the auxiliary fuel factor equal to 0.00 for no fuel, 0.0226 for methane, 0.0217 for natural gas, 0.0196 for propane, 0.0172 for #2 oil, 0.0161 for #6 oil, 0.0148 for coal, 0.0126 for coke; $CO_2$ is the $CO_2$ concentration in percent.

Note. It is necessary in some cases to convert measured concentration units to other units for these calculations.

Use the following table for such conversions:

| From | To | Multiply by |
|---|---|---|
| g/scm | kg/scm | $10^{-3}$ |
| mg/scm | kg/scm | $10^{-6}$ |
| ppm ($SO_2$) | kg/scm | $2.660 \times 10^{-6}$ |
| ppm ($SO_2$) | lb/scm | $1.660 \times 10^{-7}$ |

SECTION 16. NR 440.24(6)(e) is created to read:

NR 440.24(6)(e) Alternatively, a source that processes elemental sulfur or an ore that contains elemental sulfur and uses air to supply oxygen may use the $SO_2$, acid mist, $O_2$ and $CO_2$ (if required) measurement data in determining $SO_2$ and acid mist emission rates in terms of the standard. Data from the reference method tests as specified in par. (a) are required; that is, Method 8 of 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17, for $O_2$ and $CO_2$. No determinations of production rate or total gas flow rate are necessary. Calculate the $SO_2$ and acid mist emission rate as described in s. NR 440.24(5)(d) substituting the acid mist concentration for $C_{SO_2}$ as appropriate.

SECTION 17. NR 440.30 (title) and (1)(a) are amended to read:

### NR 440.30 (TITLE) SECONDARY BRASS AND BRONZE PRODUCTION PLANTS.

NR 440.30(1)(a) The provisions of this section are applicable to the following affected facilities in secondary brass or bronze ~~ingot~~ production plants: reverberatory and electric furnaces of 1,000 kg (2,205 lb) or greater production capacity and blast (cupola) furnaces of 250 kg/hr (550 lb/hr) or greater production capacity. Furnaces from which molten brass or bronze are cast into the shape of finished products, such as foundry furnaces, are not considered to be affected facilities.

SECTION 18. NR 440.30(4)(a)3. and 4. are amended to read:

NR 440.30(4)(a)3. Method 2 for velocity and volumetric flow rate~~, and~~

4. Method 3 for gas analysis, and

SECTION 19. NR 440.30(4)(a)5. is created to read:

NR 440.30(4)(a)5. Method 9 for visual determination of the opacity of emissions.

SECTION 20. NR 440.44 (title) is amended to read:

NR 440.44 (TITLE) STEEL PLANTS: ELECTRIC ARC FURNACES CONSTRUCTED AFTER OCTOBER 21, 1974, AND ON OR BEFORE AUGUST 17, 1983.

SECTION 21. NR 440.44(1)(a) and (b) are amended to read:

NR 440.44(1)(a) The provisions of this section are applicable to the following affected facilities in steel plants that produce carbon, alloy, or specialty steels: electric arc furnaces and dust-handling ~~equipment~~ systems.

(b) ~~Any facility under par. (a) that commences construction or modification after October 21, 1974, is subject to the requirements of this section.~~ The provisions of this section apply to each affected facility identified under par.(a) of this section that commenced construction, modification, or reconstruction after October 21, 1974 and on or before August 17, 1983.

SECTION 22. NR 440.44(2)(g) is amended to read:

NR 440.44(2)(g) "'Electric arc furnace' or 'EAF'" means any furnace that produces molten steel and heats the charge materials with electric arcs from carbon electrodes. Furnaces ~~from-which-the-molten-steel-is-cast-into-the-shape-of-finished-products,-such-as-in-a-foundry,-and-furnaces-which,-as-the-primary-source-of-iron,~~ that continuously feed ~~prereduced~~ direct-reduced iron ore pellets as the primary source of iron are not affected facilities within the scope of this definition.

SECTION 23. NR 440.44(3)(a)3. (intro), a., b. and c. are amended to read:

NR 440.44(3)(a)3.(intro) Exit from a shop and, due solely to operations of any EAFs, exhibit ~~greater than-zero~~ 6 ~~percent-shop~~ % opacity or greater except:

a. Shop opacity ~~greater-than-zero-percent,-but~~ less than 20% may occur during charging periods.

b. Shop opacity ~~greater-than-zero-percent,-but~~ less than 40% may occur during tapping periods.

c. Opacity standards of this subdivision apply only during periods when ~~flow-rates-and~~ pressures and either control system fan motor amperes and damper positions or flow rate are being established under sub. (5)(c) and ~~(f)~~ (g).

SECTION 24. NR 440.44(4)(c) is created to read:

NR 440.44(4)(c) No continuous monitoring system shall be required on any modular, multiple-stack, negative-pressure, or positive-pressure fabric filters if observations of the opacity of the visible emissions from the control device are performed by a certified visible emission observer in accordance with sub. (6)(l).

SECTION 25. NR 440.44(5)(b) and (c) are amended to read:

NR 440.44(5)(b) Except as provided under par. (d), the owner or operator subject to the provisions of this section shall check and record on a once-per-shift basis the furnace static pressure (if a direct shell evacuation or DEC system is in use) and either check and record the control system fan motor amperes and damper positions on a once-per-shift basis; or install, calibrate and maintain a monitoring device that continuously records the volumetric flow rate through each separately ducted hood. The monitoring devices may be installed in any appropriate location in the exhaust duct such that reproducible flow rate monitoring will result. Flow rate monitoring devices shall have an accuracy of plus or minus 10% over their normal operating range and shall be calibrated according to the manufacturer's instructions. The department may require the owner or operator to demonstrate the accuracy of the monitoring devices relative to Methods 1 and 2 of 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17.

(c) When the owner or operator of an EAF is required to demonstrate compliance with the standard under sub. (3)(a)3., and at any other time~~,~~ the department may require that either the control system fan motor amperes and all damper positions or the volumetric flow rate through each separately ducted hood shall be determined during all periods in which the hood is operated for the purpose of capturing emissions from the EAF ~~using the monitoring device under par. (b).~~ subject to par. (b). The owner or operator may petition the department for reestablishment of these ~~flow rates~~ parameters whenever the owner or operator can demonstrate to the department's satisfaction that the EAF operating conditions upon which the ~~flow rates~~ parameters were previously established are no longer applicable. The values of these parameters were determined during the most recent demonstration of compliance shall be maintained ~~(or may be exceeded)~~ at the appropriate level for each applicable period. Operation at ~~lower flow rates may be considered by the department to be unacceptable operation and maintenance of the affected facility~~ other than baseline values may be subject to the requirements of sub. (7)(a).

SECTION 26. NR 440.44(5)(e), (f) and (g) are renumbered NR 440.44(5)(f), (g) and (h), respectively.

SECTION 27. NR 440.44(5)(e) and (i) are created to read:

NR 440.44(5)(e) The owner or operator shall perform monthly operational status inspections of the equipment that is important to the performance of the total capture system (i.e., pressure sensors, dampers and damper switches). This inspection shall include observations of the physical appearance of the equipment (e.g., presence of hole in ductwork or hoods, flow constrictions caused by dents or accumulated dust in ductwork, and fan erosion). Any deficiencies shall be noted and proper maintenance performed.

(i) During any performance test required under s. NR 440.08 and for any report thereof required under sub. (6)(c) or to determine compliance with sub. (3)(a)3., the owner or operator shall monitor the following information for all heats covered by the test:

1. Charge weights and materials, and tap weights and materials;

2. Heat times, including start and stop times, and a log of process operation, including periods of no operation during testing and the pressure inside the furnace where direct-shell evacuation systems are used;

3. Control device operation log; and

4. Continuous monitor or Reference Method 9 data.

SECTION 28. NR 440.44(6)(a)1., 3. and 4. are amended to read:

NR 440.44(6)(a)1. Either Method 5 for negative-pressure fabric filters and other types of control devices or Method 5D for concentration of particulate matter and associated moisture content,

3. Method 2 for velocity and volumetric flow rate, ~~and~~

4. Method 3 for gas analysis., and

SECTION 29. NR 440.44(6)(a)5. is created to read:

NR 440.44(6)(a)5. Method 9 for the opacity of visible emissions.

SECTION 30. NR 440.44(6)(b) and (c) are amended to read:

NR 440.44(6)(b) For Method 5 or 5D of 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17, the sampling time for each run shall be at least 4 hours. When a single EAF is sampled, the sampling time for each run shall also include an integral number of heats. Shorter sampling times, when necessitated by process variables or other factors, may be approved by the department. For Method 5 or 5D ~~The~~ the minimum sample volume shall be 4.5 dscm (160 dscf).

(c) For the purpose of this section, the owner or operator shall conduct the demonstration of compliance with sub. (3)(a)~~3.~~ and furnish the department a written report of the results of the test. This report shall include the following information:

1. Facility name and address;

2. Plant representative;

3. Make and model of process, control device, and continuous monitoring device;

4. Flow diagram of process and emission capture equipment or process(es) ducted to the same control device;

5. Rated design capacity of process equipment;

6. Those data required under par. (5)(i);

a. List of charge and tap weights and materials;

b. Heat times and process log;

c. Control device operation log; and

d. Continuous monitor or Reference Method 9 data.

7. Test dates and test times;

8. Test company;

9. Test company representative;

10. Test observers from outside agency;

11. Description of test methodology used, including any deviation from standard reference methods;

12. Schematic of sampling location;

13. Number of sampling points;

14. Description of sampling equipment;

15. Listing of sampling equipment calibrations and procedures;

16. Field and laboratory data sheets;

17. Description of sample recovery procedures;

18. Sampling equipment leak check results;

19. Description of quality assurance procedures;

20. Description of analytical procedures;

21. Notation of sample blank corrections; and

22. Sample emission calculations.

SECTION 31. NR 440.44(6)(i) and (j) are created to read:

NR 440.44(6)(i) Visible emissions observations of modular, multiple-stack, negative pressure or positive pressure fabric filters shall occur at least once per day of operation. The observations shall occur when the furnace is operating in the melting and refining period. These observations shall be taken in accordance with Method 9 and, for at least three 6-minute periods, the opacity shall be recorded for any point(s) where visible emissions are observed. Where it is possible to determine that a number of visible emission sites relate to only one incident of the visible emissions, only one set of three 6-minute observations will be required. In this case Reference Method 9 observations must be made for the site of highest opacity that directly relates to the cause (or location) of visible emissions observed during a single incident. Records shall be maintained of any 6-minute average that is in excess of the emission limit specified in sub. (3)(a).

(j) Unless the presence of inclement weather makes concurrent testing infeasible the owner or operator shall conduct concurrently the performance tests required under s. NR 440.08 to demonstrate compliance with sub. (3)(a)1., 2., and 3.

SECTION 32. NR 440.44(7) is created to read:

NR 440.44(7) RECORDKEEPING AND REPORTING REQUIREMENTS. (a) Operation at a furnace static pressure that exceeds the value established under sub. (5)(f) and either operation of control system fan motor amperes at values exceeding ± 15% of the value established under sub. (5)(c) or operation at flow rates lower than those established under sub. (5)(c) may be considered by the department to be unacceptable operation and maintenance of the affected facility. Operation at such values shall be reported to the department semi-annually.

(b) When the owner or operator of an EAF is required to demonstrate compliance with the standard under sub. (6)(g)2. or 3. the owner or operator shall obtain approval from the department of the procedure(s) that will be used to determine compliance. Notification of the procedure to be used must be postmarked 30 days prior to the performance test.

SECTION 33. NR 440.445 is created to read:

NR 440.445 STEEL PLANTS: ELECTRIC ARC FURNACES AND ARGON-OXYGEN DECARBURIZATION VESSELS CONSTRUCTED AFTER AUGUST 17, 1983. (1) APPLICABILITY. (a) The provisions of this section are applicable to the following affected facilities in steel plants that produce carbon, alloy, or specialty steels: electric arc furnaces, argon-oxygen decarburization vessels and dust-handling systems.

(b) The provisions of this section apply to each affected facility identified in par. (a) that commences construction, modification, or reconstruction after August 17, 1983.

(2) DEFINITIONS. As used in this section all terms not defined in this subsection have the meaning designated in s. NR 440.02.

(a) "Argon-oxygen decarburization vessel" (AOD vessel) means any closed-bottom, refractory-lined converter vessel with submerged tuyeres through which gaseous mixtures containing argon and oxygen or nitrogen may be blown into molten steel for further refining.

(b) "Capture system" means the equipment (including ducts, hoods, fans, dampers, etc.) used to capture or transport particulate matter generated by an electric arc furnace or AOD vessel to the air pollution control device.

(c) "Charge" means the addition of iron and steel scrap or other materials into the top of an electric arc furnace or the addition of molten steel or other materials into the top of an AOD vessel.

(d) "Control device" means the air pollution control equipment used to remove particulate matter from the effluent gas stream generated by an electric arc furnace or AOD vessel.

(e) "Direct-shell evacuation control system" (DEC system) means a system that maintains a negative pressure within the electric arc furnace above the slag or metal and ducts emissions to the control device.

(f) "Dust-handling system" means equipment used to handle particulate matter collected by the control device for an electric arc furnace or AOD vessel subject to this section. For the purposes of this section the dust-handling system shall consist of the control device dust hoppers, the dust-conveying equipment, any central dust storage equipment, the dust-treating equipment (e.g., pug mill, pelletizer), dust transfer equipment (from storage to truck) and any secondary control devices used with the dust transfer equipment.

(g) "Electric arc furnace" (EAF) means a furnace that produces molten steel and heats the charge materials with electric arcs from carbon electrodes. For the purposes of this section an EAF shall consist of the furnace shell and roof and the transformer. Furnaces that continuously feed direct-reduced iron ore pellets as the primary source of iron are not affected facilities within the scope of this definition.

(h) "Heat cycle" means the period beginning when scrap is charged to an empty EAF and ending when the EAF tap is completed or beginning when molten steel is charged to an empty AOD vessel and ending when the AOD vessel tap is completed.

(i) "Melting" means that phase of steel production cycle during which the iron and steel scrap is heated to the molten state.

(j) "Negative-pressure fabric filter" means a fabric filter with the fans on the downstream side of the filter bags.

(k) "Positive-pressure fabric filter" means a fabric filter with the fans on the upstream side of the filter bags.

(l) "Refining" means the phase of the steel production cycle during which undesirable elements are removed from the molten steel and alloys are added to reach the final metal chemistry.

(m) "Shop" means the building which houses one or more EAF's or AOD vessels.

(n) "Shop opacity" means the arithmetic average of 24 observations of the opacity of emissions from the shop taken in accordance with Method 9 of 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17.

(o) "Tap" means the pouring of molten steel from an EAF or AOD vessel.

(3) STANDARD FOR PARTICULATE MATTER. (a) On and after the date on which the performance test required to be conducted by s. NR 440.08 is completed no owner or operator subject to the provisions of this section may cause to be discharged into the atmosphere from an EAF or an AOD vessel any gases which:

1. Exit from a control device and contain particulate matter in excess of 12 mg/dscm (0.0052 gr/dscf);

2. Exit from a control device and exhibit 3% opacity or greater; and

3. Exit from a shop and, due solely to the operations of any affected EAF(s) or AOD vessel(s), exhibit 6% opacity or greater.

(b) On and after the date on which the performance test required to be conducted by s. NR 440.08 is completed no owner or operator subject to the provisions of this section shall cause to be discharged into the atmosphere from the dust-handling system any gases that exhibit 10% opacity or greater.

(4) EMISSION MONITORING. (a) Except as provided under pars. (b) and (c) a continuous monitoring system for the measurement of the opacity of emissions discharged into the atmosphere from the control device(s) shall be installed, calibrated, maintained and operated by the owner or operator subject to the provisions of this section.

(b) No continuous monitoring system shall be required on any control device serving the dust-handling system.

(c) No continuous monitoring system shall be required on modular, multiple-stack, negative-pressure or positive-pressure fabric filters if observations of the opacity of the visible emissions from the control device are performed by a certified visible emission observer in accordance with sub. (6)(c).

(5) MONITORING OF OPERATIONS. (a) The owner or operator subject to the provisions of this section shall maintain records of the following information:

1. All data obtained under par. (b); and

2. All monthly operational status inspections performed under par. (c).

(b) Except as provided under par. (d), the owner or operator subject to the provisions of this section shall check and record on a once-per-shift basis the furnace static pressure (if DEC system is in use) and either check and record the control system fan motor amperes and damper position and a once-per-shift basis, or install, calibrate and maintain a monitoring device that continuously records the volumetric flow rate through each separately ducted hood. The monitoring device may be installed in any appropriate location in the exhaust duct such that reproducible flow rate monitoring will result. The flow rate monitoring device shall have an accuracy of ± 10% over its normal operating range and shall be calibrated according to the manufacturer's instructions. The department may require the owner or operator to demonstrate the accuracy of the monitoring device relative to Methods 1 and 2 of 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17.

(c) When the owner or operator of an affected facility is required to demonstrate compliance with the standards under sub. (3)(a)3. and at any other time, the department may require that either the control system fan motor amperes and all damper positions or the volumetric flow rate through each separately ducted hood shall be determined during all periods in which a hood is operated for the purpose of capturing emissions from the affected facility subject to par. (b). The owner or operator may petition the department for reestablishment of these parameters whenever the owner or operator can demonstrate to the department's satisfaction that the affected facility operating conditions upon which the parameters were previously established are no longer applicable. The values of these parameters as determined during the most recent demonstration of compliance shall be maintained at the appropriate level for each applicable period. Operation at other than baseline values may be subject to the requirements of sub. (7)(c).

(d) The owner or operator shall perform monthly operational status inspections of the equipment that is important to the performance of the total capture system (i.e., pressure sensors, dampers and damper switches). This inspection shall include observations of the physical appearance of the equipment (e.g., presence of holes in ductwork or hoods, flow constrictions caused by dents or accumulated dust in ductwork and fan erosion). Any deficiencies shall be noted and proper maintenance performed.

(e) The owner or operator may petition the department to approve any alternative to monthly operational status inspections that will provide a continuous record of the operation of each emission capture system.

(f) If emissions during any phase of the heat time are controlled by the use of a DEC system the owner or operator shall install, calibrate and maintain a monitoring device that allows the pressure in the free space inside the EAF to be monitored. The monitoring device may be installed in any appropriate location in the EAF or DEC duct prior to the introduction of ambient air such that reproducible results will be obtained. The pressure monitoring device shall have an accuracy of ±5mm of water gauge over its normal operating range and shall be calibrated according to the manufacturer's instructions.

(g) When the owner or operator of an EAF controlled by a DEC is required to demonstrate compliance with the standard under sub. (3)(a)3., and at any other time the department may require the pressure in the free space inside the furnace shall be determined during the melting and refining period(s) using the monitoring device required under par. (f). The owner or operator may petition the department for reestablishment of the 15-minute integrated average of the pressure whenever the owner or operator can demonstrate to the department's satisfaction that the EAF operating conditions upon which the pressures were previously established over no longer applicable. The pressure determined during the most recent demonstration of compliance shall be maintained at all times when the EAF is operating in a meltdown and refining period. Operation at higher pressures may be considered by the department to be unacceptable operation and maintenance of the affected facility.

(h) During any performance test required under s. NR 440.08 and for any report thereof required by sub. (6)(d), or to determine compliance with sub.(3)(a)3., the owner or operator shall monitor the following information for all heats covered by the test:

1. Charge weights and materials and tap weights and materials;

2. Heat times, including start and stop times, and a log of process operation including periods of no operation during testing and the pressure inside an EAF when direct-shell evacuation control system are used;

3. Control device operation log; and

4. Continuous monitor or Reference Method 9 of 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17., data.

(6) TEST METHODS AND PROCEDURES. (a) Reference methods in 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17, except as provided under s. NR 440.08(2), shall be used to determine compliance with the standards prescribed under sub. (3) as follows:

1. Method 1 for sample and velocity traverses;

2. Method 2 for velocity and volumetric flow rate;

3. Method 3 for gas analysis;

4. Either Method 5 for negative-pressure fabric filters and other types of control devices or Method 5D for positive-pressure fabric filters for concentration of particulate molten and associated moisture content; and

5. Method 9 for the opacity of visible emissions.

(b) For Method 5 or 5D the sampling time for each run shall be at least 4 hours. When a single EAF or AOD vessel is sampled the sampling time for each run shall also include an integral number of heats. Shorter sampling times when necessitated by process variables or other factors may be approved by the department. For Method 5 or 5D the minimum sample volume shall be 4.5 dsm$^3$ (160 dscf).

(c) Visible emissions observations of modular, multiple-stack, negative-pressure or positive-pressure fabric filters shall occur at least once per day of operation. The observations shall occur when the furnace or vessel is operating in the melting or refining phase of a heat cycle. These observations shall be taken in accordance with Method 9 and, for at least three 6-minute periods, the opacity shall be recorded for any point(s) where visible emissions are observed. Where it is possible to determine that a number of visible emission sites relate to only one incident of the visible emissions only one set of three 6-minute observations will be required. In this case Reference Method 9 observations must be made for the site of highest opacity that directly relates to the cause (or location) of visible emissions observed during a single incident. Records shall be maintained of any 6-minute average that is in excess of the emission limit specified in sub. (3).

(d) For the purpose of this section the owner or operator shall conduct the demonstration of compliance with sub. (3)(a) and furnish the department a written report of the results of the test. This report shall include the following information:

1. Facility name and address;

2. Plant representative;

3. Make and model of process, control device, and continuous monitoring equipment;

4. Flow diagram of process and emission capture equipment including other equipment or process(es) ducted to the same control device;

5. Rated (design) capacity of process equipment;

6. Those data required under sub. (5)(h):

a. List of charge and tap weights and materials;

b. Heat times and process log;

c. Control device operation log; and

d. Continuous monitor or Reference Method data.

7. Test dates and test times;

8. Test company;

9. Test company representative;

10. Test observers from outside agency;

11. Description of test methodology used, including any deviation from standard reference methods;

12. Schematic of sampling location;

13. Number of sampling points;

14. Description of sampling equipment;

15. Listing of sampling equipment calibrations and procedures;

16. Field and laboratory data sheets;

17. Description of sample recovery procedures;

18. Sampling equipment leak check results;

19. Description of quality assurance procedures;

20. Description of analytical procedures;

21. Notation of sample blank corrections; and

22. Sample emission calculations.

(e) During any performance test required under s. NR 440.08 no gaseous diluents may be added to the effluent gas streams after the fabric in any pressurized fabric filter collector, unless the amount of dilution is separately determined and considered in the determination of emissions.

(f) When more than one control device serves the EAF or AOD vessel being tested the concentration of particulate matter shall be determined using the following equation:

$$C = \frac{\sum_{n=1}^{N} (CQ)_n}{\sum_{n=1}^{N} (Q)_n}$$

where:

C = concentration of particulate matter in mg/dsm$^3$ (gr/dscf) as determined by Method 5 or 5D.

N = total number of control devices tested.

Q = volumetric flow rate of the effluent gas stream in dsm$^3$/hr (dscf/hr) as determined by Method 2.

$(CQ)_n$, $(Q)_n$ = value of the applicable parameter for each control device tested.

(g) Any control device subject to the provisions of this section shall be designed and constructed to allow measurement of emissions using applicable test methods and procedures.

(h) Where emissions from any EAF or AOD vessel are combined with emissions from facilities not subject to the provisions of this section but controlled by a common capture system and control device the owner or operator may use any of the following procedures during a performance test:

1. Base compliance on control of the combined emissions;

2. Utilize a method acceptable to the department that compensates for the emissions from the facilities not subject to the provisions of this section or;

3. Any combination of the criteria of subd. 1. and 2.

(i) Where emissions from any EAF or AOD vessel are combined with emissions from facilities not subject to the provisions of this section determinations of compliance with sub. (3)(a)3. will only be based upon emissions originating from the affected facility(ies).

(j) Unless the presence of inclement weather makes concurrent testing infeasible the owner or operator shall conduct concurrently the performance tests required under s. NR 440.08 to demonstrate compliance with sub.(3)(a)1., 2. and 3.

(7) RECORDKEEPING AND REPORTING REQUIREMENTS. (a) Records of the measurements required in sub. (5) must be retained for at least 2 years following the date of the measurement.

(b) Each owner or operator shall submit a written report of exceedances of the control device opacity to the department semi-annually. For the purposes of these reports exceedances are defined as all 6-minute periods during which the average opacity is 3% or greater.

(c) Operation at a furnace static pressure that exceeds the value established under sub. (5)(g) and either operation of control system fan motor amperes at values exceeding ± 15% of the value established under sub. (5)(c) or operation at flow rates lower than those established under sub. (5)(c) may be considered by the department to be unacceptable operation and maintenance of the affected facility. Operation at such values shall be reported to the department semi-annually.

(d) The requirements of this section remain in force until and unless the department approves reporting requirements or an alternative means of compliance surveillance. In that event affected sources will be relieved of the obligation to comply with this section.

(e) When the owner or operator of an EAF or AOD is required to demonstrate compliance with the standard under sub. (6)(h)2. or 3. the owner or operator shall obtain approval from the department of the procedure that will be used to determine compliance. Notification of the procedure to be used must be postmarked 30 days prior to the performance test.

SECTION 34. NR 440.45(4)(a)1.f. is created to read:

NR 440.45(4)(a)1.f. The uncontrolled exhaust gases from a new, modified, or reconstructed digester system contain TRS less than 0.005 g/kg ADP (0.01 lb/ton ADP).

SECTION 35. NR 440.45(6)(d)5. is created to read:

NR 440.45(6)(d)5. When determining compliance with sub. (4)(a)1.f. use the results of Methods 2 and 16 of 40 CFR, pt. 60, Appendix A, incorporated by reference in s. NR 440.17, and the pulp production rate in the equation specified in sub. (6)(d)3., except substitute the pulp production rate (PPR) [kg/hr (tons/hr)] for the black liquor solids feed rate (BLS).

SECTION 36. NR 440.46(2)(b), (e), (h) and (k) are amended to read:

NR 440.46(2)(b) "Borosilicate recipe" means ~~raw material formulation~~ glass product composition of the following approximate ranges of weight proportions: ~~72% silica, 7% nepheline syenite, 13% anhydrous borax, 8% boric acid, and 0.1% miscellaneous materials.~~ 60 to 80% silicon dioxide, 4 to 10% total $R_2O$ (e.g., $Na_2O$ and $K_2O$), 5 to 35% boric oxides and 0 to 13% other oxides.

(e) "Glass melting furnace" means a unit comprising a refractory vessel in which raw materials are charged, melted at high temperature, refined and conditioned to produce molten glass. The unit includes foundations, superstructure and retaining walls, raw material charger systems, heat exchangers, melter cooling system, exhaust system, refractory brick work, fuel supply and electrical boosting equipment, integral control systems and instrumentation and appendages for conditioning and distributing molten glass to forming apparatuses. The forming apparatuses, including the float bath used in flat glass manufacturing and flow channels in wool fiberglass and textile fiberglass manufacturing, are not considered part of the glass melting furnace.

(h) "Lead recipe" means ~~raw material formulation~~ glass product composition of the following ~~approximate~~ ranges of weight proportions: ~~56% silica, 8% potassium carbonate, and 36% red lead.~~ 50 to 60% silicon dioxide, 18 to 35% lead oxides, 5 to 20% total $R_2O$ (e.g., $Na_2O$ and $K_2O$), 0 to 8% total $R_2O_3$ (e.g., $Al_2O_3$), 0 to 15% total RO (e.g., CaO, MgO), other than lead oxide, and 5 to 10% other oxides.

(k) "Soda-lime recipe" means ~~raw material formulation~~ glass product composition of the following ~~approximate~~ ranges of weight proportions: ~~72% silica, 15% soda, 10% lime and magnesia, 2% alumina, and 1% miscellaneous materials (including sodium sulfate).~~ 60 to 75% silicon dioxide, 10 to 17% total $R_2O$ (e.g., $Na_2O$ and $K_2O$), 8 to 20% total RO but not to include any PbO (e.g., CaO and MgO), 0 to 8% total $R_2O_3$ (e.g., $Al_2O_3$) and 1 to 5% other oxides.

SECTION 37. NR 440.46(2)(cm), (dm), (km), and (ks) are created to read:

NR 440.46(2)(cm) "Experimental furnace" means a glass melting furnace with the sole purpose of operating to evaluate glass melting processes, technologies, or glass products. An experimental furnace does not produce glass that is sold (except for further research and development purposes) or that is used as a raw material for nonexperimental furnaces.

(dm) "Flow channels" means appendages used for conditioning and distributing molten glass to forming apparatuses and are a permanently separate source of emissions such that no mixing of emissions occurs with emissions from the melter cooling system prior to their being vented to the atmosphere.

(km) "Textile fiberglass" means fibrous glass in the form of continuous strands having uniform thickness.

(ks) "With modified-processes" means using any technique designed to minimize emissions without the use of add-on pollution controls.

SECTION 38. NR 440.46(3)(d), and (e) are created to read:

NR 440.46(3)(d) An owner or operator of an experimental furnace is not subject to the requirements of this section.

(e) During routine maintenance of add-on pollution controls an owner or operator of a glass melting furnace subject to the provisions of sub. (3)(a) is exempt from the provisions of this subsection if:

1. Routine maintenance in each calendar year does not exceed 6 days;

2. Routine maintenance is conducted in a manner consistent with good air pollution control practices for minimizing emissions; and

3. A report is submitted to the department 10 days before the start of the routine maintenance (if 10 days cannot be provided the report must be submitted as soon as practicable) and the report contains an explanation of the schedule of the maintenance.

SECTION 39. NR 440.46(4) is created to read:

NR 440.46(4) STANDARDS FOR PARTICULATE MATTER FROM GLASS MELTING FURNACE WITH MODIFIED-PROCESSES. (a) An owner or operator of a glass melting furnaces with modified-processes is not subject to the provisions of sub. (3) if the affected facility complies with the provision of this subsection.

(b) On and after the date on which the performance test required to be conducted by s. NR 440.08 is completed no owner or operator of a glass melting furnace with modified-processes subject to the provisions of this section shall cause to be discharged into the atmosphere from the affected facility:

1. Particulate matter at emission rates exceeding 0.5 gram of particulate per kilogram of glass produced (g/kg) as measured according to par. (e) for container glass, flat glass and pressed and blown glass with a soda-lime recipe melting furnaces.

2. Particulate matter at emission rates exceeding 1.0 g/kg as measured according to par. (e) for pressed and blown glass with a borosilicate recipe melting furnace.

3. Particulate matter at emission rates exceeding 0.5 g/kg as measured according to par. (e) for textile fiberglass and wool fiberglass melting furnaces.

(c) The owner or operator of an affected facility that is subject to emission limits specified under par. (b) shall:

1. Install, calibrate, maintain and operate a continuous monitoring system for the measurement of the opacity of emissions discharged into the atmosphere from the affected facility.

2. During the performance test required to be conducted by s. NR 440.08 conduct continuous opacity monitoring during each test run.

3. Calculate 6-minute opacity averages from 24 or more data points equally spaced over each 6-minute period during the test runs.

4. Determine, based on the 6-minute opacity averages, the opacity value corresponding to the 97.5% upper confidence level of a normal distribution of average opacity values.

5. For the purposes of s. NR 440.07 report to the department as excess emissions all of the 6-minute periods during which the average opacity, as measured by the continuous monitoring system installed under par. (c)1., exceeds the opacity value corresponding to the 97.5% upper confidence level determined under par. (c)4.

(d)1. After receipt and consideration of written application the department may approve alternative continuous monitoring systems for the measurement of one or more process or operating parameters that is or are demonstrated to enable accurate and representative monitoring of an emission limit specified in par. (b)1.

2. After the department approves an alternative continuous monitoring system for an affected facility, the requirements of par. (c)1. to 5. will not apply for that affected facility.

3. An owner or operator may redetermine the opacity value corresponding to the 97.5% upper confidence level as described in par. (c)4. if the owner or operator:

a. Conducts continuous opacity monitoring during each test run of a performance test that demonstrates compliance with an emission limit of par. (b),

b. Recalculates the 6-minute opacity averages as described in par. (c)3., and

c. Uses the redetermined opacity value corresponding to the 97.5% upper confidence level for the purposes of par. (c)5.

(e) Test methods and procedures as specified under sub. (7) shall be used to determine compliance with this section except that to determine compliance for any glass melting furnace using modified processes and fired with either a gaseous fuel or a liquid fuel containing less than 0.50 weight percent sulfur, Method 5 of 40 CFR pt. 60, Appendix A, incorporated by reference in s. NR 440.17, shall be used with the probe and filter holder heating system in the sampling train set to provide a gas temperature of 120 ± 14°C.

SECTION 40. NR 440.46(7)(a)(intro.) is amended to read:

NR 440.46(7)(a)(intro.) Reference methods in 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17, except as provided under s. NR 440.08(2), shall be used to determine compliance with ~~sub.~~ subs. (3) and (4) as follows:

SECTION 41. NR 440.46(7)(g) is created to read:

NR 440.46(7)(g) If an owner or operator changes an affected facility from a glass melting furnace with modified processes to a glass melting furnace without modified processes or from a glass melting furnace without modified processes to a glass melting furnace with modified processes the owner or operator shall notify the department 60 days before the change is scheduled to occur.

SECTION 42. NR 440.50(3)(d) is amended to read:

NR 440.50(3)(d) Electric utility stationary gas turbines with a ~~heat input at peak load greater than 107.2 gigajoules per hour (100 million BTU/hour) based on the lower heating value of the fuel fired~~ manufacturer's rated base load at ISO conditions of 30 megawatts or less except as provided in par. (b) shall comply with the provisions of par. (a)1.2.

SECTION 43. NR 440.50(6)(b)2. is renumbered NR 440.50(6)(b)2.a. and amended to read:

NR 440.50(6)(b)2.a. ASTM ~~D2880-78~~ D2880-71 for the sulfur content of liquid fuels and ASTM ~~D1072-56 (Reapproved 1975)~~ D1072-80, D3031-81, D4084-82, or D3246-81 for the sulfur content of gaseous fuels~~; These 2 ASTM~~ (these methods are incorporated by reference in s. NR 440.17). These methods shall also be used to comply with sub. (5)(b).

SECTION 44. NR 440.50(6)(b)2.b. is created to read:

NR 440.50(6)(b)2.b. The applicable ranges of some ASTM methods mentioned in subpar. a. are not adequate to measure the levels of sulfur in some fuel gases. Dilution of samples prior to analysis (with verification of the dilution ratio) is allowable subject to the approval of the department.

SECTION 45. NR 440.51(1)(a) is amended to read:

NR 440.51(1)(a) The provisions of this section are applicable to ~~the-affected-facilities-used-in-the manufacture-of-lime-:-rotary-lime-kilns-and-lime-hydrators.~~ each rotary lime kiln used in the manufacture of lime.

SECTION 46. NR 440.51(2) is amended to read:

NR 440.51(2)(a) ~~"Lime-hydrator"-means-a-unit-used-to-produce-hydrated-lime-product.--(b)~~ "Lime manufacturing plant" ~~includes~~ means any plant which ~~produces~~ uses a rotary lime kiln to produce lime product from limestone by calcination. ~~Hydration-of-the-lime-product-shall-be-considered-to-be-part-of-the-source.~~

~~(c)~~(b) "Lime product" means the product of the calcination process including, but not limited to, calcitic lime, dolomitic lime and dead-burned dolomite.

(c) "Positive-pressure fabric filter" means a fabric filter with the fans on the upstream side of the filter bags.

(d) "Rotary lime kiln" means a unit with an inclined rotating drum which is used to produce a lime product from limestone by calcination.

(e) "Stone feed" means limestone feedstock and millscale or other iron oxide additives that become part of the product.

SECTION 47. NR 440.51(3)(a) is amended to read:

NR 440.51(3)(a) On and after the date on which the performance test required to be conducted by s. NR 440.08 is completed, no owner or operator subject to the provisions of this section may cause to be discharged into the atmosphere~~:~~ ~~1.--From~~ from any rotary lime kiln any gases which:

~~a.~~ 1. Contain particulate matter in excess of ~~0.15~~ 0.30 kilogram per megagram of ~~limestone~~ stone feed (~~0.30~~ 0.60 lb/ton).

~~b.~~ 2. Exhibit ~~10% opacity or greater.~~ greater than 15% opacity when exiting from a dry emission control device.

~~2.--From any lime hydrator any gases which contain particulate matter in excess of 0.075 kilogram per megagram of lime feed (0.15 lb/ton).~~

SECTION 48. NR 440.51(4) and (5) are amended to read:

NR 440.51(4)(a) The owner or operator subject to the provisions of this section shall install, calibrate, maintain and operate a continuous monitoring system, except as provided in ~~par.~~ pars. (b) and (c), to monitor and record the opacity of a representative portion of the gases discharged into the atmosphere from any rotary lime kiln. The span of this system shall be set at 40% opacity.

(b) The owner or operator of any rotary lime kiln using a positive-pressure fabric filter control device subject to the provisions of this section may, in lieu of the continuous monitoring requirements of par. (a), monitor visible emissions at least once per day of operation by using a certified visible emissions observer who, for each site where visible emissions are observed, will perform and record three Reference Method 9 tests on the gases discharged into the atmosphere. (Reference Method 9 of 40 C.F.R. pt. 60, Appendix A, is incorporated by reference in s. NR 440.17).

~~(b)~~(c) The owner or operator of any rotary lime kiln using a wet scrubbing emission control device subject to the provisions of this section may not be required to monitor the opacity of the gases discharged as required in par. (a) but shall install, calibrate, maintain and operate the following continuous monitoring devices:

1. A monitoring device for the continuous measurement of the pressure loss of the gas stream through the scrubber. The monitoring device shall be accurate within plus or minus 250 pascals (one inch of water).

2. A monitoring device for continuous measurement of the scrubbing liquid supply pressure to the control device. The monitoring device shall be accurate within plus or minus 5% of the design scrubbing liquid supply pressure.

~~(c) The owner or operator of any lime hydrator using a wet scrubbing emission control device subject to the provisions of this section shall install, calibrate, maintain and operate the following continuous monitoring devices:~~

~~1. A monitoring device for the continuous measuring of the scrubbing liquid flow rate. The monitoring device shall be accurate within plus or minus 5% of design scrubbing liquid flow rate.~~

~~2. A monitoring device for the continuous measurement of the electric current, in amperes, used by the scrubber. The monitoring device shall be accurate within plus or minus 10% over its normal operating range.~~

(d) For the purpose of conducting a performance test under s. NR 440.08 the owner or operator of any lime manufacturing plant subject to the provisions of this section shall install, calibrate, maintain and operate a device for measuring the mass rate of ~~limestone~~ stone feed to any affected rotary lime kiln ~~and the mass rate of lime feed to any affected lime hydrator~~. The measuring device used shall be accurate within plus or minus 5% of the mass rate over its operating range.

(e) For the purpose of reports required under s. NR 440.07(3) periods of excess emissions that shall be reported are defined as all 6-minute periods during which the average opacity of the plume from any lime kiln subject to par. (a) is ~~10% or greater.~~ greater than 15% or, in the case of wet scrubbers, any period in which the scrubber pressure drop is greater than 30% below the rate established during the performance test. Reports of excess emissions recorded during observations made as required by sub. (5)(c) shall be submitted semi-annually.

(5)(a) Reference methods in 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17, except as provided under s. NR 440.08(2), shall be used to determine compliance with sub. (3)(a) as follows:

1. ~~Method 5 for the measurement of particulate matter, 2.~~ Method 1 for sample and velocity traverses,

~~3.~~ 2. Method 2 for velocity and volumetric flow rate,

~~4.~~ 3. Method 3 for gas analysis,

~~5.~~ 4. Method 4 for stack gas moisture, ~~and~~

5. Method 5 or 5D for the measurement of particulate matter; and

6. Method 9 for visible emissions.

(b) For Method 5 or 5D of 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17, the sampling time for each run shall be at least 60 minutes, and the sampling rate shall be at least 0.85 std. m3/hr, dry basis, (0.53 dscf/min), ~~except that shorter,~~ Shorter sampling times, when necessitated by process variables or other factors, may be approved by the department.

(c) ~~Because of the high moisture content (40 to 85 percent by volume) of the exhaust gases from hydrators, the Method 5 sample train may be modified to include a calibrated orifice immediately following the sample nozzle when testing lime hydrators. In this configuration, the sampling rate necessary for maintaining isokinetic conditions can be directly related to exhaust gas velocity without a correction for moisture content. Extra care shall be exercised when cleaning the sample train with the orifice in this position following the test runs.~~ Visible emission observations of positive-pressure fabric filters shall occur during normal operation of the rotary lime kiln at least once per day of operation. For at least three 6-minute periods the opacity shall be recorded and maintained for any point(s) where visible emissions are observed and the corresponding feed rate of the kiln shall also be recorded and maintained. These observations shall be taken in accordance with Method 9 of 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17. Records shall be maintained of any 6-minute average that is in excess of the emissions limit specified in sub. (3)(a).

SECTION 49. NR 440.60 is created to read:

NR 440.60 METALLIC MINERAL PROCESSING PLANTS. (1) APPLICABILITY AND DESIGNATION OF AFFECTED FACILITY. (a) The provisions of this section are applicable to the following affected facilities in metallic mineral processing plants: each crusher and screen in open-pit mines; each crusher, screen, bucket elevator, conveyor belt transfer point, thermal dryer, product packaging station, storage bin, enclosed storage area, truck loading station, truck unloading station, railcar loading station and railcar unloading station at the mill or concentrator with the following exceptions. All facilities located in underground mines are exempted from the provisions of this section. At uranium ore processing plants all facilities subsequent to and including the beneficiation of uranium ore are exempted from the provisions of this section.

(b) An affected facility under par. (a) that commences construction or modification after August 24, 1982, is subject to the requirements of this section.

(2) DEFINITIONS. As used in this section all terms not defined in this subsection have the meaning designated in s. NR 440.02.

(a) "Bucket elevator" means a conveying device for metallic minerals consisting of a head and foot assembly that supports and drives an endless single or double strand chain or belt to which buckets are attached.

(b) "Capture system" means the equipment used to capture and transport particulate matter generated by one or more affected facilities to a control device.

(c) "Control device" means the air pollution control equipment used to reduce particulate matter emissions released to the atmosphere from one or more affected facilities at a metallic mineral processing plant.

(d) "Conveyor belt transfer point" means a point in the conveying operation where the metallic mineral or metallic mineral concentrate is transferred to or from a conveyor belt except where the metallic mineral is being transferred to a stockpile.

(e) "Crusher" means a machine used to crush any metallic mineral and includes feeders or conveyors located immediately below the crushing surfaces. Crushers include, but are not limited to, the following types: jaw, gyratory, cone and hammermill.

(f) "Enclosed storage area" means any area covered by a roof under which metallic minerals are stored prior to future processing or loading.

(g) "Metallic mineral concentrate" means a material containing metallic compounds in concentrations higher than naturally occurring in ore but requiring additional processing if pure metal is to be isolated. A metallic mineral concentrate contains at least one of the following metals in any of its oxidation states and at a concentration that contributes to the concentrate's commercial value: aluminum, copper, gold, iron, lead, molybdenum, silver, titanium, tungsten, uranium, zinc and zirconium. This definition shall not be construed as requiring that material containing metallic compounds be refined to a pure metal in order for the material to be considered a metallic mineral concentrate to be covered by the standards.

(h) "Metallic mineral processing plant" means any combination of equipment that produces metallic mineral concentrates from ore. Metallic mineral processing commences with the mining of ore and includes all operations either up to and including the loading of wet or dry concentrates or solutions of metallic minerals for transfer to facilities at nonadjacent locations that will subsequently process metallic concentrates into purified metals (or other products) or up to and including all material transfer and storage operations that precede the operations that produce refined metals (or other products) from metallic mineral concentrates at facilities adjacent to the metallic mineral processing plant. This definition shall not be construed as requiring that mining of ore be conducted in order for the combination of equipment to be considered a metallic mineral processing plant. (See also the definition of "metallic mineral concentrate.")

(i) "Process fugitive emissions" means particulate matter emissions from an affected facility that are not collected by a capture system.

(j) "Product packaging station" means the equipment used to fill containers with metallic compounds or metallic mineral concentrates.

(k) "Railroad loading station" means that portion of a metallic mineral processing plant where metallic minerals or metallic mineral concentrates are loaded by a conveying system into railcars.

(l) "Railcar unloading station" means that portion of a metallic mineral processing plant where metallic ore is unloaded from a railcar into a hopper, screen or crusher.

(m) "Screen" means a device for separating material according to size by passing undersize material through one or more mesh surfaces (screens) in series and retaining oversize material on the mesh surfaces (screens).

(n) "Stack emissions" means the particulate matter captured and released to the atmosphere through a stack, chimney, or flue.

(o) "Storage bin" means a facility for storage (including surge bins and hoppers) or metallic minerals prior to further processing or loading.

(p) "Surface moisture" means water that is not chemically bound to a metallic mineral or metallic mineral concentrate.

(q) "Thermal dryer" means a unit in which the surface moisture content of a metallic mineral or a metallic mineral concentrate is reduced by direct or indirect contact with a heated gas stream.

(r) "Truck loading station" means that portion of a metallic mineral processing plant where metallic minerals or metallic mineral concentrates are loaded by a conveying system into trucks.

(s) "Truck unloading station" means that portion of a metallic mineral processing plant where metallic ore is unloaded from a truck into a hopper, screen, or crusher.

(3) STANDARD FOR PARTICULATE MATTER. (a) On and after the date on which the performance test required to be conducted by s. NR 440.08 is completed no owner or operator subject to the provisions of this section shall cause to be discharged into the atmosphere from an affected facility any stack emissions that:

1. Contain particulate matter in excess of 0.05 grams per dry standard cubic meter.

2. Exhibit greater than 7% opacity unless the stack emissions are discharged from an affected facility using a wet scrubbing emission control device.

(b) On and after the sixtieth day after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial start-up, no owner or operator subject to the provisions of this section shall cause to be discharged into the atmosphere from an affected facility any process fugitive emissions that exhibit greater than 10% opacity.

(4) RECONSTRUCTION. (a) The cost of replacement of ore-contact surfaces on processing equipment shall not be considered in calculating either the "fixed capital cost of the new components" or the "fixed capital cost that would be required to construct a comparable new facility" under s. NR 440.15. Ore-contact surfaces are: crushing surfaces; screen meshes; bars, and plates; conveyor belts; elevator buckets; and pan feeders.

(b) Under s. NR 440.15 the "fixed capital cost of the new components" includes the fixed capital cost of all depreciable components (except components specified in par.(a) that are or will be replaced pursuant to all continuous programs of component replacement commenced within any 2-year period following August 24, 1982.

(5) MONITORING OF OPERATIONS. (a) The owner or operator subject to the provisions of this section shall install, calibrate, maintain and operate a monitoring device for the continuous measurement of the change in pressure of the gas stream through the scrubber for any affected facility using a wet scrubbing emission control device. The monitoring device must be certified by the manufacturer to be accurate within ± 250 pascals (± 1 inch water) gauge pressure and must be calibrated on an annual basis in accordance with manufacturer's instructions.

(b) The owner or operator subject to the provisions of this section shall install, calibrate, maintain and operate a monitoring device for the continuous measurement of the scrubbing liquid flow rate to a wet scrubber for any affected facility using any type of wet scrubbing emission control device. The monitoring device must be certified by the manufacturer to be accurate within ± 5% of design scrubbing liquid flow rate and must be calibrated on at least an annual basis in accordance with manufacturer's instructions.

(6) RECORDKEEPING AND REPORTING REQUIREMENTS. (a) The owner or operator subject to the provisions of this section shall conduct a performance test and submit to the department a written report of the results of the test as specified in s. NR 440.08(1).

(b) During the initial performance test of a wet scrubber, and at least weekly thereafter, the owner or operator shall record the measurements of both the change in pressure of the gas stream across the scrubber and the scrubbing liquid flow rate.

(c) After the initial performance test of a wet scrubber the owner or operator shall submit semi-annual reports to the department of occurrences when the measurements of the scrubber pressure loss (or gain) and liquid flow rate differ by more than ± 30% from those measurements recorded during the most recent performance test.

(d) The reports required under par. (c) shall be postmarked within 30 days following the end of the second and fourth calendar quarters.

(e) The requirements of this section remain in force until and unless the department approves reporting requirements or an alternative means of compliance surveillance. In that event affected sources will be relieved of the obligation to comply with this section.

(7) TEST METHODS AND PROCEDURES. (a) Reference methods in of 40 C.F.R. pt. 60, Appendix A incorporated by reference in s. NR 440.17, except as provided under s. NR 440.08(2), shall be used to determine compliance with the standards prescribed under sub. (3) as follows:

1. Method 5 or 17 for concentration of particulate matter and associated moisture content;

2. Method 1 for sample and velocity traverses;

3. Method 2 for velocity and volumetric flow rate;

4. Method 3 for gas analysis;

5. Method 9 for measuring opacity from stack emissions and process fugitive emissions.

(b) For Method 5 the following stipulations shall apply:

1. The sampling probe and filter holder may be operated without heaters if the gas stream being sampled is at ambient temperature;

2. For gas streams above ambient temperature the sampling train shall be operated with a probe and filter temperature slightly above the effluent temperature (up to a minimum filter temperature of 121°C (250°F) in order to prevent water condensation on the filter;

3. The minimum sample volume shall be 1.7 dscm (60 dscf).

(c) For Method 9 the following stipulation shall apply: the observer shall read opacity only when emissions are clearly identified as emanating solely from the affected facility being observed.

SECTION 50. NR 440.61 is created to read:

NR 440.61 PRESSURE SENSITIVE TAPE AND LABEL SURFACE COATING OPERATIONS. (1) APPLICABILITY AND DESIGNATION OF AFFECTED FACILITY. (a) The affected facility to which the provisions of this section apply is each coating line used in the manufacture of pressure sensitive tape and label materials.

(b) Any affected facility which inputs to the coating process 45 Mg of VOC or less per 12 month period is not subject to the emission limits of sub. (3)(a) however, the affected facility is subject to the requirements of all other applicable subsections of this section. If the amount of VOC input exceeds 45 Mg per 12 month period the coating line will become subject to sub. (3)(a) and all other subsections of this section.

(c) This section applies to any affected facility which begins construction, modification, or reconstruction after December 30, 1980.

(2) DEFINITIONS AND SYMBOLS. (a) As used in this section all terms not defined in this subsection have the meaning designated in s. NR 440.02, unless the context requires otherwise.

1. "Coating line" means any number or combination of adhesive, release, or precoat coating applicators, flashoff areas and ovens which coat a continuous web, located between a web unwind station and a web rewind station, to produce pressure sensitive tape and label materials.

3. "Coating solids applied" means the solids content of the coated adhesive, release, or precoat as measured by Reference Method 24 of 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17.

4. "Flashoff area" means the portion of a coating line after the coating applicator and usually before the oven entrance.

5. "Fugitive volatile organic compounds" means any volatile organic compounds which are emitted from the coating applicator and flashoff areas and are not emitted in the oven.

6. "Hood or enclosure" means any device used to capture fugitive volatile organic compounds.

7. "Oven" means a chamber which uses heat or irradiation to bake, cure, polymerize, or dry a surface coating.

8. "Precoat" means a coating operation in which a coating other than an adhesive or release is applied to a surface during the production of a pressure sensitive tape or label product.

9. "Solvent applied in the coating" means all organic solvent contained in the adhesive, release and precoat formulations that is metered into the coating applicator from the formulation area.

10. "Total enclosure" means a structure or building around the coating applicator and flashoff area or the entire coating line for the purpose of confining and totally capturing fugitive VOC emissions.

11. "VOC" means volatile organic compound.

(b) As used in this section all symbols not defined in this subsection have the meaning designated in s. NR 440.03.

1. "a" means the gas stream vents exiting the emission control device.

2. "b" means the gas stream vents entering the emission control device.

3. "Caj" means the concentration of VOC (carbon equivalent) in each gas stream (j) exiting the emission control device, in parts per million by volume.

4. "Cbi" means the concentration of VOC (carbon equivalent) in each gas stream (i) entering the emission control device, in parts per million by volume.

5. "Cfk" means the concentration of VOC (carbon equivalent) in each gas stream (k) emitted directly to the atmosphere, in parts per million by volume.

6. "G" means the calculated weighted average mass (kg) of VOC per mass (kg) of coating solids applied each calendar month.

7. "Mci" means the total mass (kg) of each coating (i) applied during the calendar month as determined from facility records.

8. "Mr" means the total mass (kg) of solvent recovery for a calendar month.

9. "Qaj" means the volumetric flow rate of each effluent gas stream (j) exiting the emission control device, in dry standard cubic meters per hour.

10. "Qbi" means the volumetric flow rate of each effluent gas stream (i) entering the emission control device, in dry standard cubic meters per hour.

11. "Qfk" means the volumetric flow rate of each effluent gas stream (k) emitted to the atmosphere, in dry standard cubic meters per hour.

12. "R" means the overall VOC emission reduction achieved for a calendar month (in percent).

13. "Rq" means the required overall VOC emission reduction (in percent).

14. "Wof" means the weight fraction of organics applied of each coating (i) applied during a calendar month as determined from Reference Method 24 of 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17, or coating manufacturer's formulation data.

15. "Wsi" means the weight fraction of solids applied of each coating (i) applied during a calendar month as determined from Reference Method 24 of 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17, or coating manufacturer's formulation data.

(3) STANDARD FOR VOLATILE ORGANIC COMPOUNDS. (a) On and after the date on which the performance test required by s. NR 440.08 has been completed each owner or operator subject to this section may:

1. Cause the discharge into the atmosphere from an affected facility not more than 0.20 kg VOC/kg of coating solids applied as calculated on a weighted average basis for one calendar month; or

2. Demonstrate for each affected facility;

a. A 90% overall VOC emission reduction as calculated over calendar months; or

b. The percent overall VOC emission reduction specified in sub. (4)(b) as calculated over a calendar month.

(4) COMPLIANCE PROVISIONS. (a) To determine compliance with sub. (3) the owner or operator of the affected facility shall calculate a weighted average of the mass of solvent used per mass of coating solids applied for one calendar month period according to the following procedures:

1. Determine the weight fraction of organics and the weight fraction of solids of each coating applied by using Reference Method 24 of 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17, or by the coating manufacturer's formulation data.

2. Compute the weighted average by the following equation:

$$G = \frac{\sum_{i=1}^{n} W_{of} M_{ci}}{\sum_{i=1}^{n} W_{si} M_{ci}}$$

3. For each affected facility where the value of G is less than or equal to 0.20 Kg VOC per Kg of coating solids applied the affected facility is in compliance with sub.(3)(a)1.

(b) To determine compliance with sub.(a)2. the owner or operator shall calculate the required overall VOC emission reduction according to the following equation:

$$Rq = \frac{G - 0.20}{G} \times 100$$

If Rq is less than or equal to 90% the required overall VOC emission reduction is Rq. If Rq is greater than 90% the required overall VOC emission reduction is 90%.

(c) Where the compliance with the emission limits specified in sub. (3)(a)2. is achieved through the use of a solvent recovery system the owner or operator shall determine the overall VOC emission reduction for a one calendar month period by the following equation:

$$R = \frac{Mr}{\sum_{i=1}^{n} W_{of} M_{ci}} \times 100$$

If the R value is equal to or greater than the Rq value specified in par.(b) compliance with sub.(3)(a)2. is demonstrated.

(d) Where compliance with the emission limit specified in sub.(3)(a)2. is achieved through the use of a solvent destruction device the owner or operator shall determine calendar monthly compliance by comparing the monthly required overall VOC emission reduction specified in par.(b) to the overall VOC emission reduction demonstrated in the most recent performance test which complied with sub.(3)(a)2. If the monthly required overall VOC emission reduction is less than or equal to the overall VOC reduction of the most recent performance test the affected facility is in compliance with sub.(3)(a)2.

(e) Where compliance with sub.(3)(a)2. is achieved through the use of a solvent destruction device the owner or operator shall continuously record the destruction device combustion temperature during coating operations for thermal incineration destruction devices or the gas temperature upstream and downstream of the incinerator catalyst bed during coating operations for catalytic incineration destruction devices. For thermal incineration destruction devices the owner or operator shall record all 3-hour periods (during actual coating operations) during which the average temperature of the device is more than 28°C (50°F) below the average temperature of the device during the most recent performance test complying with sub.(3)(a)2. For catalytic incineration destruction devices the owner or operator shall record all 3-hour periods (during actual coating operations) during which the average temperature of the device immediately before the catalyst bed is more than 38°C (100°F) below the average temperature of the device during the most recent performance test complying with sub.(3)(a)2. and all 3-hour periods (during actual coating operations) during which the average temperature difference across the catalyst bed is less than 80% of the average temperature difference of the device during the most recent test complying with sub.(3)(a)2.

(f) After the initial performance test required for all affected facilities under s. NR 440.08, compliance with the VOC emission limitation and percentage reduction requirements under sub. (3) is based on the average emission reduction for one calendar month. A separate compliance test is completed at the end of each calendar month after the initial performance test and a new calendar month's average VOC emission reduction is calculated to show compliance with the standard.

(g) If a common emission control device is used to recover or destroy solvent from more than one affected facility the performance of that control device is assumed to be equal for each of the affected facilities. Compliance with sub. (3)(a)2. is determined by the methods specified in pars. (c) and (d) and is performed simultaneously on all affected facilities.

(h) If a common emission control device is used to recover solvent from an existing facility (or facilities) as well as from an affected facility (or facilities) the overall VOC emission reduction for the affected facility (or facilities) for the purpose of compliance, shall be determined by the following procedures:

1. The owner or operator of the existing facility (or facilities) shall determine the mass of solvent recovery for a calendar month period from the existing facility (or facilities) prior to the connection of the affected facility (or facilities) to the emission control device.

2. The affected facility (or facilities) shall then be connected to the emission control device.

3. The owner or operator shall determine the total mass of solvent recovery from both the existing and affected facilities over a calendar month period. The mass of solvent determined in subd. 1. from the existing facility shall be subtracted from the total mass of recovery solvent to obtain the mass of solvent recovery from the affected facility (or facilities). The overall VOC emission reduction of the affected facility (or facilities) can then be determined as specified in par. (c).

(i) If a common emission control device is used to destruct solvent from an existing facility (or facilities) as well as from an affected facility (or facilities) the overall VOC emission reduction for the affected facility (or facilities), for the purpose of compliance, shall be determined by the following procedures:

1. The owner or operator shall operate the emission control device with both the existing and affected facilities connected.

2. The concentration of VOC (in parts per million by volume) after the common emission control device shall be determined as specified in sub. (5)(c).

(j) Startups and shutdowns are normal operation for this source category. Emissions from these operations are to be included when determining if the standard specified at sub. (3)(a)2. is being attained.

(5) PERFORMANCE TEST PROCEDURES. (a) The performance test for affected facilities complying with sub. (3) without the use of add-on controls shall be identical to the procedures specified in sub. (4)(a).

(b) The performance test for affected facilities controlled by a solvent recovery device shall be conducted as follows:

1. The performance test shall be a one calendar month test and not the average of three runs as specified in s. NR 440.08(5).

2. The weighted average mass of VOC per mass of coating solids applied for a one calendar month period shall be determined as specified in sub. (4)(a)2.

3. Calculate the required percent overall VOC emission reduction as specified in sub. (4)(b).

4. Inventory VOC usage and VOC recovery for a one calendar month period.

5. Determine the percent overall VOC emission reduction as specified in sub. (4)(c).

(c) The performance test for affected facilities controlled by a solvent destruction device shall be conducted as follows:

1. The performance of the solvent destruction device shall be determined by averaging the results of three test runs as specified in s. NR 440.08(5).

2. Determine for each affected facility prior to each test run the weighted average mass of VOC per mass of coating solids applied being used at the facility. The weighted average shall be determined as specified in sub. (4)(a). In this application the quantities of Wof, Wsi and Mci shall be determined for the time period of each test run and not a calendar month as specified in sub. (2).

3. Calculate the required percent overall VOC emission reduction as specified in sub. (4)(b).

4. Determine the percent overall VOC emissions reduction of the solvent destruction device by the following equation and procedures:

$$R = \frac{\sum_{i=1}^{n} Q_{bi}C_{bi} - \sum_{j=1}^{m} Q_{aj}C_{aj}}{\sum_{i=1}^{n} Q_{bi}C_{bi} + \sum_{k=1}^{P} Q_{fk}C_{fk}} \times 100$$

a. The owner or operator of the affected facility shall construct the overall VOC emission reduction system so that all volumetric flow rates and total VOC emissions can be accurately determined by the applicable test methods and procedures specified in sub.(7)(b).

b. The owner or operator of an affected facility shall construct a temporary total enclosure around the coating line applicator and flashoff area during the performance test for the purpose of capturing fugitive VOC emissions. If a permanent total enclosure exists in the affected facility prior to the performance test and the department is satisfied that the enclosure is totally capturing fugitive VOC emissions then no additional total enclosure will be required for the performance test.

c. For each affected facility where the value of R is greater than or equal to the value Rq calculated in sub. (4)(b) compliance with sub. (3)(a)2. is demonstrated.

(6) MONITORING OF OPERATIONS AND RECORDKEEPING. (a) The owner or operator of an affected facility subject to this section shall maintain a calendar month record of all coatings used and the results of the reference test methods specified in sub. (7)(a) or the manufacturer's formulation data used for determining the VOC content of those coatings.

(b) The owner or operator of an affected facility controlled by a solvent recovery device shall maintain a calendar month record of the amount of solvent applied in the coating at each affected facility.

(c) The owner or operator of an affected facility controlled by a solvent recovery device shall install, calibrate, maintain and operate a monitoring device for indicating the cumulative amount of solvent recovery by the device over a calendar month period. The monitoring device shall be accurate within ± 2.0%. The owner or operator shall maintain a calendar month record of the amount of solvent recovery by the device.

(d) The owner or operator of an affected facility operating at the conditions specified in sub. (1)(b) shall maintain a 12 month record of the amount of solvent applied in the coating at the facility.

(e) The owner or operator of an affected facility controlled by a thermal incineration solvent destruction device shall install, calibrate, maintain and operate a monitoring device which continuously indicates and records the temperature of the solvent destruction device's exhaust gases. The monitoring device shall have an accuracy of the greater of ± 0.75% of the temperature being measured expressed in degrees Celsius or ± 2.5°C.

(f) The owner or operator of an affected facility controlled by a catalytic incineration solvent destruction device shall install, calibrate, maintain, and operate a monitoring device which continuously indicates and records the gas temperature both upstream and downstream of the catalyst bed.

(g) The owner or operator of an affected facility controlled by a solvent destruction device which uses a hood or enclosure to capture fugitive VOC emissions shall install, calibrate, maintain and operate a monitoring device which continuously indicates that the hood or enclosure is operating. No continuous monitor shall be required if the owner or operator can demonstrate that the hood or enclosure system is interlocked with the affected facility's oven recirculation air system.

(h) Records of the measurements required in subs. (4) and (6) must be retained for at least two years following the date of the measurements.

(7) TEST METHODS AND PROCEDURES. (a) The VOC contents per unit of coating solids applied and compliance with sub. (3)(a)1. shall be determined by either Reference Method 24 of 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17, and the equations specified in sub. (4) or by manufacturer's formulation data. In the event of any inconsistency between a Method 24 test and manufacturers' formulation data the Method 24 test will govern. The department may require an owner or operator to perform Method 24 tests during such months as it deems appropriate. For Reference Method 24 the coating sample must be a one liter sample taken into a one liter container at a point where the sample will be representative of the coating applied to the web substrate.

(b) Reference Method 25 of 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17, shall be used to determine the VOC concentration, in parts per million by volume, of each effluent gas stream entering and exiting the solvent destruction device or its equivalent and each effluent gas stream emitted directly to the atmosphere. Reference Methods 1, 2, 3, and 4 of 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17, shall be used to determine the sampling location, volumetric flowrate, molecular weight and moisture of all sampled gas streams. For Reference Method 25 the sampling time for each of three runs must be at least 1 hour. The minimum sampling volume must be 0.003 dscm except that shorter sampling times or smaller volumes, when necessitated by process variables or other factors, may be approved by the department.

(c) If the owner or operator can demonstrate to the Department's satisfaction that testing of representative stacks yields results comparable to those that would be obtained by testing all stacks the department will approve testing of representative stacks on a case-by-case basis.

(8) REPORTING REQUIREMENTS. (a) For all affected facilities subject to compliance with sub. (3) the performance test data and results from the performance test shall be submitted to the department as specified in s. NR 440.08(1).

(b) The owner or operator of each affected facility shall submit semi-annual reports to the department of exceedances of the following:

1. The VOC emission limits specified in sub. (4); and

2. The incinerator temperature drops as defined under sub. (4)(e). The reports required under par. (b) shall be postmarked within 30 days following the end of the second and fourth calendar quarters.

(c) The requirements of this section remain in force until and unless the department approves reporting requirements or an alternative means of compliance surveillance. In that event affected sources will be relieved of the obligation to comply with this section.

SECTION 51 NR 440.62 is created to read:

NR 440.62 EQUIPMENT LEAKS OF VOC IN THE SYNTHETIC ORGANIC CHEMICALS MANUFACTURING INDUSTRY. (1) APPLICABILITY AND DESIGNATION OF AFFECTED FACILITY. (a)1. The provisions of this section apply to affected facilities in the synthetic organic chemicals manufacturing industry.

2. The group of all equipment (defined in sub. (2)) within a process unit is an affected facility.

(b) Any affected facility under par. (a) that commences construction or modification after January 5, 1981, shall be subject to the requirements of this section.

(c) Addition or replacement of equipment for the purpose of process improvement which is accomplished without a capital expenditure shall not by itself be considered a modification under this section.

(d)1. If an owner or operator applies for one of the exemptions in this paragraph the owner or operator shall maintain records as required in sub. (7)(i).

2. Any affected facility that has the design capacity to produce less than 1,000 Mg/yr is exempt from sub. (3).

3. If an affected facility produces heavy liquid chemicals only from heavy liquid feed or raw materials it is exempt from sub. (3).

4. Any affected facility that produces beverage alcohol is exempt from sub. (3).

5. Any affected facility that has no equipment in VOC service is exempt from sub. (3).

(2) DEFINITIONS. As used in this section all terms not defined in this subsection have the meaning designated in s. NR 440.02.

(a) "Capital expenditure" means, in addition to the definition in s. NR 440.02(6), an expenditure for a physical or operational change to an existing facility that:

1. Exceeds P, the product of the facility's replacement cost, R, and an adjusted annual asset guideline repair allowance, A, as reflected by the following equation: $P = R \times A$, where

a. The adjusted annual asset guideline repair allowance, A, is the product of the percent of the replacement cost, Y, and the applicable basic annual asset guideline repair allowance, B, as reflected by the following equation: $A = Y \times (B \div 100)$;

b. The percent Y is determined from the following equation: $Y = 1.0 - 0.575 \log X$, where X is 1982 minus the year of construction; and

c. The applicable basic annual asset guideline repair allowance, B, is selected from the following table consistent with the applicable section:

Table for Determining Applicable For B

| Section applicable to facility | Value of B to be used in equation |
|---|---|
| Sec. NR 440.75 | 12.5 |
| Sec. NR 440.76 | 12.5 |
| Sec. NR 440.66 | 7.0 |
| Sec. NR 440.77 | 4.5 |

(b) "Closed vent system" means a system that is not open to the atmosphere and that is composed of piping, connections and, if necessary, flow inducing devices that transport gas or vapor from a piece or pieces of equipment to a control device.

(c) "Connector" means flanged, screwed, welded, or other joined fittings used to connect two pipe lines or a pipe line and a piece of process equipment.

(d) "Control device" means an enclosed combustion device, vapor recovery system, or flare.

(e) "Distance piece" means an open or enclosed casing through which the piston rod travels, separating the compressor cylinder from the crankcase.

(f) "Double block and bleed system" means two blocks valves connected in series with a bleed valve or line that can vent the line between the two block valves.

(g) "Equipment" means each pump, compressor, pressure relief device, sampling connection system, open-ended valve or line, valve and flange or other connection in VOC service and any devices or systems required by this section.

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

(i) "In gas/vapor service" means that the piece of equipment contains process fluid that is in the gaseous state at operating conditions.

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

(k) "In light liquid service" means that the piece of equipment contains a liquid that meets the conditions specified in sub. (6)(e).

(l) "Liquids dripping" means any visible leakage from the seal including spraying, misting, clouding and ice formation.

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

(n) "Pressure release" means the emission of materials resulting from system pressure being greater than set pressure of the pressure relief device.

(o) "Process improvement" means routine changes made for safety and occupational health requirements, for energy savings, for better utility, for ease of maintenance and operation, for correction of design deficiencies, for bottleneck removal, for changing product requirements, or for environmental control.

(p) "Process unit" means components assembled to produce, as intermediate or final products, one or more of the chemicals listed in Table A of sub. (10). A process unit can operate independently if supplied with sufficient feed or raw materials and sufficient storage facilities for the product.

(q) "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.

(r) "Quarter" means a 3-month period; the first quarter concludes on the last full month during the 180 days following initial startup.

(s) "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 ppm or greater, indication of liquids dripping, or indication by a sensor that a seal or barrier fluid system has failed.

(t) "Replacement cost" means the capital needed to purchase all the depreciable components in a facility.

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

(v) "In-situ sampling systems" means nonextractive samplers or in-line samplers.

(w) "Synthetic organic chemicals manufacturing industry" means the industry that produces, as intermediates or final products, one or more of the chemicals listed in Table A of sub. (10).

(x) "In-vacuum service" means that equipment is operating at an internal pressure which is at least 5 kilopascals (kPa) below ambient pressure.

(y) "Volatile organic compounds" or VOC means, for the purpose of this section, any reactive organic compounds as defined in s. NR 440.02(35).

(z) "In VOC service" means that the piece of equipment contains or contacts a process fluid that is at least 10% VOC by weight. (The provisions of sub. (6)(d) specify how to determine that a piece of equipment is not in VOC service.)

(3) STANDARDS. (a) General. 1. Each owner or operator subject to the provisions of this section shall demonstrate compliance with the requirements of pars. (a) to (j) for all equipment within 180 days of initial startup.

2. Compliance with pars. (a) to (j) will be determined by review of records and reports, review of performance test results and inspection using the methods and procedures specified in sub. (6).

3.a. An owner or operator may request a determination of equivalence of a means of emission limitation to the requirements of par. (b), (c), (e), (f), (g), (h) or (j) as provided in sub. (5).

b. If the department makes a determination that a means of emission limitation is at least equivalent to the requirements of par. (b), (c), (e), (f), (g), (h) or (j) an owner or operator shall comply with the requirements of that determination.

4. Equipment that is in vacuum service is excluded from the requirements of pars. (b) to (j) if it is identified as required in sub. (7)(e)5.

(b) Pumps in light liquid. 1.a. Each pump in light liquid service shall be monitored monthly to detect leaks by the methods specified in sub. (6)(b), except as provided in par. (a)3. and subds. 4., 5. and 6.

b. Each pump in light liquid service shall be checked by visual inspection each calendar week for indications of liquids dripping from the pump seal.

2.a. If an instrument reading of 10,000 ppm or greater is measured a leak is detected.

b. If there are indications of liquids dripping from the pump seal a leak is detected.

3.a. When a leak is detected it shall be repaired as soon as practicable but not later than 15 calendar days after it is detected, except as provided in par. (l).

b. A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.

4. Each pump equipped with a dual mechanical seal system that includes a barrier fluid system is exempt from the requirements of subd. 1. provided the following requirements are met:

a. Each dual mechanical seal system is:

1) Operated with the barrier fluid at a pressure that is at all times greater than the pump stuffing box pressure; or

2) Equipment with a barrier fluid degassing reservoir that is connected by a dosed vent system to a control device that complies with the requirements of par. (j); or

3) Equipped with a system that purges the barrier fluid into a process stream with a zero VOC emissions to the atmosphere.

b. The barrier fluid system is in heavy liquid service or is not in VOC service.

c. Each barrier fluid system is equipped with a sensor that will detect failure of the seal system, the barrier fluid system, or both.

d. Each pump is checked by visual inspection each calendar week for indications of liquids dripping from the pump seals.

e.1) Each sensor as described in subpar. c. is checked daily or is equipped with an audible alarm, and

2) The owner or operator determines, based on design considerations and operating experience, a criterion that indicates failure of the seal system, the barrier fluid system, or both.

f.1) If there are indications of liquids dripping from the pump seal or the sensor indicates failure of the seal system, the barrier fluid system, or both based on the criterion determined in subpar. e.2) a leak is detected.

2) When a leak is detected it shall be repaired as soon as practicable but no later than 15 calendar days after it is detected, except as provided in par.(i).

3) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.

5. Any pump that is designated as described in subs. (7)(e)1. and 2. for no detectable emission, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of subds. 1., 3. and 4. if the pump:

a. Has no externally actuated shaft penetrating the pump housing,

b. Is demonstrated to be operating with no detectable emissions as indicated by an instrument reading of less than 500 ppm above background as measured by the methods specified in sub. (6)(c), and

c. Is tested for compliance with sub. (6)(e)2. initially upon designation, annually and at other times requested by the department.

6. If any pump is equipped with a closed vent system capable of capturing and transporting any leakage from the seal or seals to a control device that complies with the requirements of par. (j) it is exempt from the requirements of subds. 1. to 5.

(c) Compressors. 1. Each compressor shall be equipped with a seal system that includes a barrier fluid system that prevents leakage of VOC to the atmosphere, except as provided in par. (a)3. and subds. 8. and 9.

2. Each compressor seal system as required in subd. 1. shall be:

a. Operated with a barrier fluid at a pressure that is greater than the compressor stuffing box pressure; or

b. Equipped with a barrier fluid system that is connected by a closed vent system to a control device that complies with the requirements of par. (j); or

c. Equipped with a system that purges the barrier fluid into a process stream with zero VOC emissions to the atmosphere.

3. The barrier fluid system shall be in heavy liquid service or shall not be in VOC service.

4. Each barrier fluid system as described in subd. 1. shall be equipped with a sensor that will detect failure of the seal system, barrier fluid system, or both.

5.a. Each sensor as required in subd. 4. shall be checked daily or shall be equipped with an audible alarm.

b. The owner or operator shall determine, based on design considerations and operating experience, a criterion that indicates failure of the seal system, the barrier fluid system, or both.

6. If the sensor indicates failure of the seal system, the barrier system, or both based on the criterion determined under subd. 5.b. a leak is detected.

7.a. When a leak is detected it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in par. (i).

b. A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.

8. A compressor is exempt from the requirements of subds. 1. and 2. if it is equipped with a closed vent system capable of capturing and transporting any leakage from the seal to a control device that complies with the requirements of par. (j), except as provided in subd. 9.

9. Any compressor that is designated as described in sub. (7)(e)1. and 2. for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of subds. 1. to 8. if the compressor:

a. Is demonstrated to be operating with no detectable emissions as indicated by an instrument reading of less than 500 ppm above background, as measured by the methods specified in sub. (6)(c); and

b. Is tested for compliance with sub par. a. initially upon designation, annually and at other times requested by the department.

10. Any existing reciprocating compressor in a process unit which becomes an affected facility under provisions of s. NR 440.14 or 440.15 is exempt from subds. 1., 2., 3., 4., 5. and 8. provided the owner or operator demonstrates that recasting the distance piece or replacing the compressor are the only options available to bring the compressor into compliance with the provisions of subds. 1., 2., 3., 4., 5. and 8.

(d) Pressure relief devices in gas/vapor service. 1. Except during pressure releases, each pressure relief device in gas/vapor service shall be operated with no detectable emissions as indicated by an instrument reading of less than 500 ppm above background, as determined by the methods specified in sub. (6)(c).

2.a. After each pressure release the pressure relief device shall be returned to a condition of no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as soon as practicable but no later than 5 calendar days after the pressure release, as provided in par. (i).

b. No later than 5 calendar days after the pressure release the pressure relief device shall be monitored to confirm the conditions of no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, by the methods specified in sub. (6)(c).

3. Any pressure relief device that is equipped with a closed vent system capable of capturing and transporting leakage through the pressure relief device to a control device as described in par. (j) is exempted from the requirements of this paragraph.

(e) Sampling connection systems. 1. Each sampling connection system shall be equipped with a closed purge system or closed vent system, except as provided in par. (a)3.

2. Each closed purge system or closed system as required in subd. 1. shall:

a. Return the purged process fluid directly to the process line with zero VOC emissions to the atmosphere; or

b. Collect and recycle the purged process fluid with zero VOC emissions to the atmosphere; or

c. Be designed and operated to capture and transport all the purged process fluid to a control device that complies with the requirements of par. (j).

3. In situ-sampling systems are exempt from subd. 1. and 2.

(f) Open-ended valves or lines. 1.a. Each open-ended valve or line shall be equipped with a cap, blind flange, plug, or a second valve, except as provided in par. (a)3.

b. The cap, blind flange, plug, or second valve shall seal the open end at all times except during operations requiring process fluid flow through the open-ended valve or line.

2. Each open-ended valve or line equipped with a second valve shall be operated with a second valve shall be operated in a manner such that the valve on the process fluid end is closed before the second valve is closed.

3. When a double block-and-bleed system is being used the bleed valve or line may remain open during operations that require venting the line between the block valves but shall comply with subd. 1. at all times.

(g) Valves in gas/vapor service in light liquid service. 1. Each valve shall be monitored monthly to detect leaks by the methods specified in sub. (6)(b) and shall comply with subds. 2. to 5., except as provided in subds. 6., 7. and 8., subs. (4)(a) and (b) and par. (a)3.

2. If an instrument reading of 10,000 ppm or greater is measured a leak is detected.

3.a. Any valve for which a leak is not detected for 2 successive months may be monitored the first month of every quarter, beginning with the next quarter, until a leak is detected.

b. If a leak is detected the valve shall be monitored monthly until a leak is not detected for 2 successive months.

4.a. When a leak is detected it shall be repaired as soon as practicable, but no later than 15 calendar days after the leak is detected, except as provided in par. (i).

b. A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.

5. First attempts at repair include, but are not limited to, the following best practices where practicable:

a. Tightening of bonnet bolts;

b. Replacement of bonnet bolts;

c. Tightening of packing gland nuts;

d. Injection of lubricant into lubricated packing.

6. Any valve that is designated as described in sub. (7)(e)2. for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of subd. 1. if the valve:

a. Has no external actuating mechanism in contact with the process fluid;

b. Is operated with emission less than 500 ppm above background as determined by the method specified in sub. (6)(c), and

c. Is tested for compliance with subd. 6.b. initially upon designation, annually, and at other times requested by the department.

7. Any valve that is designated as described in sub. (7)(f)2. as a difficult-to-monitor valve is exempt from the requirements of subd. 1. if:

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 subd. 1., and

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.

8. Any valve that is designated as described in sub. (7)(f)2. as a difficult-to-monitor valve, is exempt from the requirements of subd. 1. if:

a. The owner or operator of the valve demonstrates that the valve cannot be monitored without elevating the monitoring personnel more than 2 meters above a support surface.

b. The process unit within which the valve is located either becomes an affected facility through s. NR 440.14 or 440.15, or the owner or operator designates less than 3.0% of the total number of valves as difficult-to-monitor, and

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

(h) Pumps and valves in heavy liquid service, pressure relief devices in light liquid or heavy liquid service and flanges and other connectors. 1. Pumps and valves in heavy liquid service, pressure relief devices in light liquid or heavy liquid service and flanges and other connectors shall be monitored within 5 days by the method specified in sub. (6)(b) if evidence of a potential leak is found by visual, audible, olfactory, or any other detection method.

2. If an instrument reading of 10,000 ppm or greater is measured a leak is detected.

3.a. When a leak is detected it shall be repaired as soon as practicable but not later than 15 calendar days after it is detected, except as provided in par. (i).

b. The first attempt at repair shall be made no later than 5 calendar days after each leak is detected.

4. First attempts at repair include, but are not limited to, the best practices described under par. (g)5.

(i) Delay of repair. 1. Delay of repair of equipment for which leaks have been detected will be allowed if the repair is technically infeasible without a process unit shutdown. Repair of this equipment shall occur before the end of the next process unit shutdown.

2. Delay of repair of equipment will be allowed for equipment which is isolated from the process and which does not remain in VOC service.

3. Delay of repair for valves will be allowed if:

a. The owner or operator demonstrates that emissions of purged material resulting from immediate repair are greater than the fugitive emissions likely to result from delay of repair, and

b. When repair procedures are effected, the purged material is collected and destroyed or recovered in a control device complying with par. (j).

4. Delay of repair for pumps will be allowed if:

a. Repair requires the use of a dual mechanical seal system that includes a barrier fluid system, and

b. Repair is completed as soon as practicable but not later than 6 months after the leak was detected.

5. 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.

(j) Closed vent systems and control devices. 1. Owners or operators of closed vent systems and control devices used to comply with provisions of this section shall comply with the provisions of this paragraph.

2. Vapor recovery systems (e.g., condensers and adsorbers) shall be designed and operated to recover the VOC emissions vented to them with an efficiency of 95% or greater.

3. Enclosed combustion devices shall be designed and operated to reduce the VOC emissions vented to them with an efficiency of 95% or greater or to provide a minimum residence time of 0.75 seconds at a minimum temperature of 816°C.

4.a. Flares shall be designed for and operated with no visible emissions as determined by the methods specified in sub. (6)(g), except for periods not to exceed a total of 5 minutes during any 2 consecutive hours.

2. Flares shall be operated with a flame present at all times, as determined by the methods specified in sub. (6)(g).

c. Flares shall be used only with the net heating value of the gas being combusted being 11.2 MJ/scm (300 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 or greater if the flare is nonassisted. The net heating value of the gas being combusted shall be determined by the methods specified in sub. (6)(g).

d. Steam-assisted and nonassisted flare shall be designed for and operated with an exit velocity, as determined by the methods specified in sub. (6)(g)4., of less than 18 m/sec (60 ft./sec.).

e. Flares used to comply with this subpart shall be steam-assisted; air-assisted, or nonassisted.

f. Air-assisted flares shall be designed and operated with an exit velocity less than the velocity Vmax, as determined by the methods specified in sub. (6)(g)5.

5. Owners or operators of control devices used to comply with the provisions of this section shall monitor these control devices to ensure that they are operated and maintained in conformance with their designs.

6.a. Closed vent system shall be designed and operated with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background and visual inspections, as determined by the methods specified in sub. (6)(c).

b. Closed vent systems shall be monitored to determine compliance with this section initially in accordance with s. NR 440.08, annually and at other times requested by the department.

7. Closed vent systems and control devices used to comply with provisions of this section shall be operated at all times when emissions may be vented to them.

(4) ALTERNATIVE STANDARDS FOR VALVES. (a) Allowable percentage of valves leaking. 1. An owner or operator may elect to comply with an allowable percentage of valves leaking of equal to or less than 2.0%.

2. The following requirements shall be net if an owner or operator wishes to comply with an allowable percentage of valves leaking:

a. An owner or operator must notify the department that the owner or operator has elected to comply with the allowable percentage of valves leaking before implementing this alternative standard, as specified in sub. (8)(b).

b. A performance test as specified in subd. 3. shall be conducted initially upon designation, annually, and at other times requested by the department.

c. If a valve leak is detected it shall be repaired in accordance with subs. (3)(g)4. and 5.

3. Performance tests shall be conducted in the following manner:

a. All valves in gas/vapor and light liquid service within the affected facility shall be monitored within 1 week by the methods specified in sub. (6)(b).

b. If an instrument reading of 10,000 ppm or greater is measured a leak is detected.

c. The leak percentage shall be determined by dividing the number of valves for which leaks are detected by the number of valves in gas/vapor and light liquid service within the affected facility.

4. Owners and operators who elect to comply with this alternative standard shall not have an affected facility with a leak percentage greater than 2.0 percent.

(b) Skip period leak detection and repair. 1.a. An owner or operator may elect to comply with one of the alternative work practices specified in subd. 2.b. and c.

b. 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 sub. (3)(g).

c. After 2 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 1 of the quarterly leak detection periods for the valves in gas/vapor and light liquid service.

d. After 5 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 of the quarterly leak detection periods for the valves in gas/vapor and light liquid service.

e. If the percent of valves leaking is greater than 2.0 the owner or operator shall comply with the requirements as described in sub. (3)(g) but can again elect to use this subsection.

f. 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 par. (b).

g. An owner or operator must keep a record of the percent of valves found leaking during each leak detection period.

(5) EQUIVALENCE OF MEANS OF EMISSION LIMITATION. (a) Each owner or operator subject to the provisions of this section may apply to the department for determination of equivalence for any means of emission limitation that achieves a reduction in emissions of VOC at least equivalent to the reduction in emissions of VOC achieved by the controls required in this section.

(b) Determination of equivalence to the equipment, design and operational requirements of this section will be evaluated by the following guidelines:

1. Each owner or operator applying for an equivalence determination shall be responsible for collecting and verifying test data to demonstrate equivalence of means of emission limitation.

2. The department will compare test data for the means of emission limitation to test data for the equipment, design and operational requirements.

3. The department may condition the approval of equivalence on requirements that may be necessary to assure operation and maintenance to achieve the same emission reduction as the equipment, design, and operational requirements.

(c) Determination of equivalence to the required work practices in this section will be evaluated by the following guidelines:

1. Each owner or operator applying for a determination of equivalence shall be responsible for collecting and verifying test data to demonstrate equivalence of an equivalent means of emission limitation.

2. For each affected facility for which a determination of equivalence is requested the emission reduction achieved by the required work practice shall be demonstrated.

3. For each affected facility for which a determination of equivalence is requested the emission reduction achieved by the equivalent means of emission limitation shall be demonstrated.

4. Each owner or operator applying for a determination of equivalence shall commit in writing to work practice(s) that provide for emission reductions equal to or greater than the emission reductions achieved by the required work practice.

5. The department will compare the demonstrated emission reduction for the equivalent means of emission limitation to the demonstrated emission reduction for the required work practices and will consider the commitment in par. (c)4.

6. The department may condition the approval of equivalence on requirements that may be necessary to assure operation and maintenance to achieve the same emission reduction as the required work practice.

(d) An owner or operator may offer a unique approach to demonstrate the equivalence of any equivalent means of emission limitation.

(e)1. After a request for determination of equivalence is received the department will publish a notice and provide the opportunity for public hearing if the department judges that the request may be approved.

2. After notice and opportunity for public hearing the department will determine the equivalence of a means of emission limitation.

3. Any equivalent means of emission limitations approved under this section shall constitute a required work practice, equipment, design, or operational standard within the meaning of Section 111(h)(1) of the Federal Clean Air Act.

(f)1. Manufacturers of equipment used to control equipment leaks of VOC may apply to the department for determination of equivalence for any equivalent means of emission limitation that achieves a reduction in emissions of VOC achieved by the equipment, design and operational requirements of this section.

2. The Department will make an equivalence determination according to the provisions of pars. (b), (c), (d) and (e).

(6) TEST METHODS AND PROCEDURES. (a) Each owner or operator subject to the provisions of this section shall comply with the test method and procedure requirements provided in this subsection.

(b) Monitoring as required in subs. (3), (4) and (5) shall comply with the following requirements:

1. Monitoring shall comply with Reference Method 21 of 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17.

2. The detection instrument shall meet the performance criteria of Reference Method 21 of 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17.

3. The instrument shall be calibrated before use on each day of its use by the methods specified in Method 21 of 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17.

4. Calibration gases shall be:

a. Zero air (less than 10 ppm of hydrocarbon in air); and

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.

5. The instrument probe shall be traversed around all potential leak interfaces as close to the interface as possible as described in Reference Method 21 of 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17.

(c) When equipment is tested for compliance with no detectable emissions as required in subs. (3)(b)5., (c)9., (d), (g)6. and (j)5. the test shall comply with the following requirements:

1. The requirements of pars. (b)1. to 4. shall apply.

2. The background level shall be determined as set forth in Reference Method 21 of 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17.

3. The instrument probe shall be traversed around all potential leak interfaces as close to the interface as possible as described in Reference Method 21 of 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17.

4. The arithmetic difference between the maximum concentration indicated by the instrument and the background level is compared with 500 ppm for determining compliance.

(d)1. Each piece of equipment within a process unit is presumed to be in VOC service unless an owner or operator demonstrates that the piece of equipment is not in VOC service. For a piece of equipment to be considered not in VOC service it must be determined that the percent VOC content can be reasonably expected never to exceed 10% by weight. For purposes of determining the percent VOC content in the process fluid that is contained in or contacts equipment procedures that conform to the general methods described in ASTM E-260, E-168 or E-169 shall be used. These ASTM methods are incorporated by reference in s. NR 440.17.

2. If an owner or operator decides to exclude nonreactive organic compounds from the total quantity of organic compounds in determining the percent of VOC content of the process fluid the exclusion will be allowed if:

a. Those substances excluded are those considered as having negligible photochemical reactivity by the department, and

b. The owner or operator demonstrates that the percent organic content, excluding nonreactive organic compounds, can be reasonably expected never to exceed 10% by weight.

3.a. An owner or operator may use engineering judgment rather than the procedures in subds. 1 and 2. to demonstrate that the percent VOC content does not exceed 10% by weight provided that the engineering judgment demonstrates that the VOC content clearly does not exceed 10% by weight. When an owner or operator and the department do not agree on whether a piece of equipment is not in VOC service however, the procedures in subds. 1 and 2 shall be used to resolve the agreements.

b. If an owner or operator determines that a piece of equipment is in VOC service, the determination can be revised only after following the procedures in subds. 1. and 2.

(e) Equipment is in light liquid service if the following conditions apply:

1. The vapor pressure of one or more of the components is greater than 0.3 kPa at 20°C. Vapor pressures may be obtained from standard reference texts or may be determined by ASTM D-2879. This ASTM method is incorporated by reference in s. NR 440.17.

2. The total concentration of the pure components having a vapor pressure greater than 0.3 kPa at 20°C is equal to or greater than 20% by weight; and

3. The fluid is a liquid at operating conditions.

(f) Samples used in conjunction with pars. (d), (e) and (g) shall be representative of the process fluid that is contained in or contacts the equipment or the gas being combusted in the flare.

(g)1. Reference Method 22 in 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17, shall be used to determine the compliance of flares with the visible emission provisions of this section.

2. The presence of a flare pilot flame shall be monitored using a thermocouple or any other equivalent device to detect the presence of a flame.

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

$$H_T = K \sum_{i=1}^{n} Ci\ Hi$$

where:

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

$$K = \text{Constant, } 1.740 \times 10^{-7} \left(\frac{1}{\text{ppm}}\right)\left(\frac{\text{g mole}}{\text{scm}}\right)\left(\frac{\text{MJ}}{\text{Kcal}}\right)$$

where:

Standard temperature for $\frac{\text{g mole}}{\text{scm}}$ is 20°C

Ci = Concentration of sample component i in ppm, as measured by Reference Method 18 in 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17 and ASTM D2504-67, incorporated by reference in s. NR 440.17.

Hi = Net heat of combustion of sample component i, Kcal/g mole. The heats of combustion may be determined using ASTM D2382-76, incorporated by reference in s. NR 440.17, if published values are not available or cannot be calculated.

4. The actual exit velocity of a flare shall be determined by dividing the volumetric flow rate (in units of standard temperature and pressure), as determined by Reference Method 2, 2A, 2C, or 2D of 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17, as appropriate; by the unobstructed (free) cross sectional area of the flare tip.

5. The maximum permitted velocity, Vmax, for air-assisted flares shall be determined by the following equation:

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

Vmax = maximum permitted velocity, m/sec.

8.706 = constant.

0.7084 = constant.

$H_T$ = the net heating value as determined in subd. 3.

(7) RECORDKEEPING REQUIREMENTS. (a)1. Each owner or operator subject to the provisions of this section shall comply with the recordkeeping requirements of this section.

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

(b) When each leak is detected as specified in subs. (3)(b), (c), (g), (h) and (4)(b) the following requirements apply:

1. A weather proof and readily visible identification, marked with the equipment identification number, shall be attached to the leaking equipment.

2. The identification on a value may be removed after it has been monitored for 2 successive months as specified in sub. (3)(g)3. and no leak has been detected during those 2 months.

3. The identification on equipment except on valve may be removed after it has been repaired.

(c) When each leak is detected as specified in subs. (3)(b), (c), (g), (h) and (4)(b) the following information shall be recorded in a log and shall be kept for 2 years in a readily accessible location:

1. The instrument and operator identification numbers and the equipment identification number.

2. The date the leak was detected and the dates each attempt to repair the leak.

3. Repair methods applied in each attempt to repair the leak.

4. "Above 10,000" if the maximum instrument reading measured by the methods specified in sub. (6)(a) after each repair attempt is equal to or greater than 10,000 ppm.

5. "Repair delayed" and the reason for the delay if a leak is not repaired within 15 calendar days after discovery of the leak.

6. The signature of the owner or operator (or designate) whose decision it was that repair could not be affected without a process shutdown.

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

8. Dates of process unit shutdown that occur while the equipment is unrepaired.

9. The date of successful repair of the leak.

(d) The following information pertaining to the design requirements for closed vent systems and control devices described in sub. (3)(j) shall be recorded and kept in a readily accessible location:

1. Detailed schematics, design specifications and piping and instrumentation diagrams.

2. The dates and descriptions of any changes in the design specifications.

3. A description of the parameter or parameters monitored as required in sub. (3)(j)5., to ensure that control devices are operated and maintained in conformance with their design and an explanation of why that parameter (or parameters) was selected for the monitoring.

4. Periods when the closed vent systems and control devices required in sub. (3)(b), (c), (d) and (e) are not operated as designed, including periods when a flare pilot light does not have a flame.

5. Dates of startups and shutdowns of the closed vent systems and control devices required in sub. (3)(b), (c), (d) and (e).

(e) The following information pertaining to all equipment subject to the requirements in sub. (3)(a) to (j) shall be recorded in a log that is kept in a readily accessible location:

1. A list of identification numbers for equipment subject to the requirements of this section.

2.a. A list of identification numbers for equipment that are designated for no detectable emissions under the provisions of sub. (3)(b)5., (c)9. and (g)6.

b. The designation of equipment as subject to the requirements of sub. (3)(b)5., (c)9., or (g)6. shall be signed by the owner or operator.

3. A list of equipment identification numbers for pressure relief devices required to comply with sub. (3)(d).

4.a. The dates of each compliance test as required in sub. (3)(b)5., (c)9., (d) and (g)6.

b. The background level measured during each compliance test.

c. The maximum instrument reading measured at the equipment during each compliance test.

5. A list of identification numbers for equipment in vacuum service.

(f) The following information pertaining to all valves subject to the requirements of sub. (3)(g)7. and 8. shall be recorded in a log that is kept in a readily accessible location:

1. 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.

2. 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.

(g) The following information shall be recorded for valves complying with sub. (4)(b).

1. A schedule of monitoring.

2. The percent of valves found leaking during each monitoring period.

(h) The following information shall be recorded in a log that is kept in a readily accessible location.

1. Design criterion required in sub. (3)(b)4.e. and (c)5.b. and explanation of the design criterion; and

2. Any changes to this criterion and the reasons for the changes.

(i) The following information shall be recorded in a log that is kept in a readily accessible location for use in determining exemptions as provided in sub. (1)(d):

1. An analysis demonstrating the design capacity of the affected facility,

2. A statement listing the feed or raw materials and products from the affected facilities and an analysis demonstrating whether these chemicals are heavy liquids or beverage alcohol, and

3. An analysis demonstrating that equipment is not VOC service.

(j) 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 in a readily accessible location.

(k) The provisions of s. NR 440.07(2) and (4) do not apply to affected facilities subject to this section.

(8) REPORTING REQUIREMENTS. (a) Each owner or operator subject to the provisions of this section shall submit semi-annual reports to the department beginning six months after the initial start up date.

(b) The initial semi-annual report to the department shall include the following information:

1. Process unit identification.

2. Number of valves subject to the requirements of sub. (3)(g), excluding those valves designated for no detectable emissions under the provisions of sub. (3)(g)6.

3. Number of pumps subject to the requirements of sub. (3)(b), excluding those pumps designated for no detectable emissions under the provisions of sub. (3)(b)5. and those pumps complying with sub. (3)(b)6.

4. Number of compressors subject to the requirements of sub. (3)(c), excluding those compressors designated for no detectable emissions under the provisions of sub. (3)(c)9. and those compressors complying with sub. (3)(c)8.

(c) All semi-annual reports to the department shall include the following information summarized from the information in sub. (7):

1. Process unit identification.

2. For each month during the semi-annual reporting period.

a. Number of valves for which leaks were detected as described in sub. (3)(g)2. or (4)(b),

b. Number of valves for which leaks were not repaired as required in sub. (3)(g)4.a.,

c. Number of pumps for which leaks were detected as described in sub. (3)(b)2. and 4.f.1),

d. Number of pumps for which leaks were not repaired as required in sub. (3)(b)3.a. and 4.f. 2),

e. Number of compressors for which leaks were detected as described in sub. (3)(c)6.,

f. Number of compressors for which leaks were not repaired as required in sub. (3)(c)7.a., and

g. The facts that explain each delay of repair and, where appropriate, why a process unit shutdown was technically infeasible.

3. Dates of process unit shutdowns which occurred within the semi-annual reporting period.

4. Revisions to items reported according to par. (b) if changes have occurred since the initial report or subsequent revisions to the initial report.

(d) An owner or operator electing to comply with the provisions of sub. (4)(a) and (b) shall notify the department of the alternative standard selected 90 days before implementing either of the provisions.

(e) An owner or operator shall report the results of all performance tests in accordance with s. NR 440.08. The provisions of s. NR 440.08(4) do not apply to affected facilities subject to the provisions of this section except that an owner or operator must notify the department of the schedule for the initial performance tests at least 30 days before the initial performance tests.

(f) The requirements of pars. (a) to (c) remain in force until and unless the department approves reporting requirements or an alternative means of compliance surveillance. In that event affected sources will be relieved of the obligation to comply with the requirements of pars. (a) to (c) provided that they comply with the requirements established by the department.

(9) RECONSTRUCTION. For the purpose of this section:

(a) The cost of the following frequently replaced components of the facility shall not be considered in calculating either the "fixed capital costs that would be required to construct a comparable new facility" under s. NR 440.15: pump seals, nuts and bolts, rupture disks and packings.

(b) Under s. NR 440.15 the "fixed capital cost of new components" includes the fixed capital cost of all depreciable components (except components specified in par. (a) which are or will be replaced pursuant to all continuous programs of component replacement which are commenced within any 2-year period following the applicability date for the appropriate section. (See the "applicability and designation of affected facility" subsection of the appropriate section.) For purposes of this paragraph "commenced" means that an owner or operator has undertaken a continuous program of component replacement or that an owner or operator has entered into a contractual obligation to undertake a continuous program of component replacement or that an owner or operator has entered into a contractual obligation to undertake and complete, within a reasonable time, a continuous program of component replacement.

(10) LIST OF CHEMICALS PRODUCED BY AFFECTED FACILITIES. (a) The chemicals listed in Table A are produced, as intermediates or final products, by process units covered under this section. The applicability date for process units producing one or more of these chemicals is January 5, 1981.

Table A.

| CAS No.[a] | Chemical |
|---|---|
| 105-57-7 | Acetal |
| 75-07-0 | Acetaldehyde |
| 107-89-1 | Acetaldol |
| 60-35-5 | Acetamide |
| 103-84-4 | Acetanilide |
| 64-19-7 | Acetic acid |
| 108-24-7 | Acetic anhydride |
| 67-64-1 | Acetone |
| 75-86-5 | Acetone cyanohydrin |
| 75-05-8 | Acetonitrile |
| 98-86-2 | Acetophenone |
| 75-36-5 | Acetyl chloride |
| 74-86-2 | Acetylene |
| 107-02-8 | Acrolein |
| 79-06-1 | Acrylamide |
| 79-10-7 | Acrylic acid |
| 107-13-1 | Acrylonitrile |
| 124-04-9 | Adipic acid |
| 111-69-3 | Adiponitrile |
| (b) | Alkyl naphthalenes |
| 107-18-6 | Allyl alcohol |
| 107-05-1 | Allyl chloride |
| 1321-11-5 | Aminobenzoic acid |
| 111-41-1 | Aminoethylethanotamine |
| 123-30-8 | p-Aminophenol |
| 628-63-7, 123-92-2 | Amyl acetates |
| 71-41-0[c] | Amyl alcohols |
| 110-58-7 | Amyl amine |
| 543-59-9 | Amyl chloride |
| 110-66-7[c] | Amyl mercaptans |
| 1322-06-1 | Amyl phenol |
| 62-53-3 | Aniline |
| 142-04-1 | Aniline hydrochloride |
| 29191-52-4 | Anisidine |
| 100-66-3 | Anisole |
| 118-92-3 | Anthranilic acid |
| 84-65-1 | Anthraquinone |
| 100-52-7 | Benzaldehyde |
| 55-21-0 | Benzamide |
| 71-43-2 | Benzene |

| CAS No.[a] | Chemical |
|---|---|
| 98-48-6 | Benzenedisulfonic acid |
| 98-11-3 | Benzenesulfonic acid |
| 134-81-6 | Benzil |
| 76-93-7 | Benzilic acid |
| 65-85-0 | Benzoic acid |
| 119-53-9 | Benzoin |
| 100-47-0 | Benzonitrile |
| 119-61-9 | Benzophenone |
| 98-07-7 | Benzotrichloride |
| 98-88-4 | Benzoyl chloride |
| 100-51-6 | Benzyl alcohol |
| 100-46-9 | Benzylamine |
| 120-51-4 | Benzyl benzoate |
| 100-44-7 | Benzyl chloride |
| 98-87-3 | Benzyl dichloride |
| 92-52-4 | Biphenyl |
| 80-05-7 | Bisphenol A |
| 10-86-1 | Bromobenzene |
| 27497-51-4 | Bromonaphthalene |
| 106-99-0 | Butadiene |
| 106-98-9 | 1-butene |
| 123-86-4 | n-butyl acetate |

| CAS No.[a] | Chemical |
|---|---|
| 141-32-2 | n-butyl acrylate |
| 71-36-3 | n-butyl alcohol |
| 78-92-2 | s-butyl alcohol |
| 75-65-0 | t-butyl alcohol |
| 109-73-9 | n-butylamine |
| 13952-84-6 | s-butylamine |
| 75-64-9 | t-butylamine |
| 98-73-7 | p-tert-butyl benzoic acid |
| 107-88-0 | 1,3-butylene glycol |
| 123-72-8 | n-butyraldehyde |
| 107-92-6 | Butyric acid |
| 106-31-0 | Butyric anhydride |
| 109-74-0 | Butyronitrite |
| 105-60-2 | Caprolactam |
| 75-1-50 | Carbon disulfide |
| 558-13-4 | Carbon tetrabromide |
| 55-23-5 | Carbon tetrachloride |
| 9004-35-7 | Cellulose acetate |
| 79-11-8 | Chloroacetic acid |
| 108-42-9 | m-chloroaniline |
| 95-51-2 | o-chloroaniline |
| 106-47-8 | p-chloroaniline |

| CAS No.[a] | Chemical |
|---|---|
| 35913-09-8 | Chlorobenzaldehyde |
| 108-90-7 | Chlorobenzoic acid |
| 118-91-2,535-<br>80-8, 74-11-39[c]<br>2136-81-4,<br>2136-89-2,<br>5216-25-1[c], | Chlorobenzotrichloride |
| 1321-03-5 | Chlorobenzoyl chloride |
| 25497-29-4 | Chlorodifluoromethane |
| 75-45-6 | Chlorodifluorethane |
| 67-66-3 | Chloroform |
| 25586-43-0 | Chloronapthalene |
| 88-73-3 | o-chloronitrobenzene |
| 100-00-5 | p-chloronitrobenzene |
| 25167-80-0 | Chlorophenols |
| 126-99-8 | Chloroprene |
| 7790-94-5 | Chlorosulfonic acid |
| 108-41-8 | m-chlorotoluene |
| 95-49-8 | o-chlorotoluene |
| 106-43-4 | p-chlorotoluene |
| 75-72-9 | Chlorotrifluoromethane |
| 108-39-4 | m-cresol |

| CAS No.[a] | Chemical |
|---|---|
| 95-48-7 | o-cresol |
| 106-44-5 | p-cresol |
| 1319-77-3 | Mixed cresols |
| 1319-77-3 | Cresylic acid |
| 4170-30-0 | Crotonaldehyde |
| 3724-65-0 | Crotonic acid |
| 98-82-8 | Cumene |
| 80-15-9 | Cumene hydroperoxide |
| 372-09-8 | Cyanoacetic acid |
| 506-77-4 | Cyanogen chloride |
| 108-80-5 | Cyanuric acid |
| 108-77-0 | Cyanuric chloride |
| 110-82-7 | Cyclohexane |
| 108-93-0 | Cyclohexanol |
| 108-94-1 | Cyclohexanone |
| 110-83-8 | Cyclohexene |
| 108-91-8 | Cyclohexylamine |
| 111-78-4 | Cyclooctadiene |
| 112-30-1 | Decanol |
| 123-42-2 | Diacetone alcohol |
| 27576-04-1 | Diaminobenzoic acid |
| 95-76-1, 95-82- | Dichloroaniline |

| CAS No.[a] | Chemical |
|---|---|
| 9, 554-00-7,<br>608-27-6,<br>608-31-1,<br>626-43-7,<br>27134-27-6,<br>57311-92-9[c] | |
| 541-73-1 | m-dichlorobenzene |
| 95-50-1 | o-dichlorobenzene |
| 106-46-7 | p-dichlorobenzene |
| 75-71-8 | Dichlorodifluoromethane |
| 111-44-4 | Dichloroethyl ether |
| 107-06-2 | 1,2-dichloroethane (EDC) |
| 96-23-1 | Dichlorohydrin |
| 26952-23-8 | Dichloropropene |
| 101-83-7 | Dicyclohexylamine |
| 109-89-7 | Diethylamine |
| 111-46-6 | Diethylene glycol |
| 112-36-7 | Diethylene glycol diethyl ether |
| 111-96-6 | Diethylene glycol dimethyl ether |
| 112-34-5 | Diethylene glycol monobutyl ether |

| CAS No.[a] | Chemical |
|---|---|
| 124-17-7 | Diethylene glycol monobutyl ether acetate |
| 111-90-0 | Diethylene glycol monoethyl ether |
| 112-15-2 | Diethylene glycol monoethyl ether acetate |
| 111-77-3 | Diethylene glycol monomethyl ether |
| 64-67-5 | Diethyl sulfate |
| 75-37-6 | Difluoroethane |
| 25167-70-8 | Diisobutylene |
| 26761-40-0 | Diisodecyl phthalate |
| 27554-26-3 | Diisooctyl phthalate |
| 674-82-8 | Diketene |
| 124-40-3 | Dimethylamine |
| 121-69-7 | N,N-dimethylaniline |
| 115-10-6 | N,N-dimethyl ether |
| 68-12-2 | N,N-dimethylformamide |
| 57-14-7 | Dimethylhydrazine |
| 77-78-1 | Dimethyl sulfate |
| 75-18-3 | Dimethyl sulfide |
| 67-68-5 | Dimethyl sulfoxide |

| CAS No.[a] | Chemical |
|---|---|
| 120-61-6 | Dimethyl terephthalate |
| 99-34-3 | 3,5-dinitrobenzoic acid |
| 51-28-5 | Dinitrophenol |
| 25321-14-6 | Dinitrotoluene |
| 123-91-1 | Dioxane |
| 646-06-0 | Dioxilane |
| 122-39-4 | Diphenylamine |
| 101-84-8 | Diphenyl oxide |
| 102-08-9 | Diphenyl thiourea |
| 25265-71-8 | Dipropylene glycol |
| 25378-22-7 | Dodecene |
| 28675-17-4 | Diodecylaniline |
| 27193-86-8 | Dodecylphenol |
| 106-89-8 | Epichlorohydrin |
| 64-17-5 | Ethanol |
| 141-43-5[c] | Ethalolamines |
| 141-78-6 | Ethyl acetate |
| 141-97-9 | Ethyl acetoacetate |
| 140-88-5 | Ethyl acrylate |
| 75-04-7 | Ethylamine |
| 100-41-4 | Ethylbenzene |
| 74-96-4 | Ethyl bromide |

| CAS No.[a] | Chemical |
|---|---|
| 9004-57-3 | Ethylcellulose |
| 75-00-3 | Ethyl chloride |
| 105-39-5 | Ethyl chloroacetate |
| 105-56-6 | Ethylcyanoacetate |
| 74-85-1 | Ethylene |
| 96-49-1 | Ethylene carbonate |
| 107-07-3 | Ethylene chlorohydrin |
| 107-15-3 | Ethylenediamine |
| 106-93-4 | Ethylene dibromide |
| 107-21-1 | Ethylene glycol |
| 111-55-7 | Ethylene glycol diacetate |
| 110-71-4 | Ethylene glycol dimethyl ether |
| 111-76-2 | Ethylene glycol monobutyl ether |
| 112-07-2 | Ethylene glycol monobutyl ether acetate |
| 110-80-5 | Ethylene glycol monoethyl ether |
| 111-15-9 | Ethylene glycol monoethyl ether acetate |

| CAS No.[a] | Chemical |
|---|---|
| 109-86-4 | Ethylene glycol monomethyl ether |
| 110-49-6 | Ethylene glycol monomethyl ether acetate |
| 122-99-6 | Ethylene glycol monophenyl ether |
| 2807-30-9 | Ethylene glycol monopropyl ether |
| 75-21-8 | Ethylene oxide |
| 60-29-7 | Ethyl ether |
| 104-76-7 | 2-ethylhexanol |
| 122-51-0 | Ethyl orthoformate |
| 95-92-1 | Ethyl oxalate |
| 41892-71-1 | Ethyl sodium oxalacetate |
| 50-00-0 | Formaldehyde |
| 75-12-7 | Formamide |
| 64-18-6 | Formic acid |
| 110-17-8 | Fumaric acid |
| 98-01-1 | Furfural |
| 56-81-5 | Glycerol |
| 26545-73-7 | Glycerol dichlorohydrin |
| 25791-96-2 | Glycerol triether |
| 56-40-6 | Glycine |
| 107-22-2 | Glyoxal |
| 118-74-1 | Hexachlorobenzene |
| 67-72-1 | Hexacloroethane |
| 36653-82-4 | Hexadecyl alcohol |
| 124-09-4 | Hexamethylenediamine |
| 629-11-8 | Hexamethylene glycol |
| 100-97-0 | Hexamethylenetetramine |
| 74-90-6 | Hydrogen cyanide |
| 123-31-9 | Hydroquinone |
| 99-96-7 | p-hydroxybenzoic acid |
| 26760-64-5 | Isoamylene |
| 76-83-1 | Isobutanol |
| 110-19-0 | Isobutyl acetate |
| 115-11-7 | Isobutylene |
| 78-84-2 | Isobutyraldehyde |
| 79-31-2 | Isobutyric acid |
| 25339-17-7 | Isodecanol |
| 26952-21-6 | Isooctyl alcohol |
| 78-78-4 | Isopentane |
| 78-59-1 | Isophorone |

| CAS No.[a] | Chemical |
|---|---|
| 121-91-5 | Isophthalic acid |
| 78-79-5 | Isoprene |
| 67-63-0 | Isopropanol |
| 108-21-4 | Isopropyl acetate |
| 75-31-0 | Isopropylamine |
| 75-29-6 | Isopropyl chloride |
| 25168-06-3 | Isopropylphenol |
| 463-51-4 | Ketene |
| [b] | Linear alkyl sulfonate |
| 123-01-3 | Linear alkylbenzene (linear dodecylbenzene) |
| 110-16-7 | Maleic acid |
| 108-31-6 | Maleic anhydride |
| 6915-15-7 | Malic acid |
| 141-79-7 | Mesityl oxide |
| 121-47-1 | Metanilic acid |
| 79-41-4 | Methacrylic acid |
| 563-47-3 | Methallyl chloride |
| 67-56-1 | Methanol |
| 79-20-9 | Methyl acetate |
| 105-45-3 | Methyl acetoacetate |
| 74-89-5 | Methylamine |

| CAS No.[a] | Chemical |
|---|---|
| 100-61-8 | n-methylaniline |
| 74-83-9 | Methyl bromide |
| 37365-71-2 | Methyl butynol |
| 74-87-3 | Methyl chloride |
| 108-87-2 | Methylcyclohexane |
| 1331-22-2 | Methylcyclohexanone |
| 75-09-2 | Methylene chloride |
| 101-77-9 | Methylene dianiline |
| 101-68-8 | Methylene diphenyl diisocyanate |
| 78-93-3 | Methyl ethyl ketone |
| 107-31-3 | Methyl formate |
| 108-11-2 | Methyl isobutyl carbinol |
| 108-10-1 | Methyl isobutyl ketone |
| 80-62-6 | Methyl methacrylate |
| 77-75-8 | Methylpentynol |
| 98-83-9 | a-methylstyrene |
| 110-91-8 | Morpholine |
| 85-47-2 | a-naphthalene sulfonic acid |
| 120-16-3 | b-naphthalene sulfonic acid |

| CAS No.[a] | Chemical |
|---|---|
| 90-15-3 | a-naphthol |
| 135-19-3 | b-naphthol |
| 75-98-9 | Neopentanoic acid |
| 88-74-4 | o-nitroaniline |
| 100-01-6 | p-nitroaniline |
| 91-23-6 | o-nitroanisole |
| 100-17-4 | p-nitroanisole |
| 98-95-3 | Nitrobenzene |
| 27178-83-2[c] | Nitrobenzoic acid (o,m, and p) |
| 79-24-3 | Nitroethane |
| 75-52-5 | Nitromethane |
| 88-75-5 | 2-Nitrophenol |
| 25322-01-4 | Nitropropane |
| 1321-12-6 | Nitrotoluene |
| 27215-95-8 | Nonene |
| 25154-52-3 | Nonylphenol |
| 27193-28-8 | Octylphenol |
| 123-63-7 | Paraldehyde |
| 115-77-5 | Pentaerythritol |
| 109-66-0 | n-pentane |
| 109-67-1 | 1-pentene |

| CAS No.[a] | Chemical |
|---|---|
| 127-18-4 | Perchloroethylene |
| 594-42-3 | Perchloromethyl mercaptan |
| 94-70-2 | o-phenetidine |
| 156-43-4 | p-phenetidine |
| 108-95-2 | Phenol |
| 98-67-9, 505-38-6, 609-46-1, 1333-39-7[c] | Phenolsulfonic acids |
| 91-40-7 | Phenyl anthranilic acid |
| ([b]) | Phenylenediamine |
| 75-44-5 | Phosgene |
| 85-44-9 | Phthalic anhydride |
| 85-41-6 | Phthalimide |
| 108-99-6 | b-picoline |
| 110-85-0 | Piperazine |
| 9003-29-6<br>25036-20-7[c] | Polybutenes |
| 25322-68-3 | Polyethylene glycol |
| 25822-69-4 | Polypropylene glycol |
| 123-38-6 | Propionaldehyde |
| 79-09-4 | Propionic acid |
| 71-23-8 | n-propyl alcohol |

| CAS No.[a] | Chemical |
|---|---|
| 107-10-8 | Propylamine |
| 540-54-5 | Propyl chloride |
| 115-07-1 | Propylene |
| 127-00-4 | Propylene chlorohydrin |
| 78-87-5 | Propylene dichloride |
| 57-55-6 | Propylene glycol |
| 75-56-9 | Propylene oxide |
| 110-86-1 | Pyridine |
| 106-51-4 | Quinone |
| 108-46-3 | Resorcinol |
| 27138-57-4 | Resorcylic acid |
| 69-72-7 | Salicylic acid |
| 127-09-3 | Sodium acetate |
| 532-32-1 | Sodium benzoate |
| 9004-32-4 | Sodium carboxymethyl cellulose |
| 3926-62-3 | Sodium chloroacetate |
| 141-53-7 | Sodium formate |
| 139-02-6 | Sodium phenate |
| 110-44-1 | Sorbic acid |
| 100-42-5 | Styrene |
| 110-15-6 | Succinic acid |
| 110-61-2 | Succinonitrile |
| 121-57-3 | Sulfanilic acid |
| 126-33-0 | Sulfolane |
| 1401-55-4 | Tannic acid |
| 100-21-0 | Terephthalic acid |
| 79-34-5[c] | Tetrachloroethanes |
| 117-08-8 | Tetrachlorophthalic anhydride |
| 78-00-2 | Tetraethyl lead |
| 119-64-2 | Tetrahydronapthalene |
| 85-43-8 | Tetrahydrophthalic anhydride |
| 75-74-1 | Tetramethyl lead |
| 110-60-1 | Tetramethylenediamine |
| 110-18-9 | Tetramethylethylenediamine |
| 108-88-3 | Toluene |
| 95-80-7 | Toluene-2,3-diamine |
| 584-84-9 | Toluene-2,4-diisocyanate |
| 26471-62-5 | Toluene diisocyanates (mixture) |
| 1333-07-9 | Toluenesulfonamide |
| 104-15-4[c] | Toluenesulfonic acids |

| CAS No.[a] | Chemical |
|---|---|
| 98-59-9 | Toluenesulfonyl chloride |
| 26915-12-8 | Toluidines |
| 87-61-6, 108-70-3, 120-82-1[c] | Trichlorobenzenes |
| 71-55-6 | 1,1,1-trichloroethane |
| 79-00-5 | 1,1,2-trichloroethane |
| 79-01-6 | Trichloroethylene |
| 75-69-4 | Trichlorofluoromethane |
| 96-18-4 | 1,2,3-trichloropropane |
| 76-13-1 | 1,1,2-trichloro-1,2,2-trifluoroethane |
| 121-44-8 | Triethylamine |
| 112-27-6 | Triethylene glycol |
| 112-49-2 | Triethylene glycol dimethyl ether |
| 7756-94-7 | Triisobutylene |
| 75-50-3 | Trimethylamine |
| 57-13-6 | Urea |
| 108-05-4 | Vinyl acetate |
| 75-01-4 | Vinyl chloride |
| 75-35-4 | Vinylidene chloride |
| 25013-15-4 | Vinyl toluene |

| CAS No.[a] | Chemical |
|---|---|
| 1330-20-7 | Xylenes (mixed) |
| 95-47-6 | o-xylene |
| 106-42-3 | p-xylene |
| 1300-71-6 | Xylenol |
| 1300-73-8 | Xylidine |

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[a] CAS numbers refer to the Chemical Abstracts Registry numbers assigned to specific chemicals, isomers, or mixtures of chemicals. Some isomers or mixtures that are covered by the standards do not have CAS numbers assigned to them. The standards apply to all of the chemicals listed, whether CAS numbers have been assigned or not.

[b] No CAS number(s) have been assigned to this chemical, its isomers, or mixtures containing these chemicals.

[c] CAS numbers for some of the isomers are listed; the standards apply to all of the isomers and mixture, even if CAS numbers have not been assigned.

SECTION 52. NR 440.63 is created to read:

NR 440.63 BEVERAGE CAN SURFACE COATING INDUSTRY. (1) APPLICABILITY AND DESIGNATION OF AFFECTED FACILITY. (a) The provisions of this section apply to the following affected facilities in beverage can surface coating lines: each exterior base coat operation, each overvarnish coating operation and each inside spray coating operation.

(b) The provisions of this section apply to each affected facility which is identified in par. (a) and commences construction, modification, or reconstruction after November 26, 1980.

(2) DEFINITIONS. (a) As used in this section all terms not defined in this subsection have the meaning designated in s. NR 440.02.

1. "Beverage can" means any two-piece steel or aluminum container in which soft drinks or beer, including malt liquor, are packaged. The definition does not include containers in which fruit or vegetable juices are packaged.

2. "Exterior base coating operation" means the system on each beverage can surface coating line used to apply a coating to the exterior of a two piece beverage can body. The exterior base coat provides corrosion resistance and a background for lithography or printing operations. The exterior base coat operation consists of the coating application station, flashoff area and curing oven. The exterior base coat may be pigmented or clear (unpigmented).

3. "Inside spray coating operation" means the system on each beverage can surface coating line used to apply a coating to the interior of a two-piece beverage can body. This coating provides a protective film between the contents of the beverage can and the metal can body. The inside spray coating operation consists of the coating application station, flashoff area and curing oven. Multiple applications of an inside spray coating are considered to be a single coating operation.

4. "Overvarnish coating operation" means the system on each beverage can surface coating line used to apply a coating over ink which reduces friction for automated beverage can filling equipment, provides gloss and protects the finished beverage can body from abrasion and corrosion. The overvarnish coating is applied to two-piece beverage can bodies. The overvarnish coating operation consists of the coating application station, flashoff area and curing oven.

5. "Two-piece can" means any beverage can that consists of a body manufactured from a single piece of steel or aluminum and a top coatings for a two-piece can are usually applied after fabrication of the can body.

6. "VOC content" means all volatile organic compounds (VOCs) that are in a coating. VOC content is expressed in terms of kilograms of VOC per liter of coating solids.

(b) Notations used under sub. (4) are defined below:

1. $C_a$ = the VOC concentration in each gas stream leaving the control device and entering the atmosphere (parts per million as carbon).

2. $C_b$ = the VOC concentration in each gas stream entering the control device (parts per million as carbon)

3. $D_c$ = density of each coating, as received (kilograms per litre).

4. $D_d$ = density of each VOC-solvent added to coatings (kilograms per litre).

5. $D_r$ = density of VOC-solvent recovered by an emission control device (kilograms per litre).

6. E = VOC destruction efficiency of the control device (fraction).

7. F = the proportion of total VOC emitted by an affected facility which enters the control device to total emissions (fraction)

8. G = the volume-weighted average of VOC in coatings assumed in a calendar month per volume of coating solids applied (kilograms per litre of coating solids).

9. $H_e$ = the fraction of VOC emitted at the coater and flashoff areas captured by a collection system.

10. $H_h$ = the fraction of VOC emitted at the cure oven captured by a collection system.

11. $L_c$ = the volume of each coating consumed, as received (litres).

12. $L_d$ = the volume of each VOC-solvent added to coatings (litres).

13. $L_r$ = the volume of VOC-solvent recovered by an emission control device (litres).

14. $L_s$ = the volume of coating solids consumed (litres).

15. $M_d$ = the mass of VOC-solvent added to coatings (kilograms).

16. $M_o$ = the mass of VOC-solvent in coatings consumed, as received (kilograms).

17. $M_r$ = the mass of VOC-solvent recovered by emission control device (kilograms)

18. N = the volume-weighted average mass of VOC emissions to atmosphere per unit volume of coating solids applied (kilograms per litre of coating solids).

19. $Q_a$ = the volumetric flow rate of each gas stream leaving the control device and entering the atmosphere (dry standard cubic meters per hour).

20. $Q_b$ = the volumetric flow rate of each gas stream entering the control device (dry standard cubic meters per hour).

21. R = the overall emission reduction efficiency for an affected facility (fraction).

22. $S_e$ = the fraction of VOC in coating and diluent VOC-solvent emitted at the coater and flashoff area for a coating operation.

23. $S_h$ = the fraction of VOC in coating and diluent solvent emitted at the cure oven for a coating operation.

24. $V_s$ = the proportion of solids in each coating, as received (fraction by volume).

25. $W_o$ = the proportion of VOC in each coating, as received (fraction by weight).

(3) STANDARDS FOR VOLATILE ORGANIC COMPOUNDS. On or after the date on which the initial performance test required by s. NR 440.08(1) is completed no owner or operator subject to the provisions of this section shall discharge or cause the discharge of VOC emissions to the atmosphere that exceed the following volume - weighted calendar - month average emissions:

(a) 0.29 kilogram of VOC per liter of coating solids (2.4 pounds per gallon) from each two-piece can exterior base coating operation, except clear base coat;

(b) 0.46 kilogram of VOC per liter of coating solids (3.8 pounds per gallon) from each two-piece can clear base coating operation and from each overvarnish coating operation; and

(c) 0.89 kilogram of VOC per liter of coating solids (7.4 pounds per gallon) from each two-piece can inside spray coating operation.

(4) PERFORMANCE TEST AND COMPLIANCE PROVISIONS. (a) Section NR 440.08(4) does not apply to monthly performance tests and s. NR 440.08(6) does not apply to the performance test procedures required by this section.

(b) The owner or operator of an affected facility shall conduct an initial performance test as required under s. NR 440.08(1) and thereafter a performance test each calendar month for each affected facility.

1. The owner or operator shall use the following procedures for each affected facility that does not use a capture system and a control device to comply with the emission limit specified under sub. (3). The owner or operator shall determine the VOC-content of the coatings from formulation data supplied by the manufacturer of the coating or by an analysis of each coating as received, using Reference Method 24 of 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17. The department may require the owner or operator who uses formulation data supplied by the manufacturer of the coating to determine the VOC content of coatings using Reference Method 24 of 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17, or an equivalent or alternative method. The owner or operator shall determine from company records the volume of coating and the mass of VOC-solvent added to coatings. If a common coating distribution system serves more than one affected facility or serves both affected and existing facilities the owner or operator shall estimate the volume of coating used at each facility by using the average dry weight of coating, number of cans and size of cans being processed by each affected and existing facility or by other procedures acceptable to the department.

a. Calculate the volume-weighted average of the total mass of VOC per volume of coating solids used during the calendar month for each affected facility, except as provided under subpar. d. The volume-weighted average of the total mass of VOC per volume of coating solids used each calendar month will be determined by the following procedures.

1) Calculate the mass of VOC used ($M_o + M_d$) during the calendar month for the affected facility by the following equation:

$$M_o + M_d = \sum_{i=1}^{n} L_{ci} D_{ci} W_{oi} + \sum_{j=1}^{m} L_{dj} D_{dj}$$

($\sum L_{dj} D_{dj}$ will be zero if no VOC solvent is added to the coatings, as received.) Where n is the number of different coatings used during the calendar month and m is the number of different diluent VOC-solvents used during the calendar month.

2) Calculate the total volume of coating solids used ($L_s$) in the calendar month for the affected facility by the following equation:

$$L_a = \sum_{i=1}^{n} L_{ci} V_{si}$$

where n is the number of different coatings used during the calendar month.

3) Calculate the volume-weighted average mass of VOC per volume of solids used (G) during the calendar month for the affected facility by the following equation:

$$G = \frac{M_o + M_d}{L^{T2s}}$$

b. Calculate the volume-weighted average of VOC emissions discharged to the atmosphere (N) during the calendar month for the affected facility by the following equation:

$$N = G$$

c. Where the value of the volume-weighted average of mass of VOC per volume of solids discharged to the atmosphere (N) is equal to or less than the applicable emission limit specified under sub. (3) the affected facility is in compliance.

d. If each individual coating used by an affected facility has a VOC content equal to or less than the limit specified under sub. (3) the affected facility is in compliance provided no VOC-solvents are added to the coating during distribution or application.

2. An owner or operator shall use the following procedures for each affected facility that uses a capture system and a control device that destroys VOC (e.g., incinerator) to comply with the emission limit specified under sub. (3).

a. Determine the overall reduction efficiency (R) for the capture system and control device.

For the initial performance test, the overall reduction efficiency (R) shall be determined as prescribed by this subparagraph. In subsequent months the owner or operator may use the most recently determined overall reduction efficiency for the performance test providing control device and capture system operating conditions have not changed. The procedure in this subparagraph shall be repeated when directed by the department or when the owner or operator elects to operate the control device or capture system at conditions different from the initial performance test.

1) Determine the fraction (F) of total VOC used by the affected facility that enters the control device using the following equation:

$$F = S_e H_e + S_h H_h$$

where $H_e$ and $H_h$ shall be determined by a method that has been previously approved by the department. The owner or operator may use the values of $S_e$ and $S_h$ specified in Table I or other values determined by a method that has been previously approved by the department.

### TABLE I. DISTRIBUTION OF VOC EMISSIONS

| Coating Operation | Emission Distribution<br>Coater/ flashoff ($S_e$) | Curing Oven ($S_h$) |
|---|---|---|
| Two-piece aluminum or steel can: | | |
| Exterior base coat operation | 0.75 | 0.25 |
| Overvarnish coating operation | 0.75 | 0.25 |
| Inside spray coating operation | 0.80 | 0.20 |

2) Determine the destruction efficiency of the control device (E) using values of the volumetric flow rate of each of the gas streams and the VOC content (as carbon) of each of the gas streams in and out of the device by the following equation:

$$E = \frac{\sum_{i=1}^{n} Q_{bi} \quad C_{bi} - \sum_{j=1}^{m} Q_{aj} \quad C_{aj}}{\sum_{i=1}^{n} Q_{bi} \, C_{bi}}$$

where n is the number of vents before the control device and m is the number of vents after the control device.

3) Determine overall reduction efficiency (R) using the following equation:

$$R = EF$$

b. Calculate the volume-weighted average of the total mass of VOC per volume of coating solids (G) used during the calendar month for the affected facility using the equations presented in subd. 1.a.

c. Calculate the volume-weighted average of VOC emissions discharged to the atmosphere (N) during the calendar month by the following equation:

$$N = G \times (1-R)$$

the applicable emission limit specified under sub. (3), the affected facility is in compliance.

d. If the volume-weighted average of mass of VOC emitted to the atmosphere for the calendar month (N) is equal to or less than the applicable emission limit specified under sub. (3) the affected facility is in compliance.

3. An owner or operator shall use the following procedure for each affected facility that uses a capture system and a control device that recovers the VOC (e.g. carbon adsorber) to comply with the applicable emission limit specified under sub. (3).

a. Calculate the volume-weighted average of the total mass of VOC per unit volume of coating solids applied (G) used during the calendar month for the affected facility using the equations presented in subd. 1.

b. Calculate the total mass of VOC recovered ($M_r$) during each calendar month using the following equation: $M_r = L_r D_r$

c. Calculate overall reduction efficiency of the control device (R) for the calendar month for the affected facility using the following equation:

$$R = \frac{M_r}{M_a + M_d}$$

d. Calculate the volume-weighted average mass of VOC discharged to the atmosphere (N) for the calendar month for the affected facility using the equation presented in subd. 2.c.

e. If the weighted average of VOC emitted to the atmosphere for the calendar month (N) is equal to or less than the applicable emission limit specified under sub. (3) the affected facility is in compliance.

(5) MONITORING OF EMISSIONS AND OPERATIONS. The owner or operator of an affected-facility that uses a capture system and an incinerator to comply with the emission limits specified under sub. (3) shall install, calibrate, maintain and operate temperature measurement devices as prescribed below.

(a) Where thermal incineration is used a temperature measure device shall be installed in the firebox. Where catalytic incineration is used temperature measurement devices shall be installed in the gas stream immediately before and after the catalyst bed.

(b) Each temperature measurement device shall be installed, calibrated, and maintained according to the manufacturer's specifications. The device shall have an accuracy the greater of ± 0.75% of the temperature being measured expressed in degrees Celsius or ± 2.5°C.

(c) Each temperature measurement device shall be equipped with a recording device so that a permanent continuous record is produced.

(6) REPORTING AND RECORDKEEPING REQUIREMENTS. (a) The owner or operator of an affected facility shall include the following data in the initial compliance report required under s. NR 440.08(1).

1. Where only coatings which individually have a VOC content equal to or less than the limits specified under sub. (3) are used, and no VOC is added to the coating during the application or distribution process, the owner or operator shall provide a list of coatings used for each affected facility and the VOC content of each coating calculated from data determined using Reference Method 24 of 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17, or supplies by the manufacturers of the coatings.

2. Where one or more coatings which individually have a VOC content greater than the limits specified under sub. (3) are used or where VOC are added or used in the coating process the owner or operator shall report for each affected facility the volume-weighted average of the total mass of VOC per volume of coating solids.

3. Where the compliance is achieved through the use of incineration the owner or operator shall include in the initial performance test required under s. NR 440.08(1) the combustion temperature (or the gas temperature upstream and downstream of the catalyst bed), the total mass of VOC per volume of coating solids before and after the incinerator, the capture efficiency and the destruction efficiency of the incinerator used to attain compliance with the applicable emission limit specified under sub. (3). The owner or operator shall also include a description of the method used to establish the amount of VOC captured by the capture system and sent to the control device.

(b) Following the initial performance test each owner or operator shall submit for each semi-annual period ending June 30 and December 31 a written report to the department of exceedances of VOC content and incinerator operating temperatures when compliance with sub. (3) is achieved through the use of incineration. All semi-annual reports shall be postmarked by the 30th day following the end of each semi-annual period. For the purposes of these reports exceedances are defined as:

1. Each performance period in which the volume-weighted average of the total mass of VOC per volume of coating solids, after the control device, if capture devices and control systems are used, is greater than the limit specified under sub. (3).

2. Where compliance with sub. (3) is achieved through the use of thermal incineration, each 3-hour period when cans are processed, during which the average temperature of the device was more than 28°C below the average temperature of the device during the most recent performance test at which destruction efficiency was determined as specified under sub. (4).

3. Where compliance with sub. (3) is achieved through the use of catalytic incineration, each 3-hour period when cans are being processed, during which the average temperature of the device immediately before the catalyst bed is more than 28°C below the average temperature of the device immediately before the catalyst bed during the most recent performance test at which destruction efficiency was determined as specified under sub. (4) and all 3-hour periods, when cans are being processed during which the average temperature difference across the catalyst bed is less than 80% of the average temperature difference across the catalyst bed during the most recent performance test at which destruction efficiency was determined as specified under sub. (4).

(c) Each owner or operator subject to the provisions of this section shall maintain at the source, for a period of at least 2 years, records of all data and calculations used to determine VOC emissions from each affected facility in the initial and monthly performance tests. Where compliance is achieved through the use of thermal incineration, each owner or operator shall maintain, at the source, daily records of the incinerator combustion chamber temperature. If catalytic incineration is used, the owner or operator shall maintain at the source daily records of the gas temperature, both upstream and downstream of the incinerator catalyst bed. Where compliance is achieved through the use of a solvent recovery system, the owner or operator shall maintain at the source daily records of the amount of solvent recovered by the system for each affected facility.

(d) The requirements of this subsection remain in force until and unless the department approves reporting requirements or an alternative means of compliance surveillance. In that event, affected facilities will be relieved of the obligation to comply with this subsection, provided that they comply with the requirements established by the department.

(7) TEST METHODS AND PROCEDURES. (a) The reference methods of 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17, except as provided in s. NR 440.08, shall be used to conduct performance tests.

1. Reference Method 24, an equivalent or alternative method approved by the department, or manufacturer's formulation for data from which the VOC content of the coatings used for each affected facility can be calculated. In the event of dispute, Reference Method 24 shall be the reference method. When VOC content of waterborne coatings, determined from data generated by Reference Method 24, is used to determine compliance of affected facilities, the results of the Method 24 analysis shall be adjusted as described in section 4.4 of Method 24.

2. Reference Method 25 or an equivalent or alternative method for the equivalent or alternative method for the determination of the VOC concentration in the effluent gas entering and leaving the control device for each stack equipped with an emission control device. The owner or operator shall notify the department 30 days in advance when performing a test using Reference Method 25. The following reference methods are to be used in conjunction with Reference Method 25:

a. Method 1 for sample and velocity traverses,

b. Method 2 for velocity and volumetric flow rate,

c. Method 3 for gas analysis, and

d. Method 4 for stack gas moisture.

(b) For Reference Method 24, the coating sample must be a 1-liter sample collected in a 1-liter container at a point where the sample will be representative of the coating material.

(c) For Reference Method 25, the sampling time for each of three runs must be at least 1 hour. The minimum sample volume must be 0.003 dscm except that shorter sampling times or smaller volumes, when necessitated by process variables or other factors, may be approved by the department. The department will approve the sampling of representative stacks on a case-by-case basis if the owner or operator can demonstrate to the satisfaction of the department that the testing of representative stacks would yield results comparable to those that would be obtained by testing all stacks.

SECTION 53. NR 440.64 is created to read:

NR 440.64 BULK GASOLINE TERMINALS. (1) APPLICABILITY AND DESIGNATION OF AFFECTED FACILITY. (a) The affected facility to which the provisions of this section apply is the total of all the loading racks at a bulk gasoline terminal which deliver liquid product into gasoline tank trucks.

(b) Each facility under par. (a), the construction or modification of which is commenced after December 17, 1980, is subject to the provisions of this section.

(c) For purposes of this section any replacement of components of an existing facility described in par. (a), commenced before August 18, 1983 in order to comply with any emission standard adopted by the department, will not be considered a reconstruction under the provisions of s. NR 440.15.

(Note: The intent of these standards is to minimize the emissions of VOC through the application of best demonstrated technologies (BDT). The numerical emission limits in this standard are expressed in terms of total organic compounds. The emission limit reflects the performance of BDT.)

(2) DEFINITIONS. As used in this section all terms not defined in this subsection have the meaning designated in s. NR 440.02.

(a) "Bulk gasoline terminal" means any gasoline facility which receives gasoline by pipeline, ship or barge and has a gasoline throughput greater than 75,700 liters per day. Gasoline throughput shall be the maximum calculated design throughput as may be limited by compliance with an enforceable condition under Federal, State or local law and discoverable by the department and any other person.

(b) "Continuous vapor processing system" means a vapor processing system that treats total organic compounds vapors collected from gasoline tank trucks on a demand basis without intermediate accumulation in a vapor holder.

(c) "Existing vapor processing system" means a vapor processing system (capable of achieving emissions to the atmosphere no greater than 80 milligrams of total organic compounds per liter of gasoline loaded), the construction or refurbishment of which was commenced before December 17, 1980, and which was not constructed or refurbished after that date.

(d) "Gasoline" means any petroleum distillate or petroleum distillate/alcohol blend having a Reid vapor pressure of 27.6 kilopascals or greater which is used as a fuel for internal combustion engines.

(e) "Gasoline tank truck" means a delivery tank truck used at bulk gasoline terminals which is loading gasoline or which has loaded gasoline on the immediately previous load.

(f) "Intermittent vapor processing system" means a vapor processing system that employs an intermediate vapor holder to accumulate total organic compounds vapors collected from gasoline tank trucks and treats the accumulated vapors only during automatically controlled cycles.

(g) "Loading rack" means the loading arms, pumps, meters, shutoff valves, relief valves, and other piping and valves necessary to fill delivery tank trucks.

(h) "Refurbishment" means, with reference to a vapor processing system, replacement of components of, or addition of components to, the system within any 2-year period such that the fixed capital cost of the new components required for such component replacement or addition exceeds 50 percent of the cost of a comparable entirely new system.

(i) "Total organic compounds" means those compounds measured according to the procedures in sub. (4).

(j) "Vapor collection system" means any equipment used for containing total organic compounds vapors displaced during the loading of gasoline tank trucks.

(k) "Vapor processing system" means all equipment used for recovering or oxidizing total organic compounds vapors displaced from the affected facility.

(i) "Vapor-tight gasoline tank truck" means a gasoline tank truck which has demonstrated within the 12 preceding months that its product delivery tank will sustain a pressure change of not more than 750 pascals (75 mm of water) within 5 minutes after it is pressurized to 4,500 pascals (450 mm of water). This capability is to be demonstrated using the pressure test procedure specified in Reference Method 24 of 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17.

(3) STANDARDS FOR VOLATILE ORGANIC COMPOUNDS (VOC) EMISSIONS FROM BULK GASOLINE TERMINALS. On and after the date on which s. NR 440.08(1) requires a performance test to be completed the owner or operator of each bulk gasoline terminal containing an affected facility shall comply with the requirements of this subsection.

(a) Each affected facility shall be equipped with a vapor collection system designed to collect the total organic compounds vapors displaced from tank trucks during product loading.

(b) The emissions to the atmosphere from the vapor collection system due to the loading of liquid product into gasoline tank trucks are not to exceed 35 milligrams of total organic compounds per liter of gasoline loaded, except as noted in paragraph (c).

(c) For each affected facility equipped with an existing vapor processing system the emissions to the atmosphere from the vapor collection system due to the loading of liquid product into gasoline tank trucks are not to exceed 80 milligrams of total organic compounds per liter of gasoline loaded.

(d) Each vapor collection system shall be designed to prevent any total organic compounds vapors collected at one loading rack from passing to another loading rack.

(e) Loadings of liquid product into gasoline tank trucks shall be limited to vapor-tight gasoline tank trucks using the following procedures:

1. The owner or operator shall obtain the vapor tightness documentation described in sub. (6)(b) for each gasoline tank truck which is to be loaded at the affected facility.

2. The owner or operator shall require the tank identification number to be recorded as each gasoline tank truck is loaded at the affected facility.

3. The owner or operator shall cross-check each tank identification number obtained in subd. 2. with the file of tank vapor tightness documentation within 2 weeks after the corresponding tank is loaded.

4. The terminal owner or operator shall notify the owner or operator of each nonvapor-tight gasoline tank truck loaded at the affected facility within 3 weeks after the loading has occurred.

5. The terminal owner or operator shall take steps assuring that the nonvapor-tight gasoline tank truck will not be reloaded at the affected facility until vapor tightness documentation for that tank is obtained.

6. Alternate procedures to those described in subds. 1. to 5. for limiting gasoline tank truck loadings may be used upon application to and approval by the department.

(f) The owner or operator shall act to assure that loadings of gasoline tank trucks at the affected facility are made only into tanks equipped with vapor collection equipment that is compatible with the terminal's vapor collection system.

(g) The owner or operator shall act to assure that the terminal's and the tank truck's vapor collection systems are connected during each loading of a gasoline tank truck at the affected facility. Examples of actions to accomplish this include training drivers in the hookup procedures and posting visible reminder signs at the affected loading racks.

(h) 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 (450 mm of water) during product loading. This level is not to be exceeded when measured by the procedures specified in sub. (4)(b).

(i) 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 pascals (450 mm of water).

(j) Each calendar month the vapor collection system, the vapor processing 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 paragraph 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.

(4) TEST METHODS AND PROCEDURES. (a) Section NR 440.08(6) does not apply to the performance test procedures required by this section.

(b) For the purpose of determining compliance with sub. (3)(h) the following procedures shall be used:

1. Calibrate and install a pressure measurement device (liquid manometer, magnehelic gauge, or equivalent instrument), capable of measuring up to 500 mm of water gauge pressure with ± 2.5 mm of water precision.

2. Connect the pressure measurement device to a pressure tap in the terminal's vapor collection system. It should be located as close as possible to the connection with the gasoline tank truck.

3. During the performance test record the pressure every 5 minutes while a gasoline tank truck is being loaded and record the highest instantaneous pressure that occurs during each loading. Every loading position must be tested at least once during the performance test.

(c) For the purpose of determining compliance with the mass emission limitations of sub. (3)(b) and (c) the following reference methods in 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17, shall be used:

1. For the determination of volume at the exhaust vent:

a. Method 2B for combustion vapor processing systems.

b. Method 2A for all other vapor processing systems.

2. Method 25A or 25B for the determination of total organic compounds concentration at the exhaust vent. The calibration gas shall be either propane or butane.

(d) Immediately prior to a performance test required for determination of compliance with subs. (3)(b), (c) and (h) all potential sources of vapor leakage in the terminal's vapor collection system equipment shall be monitored for leaks using Method 21. The monitoring shall be conducted only while a gasoline tank truck is being loaded. A reading of 10,000 ppmv or greater as methane shall be considered a leak. All leaks shall be repaired prior to conducting the performance test.

(e) The test procedure for determining compliance with sub. (3)(b) and (c) is as follows:

1. All testing equipment shall be prepared and installed as specified in the appropriate test methods.

2. The time period for a performance test shall be not less than 6 hours during which at least 300,000 liters 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 criteria is met or resumed the next day with another complete 6 hours of testing. Testing should be conducted during the 6-hour period in which the highest throughput normally occurs as much as possible.

3. For intermittent vapor processing systems:

a. 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.

b. 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.

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

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

a. The reading from each measurement instrument shall be recorded, and

b. 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.

6. 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 emitted during testing interval i, mg.

$V_{es}$ = volume of air-vapor mixture exhausted, $m^3$, at standard conditions.

$C_e$ = total organic compounds concentration (as measured) at the exhaust vent, ppmv.

K = density of calibration gas, $mg/m^3$, at standard conditions.

= $1.83 \times 10^6$, for propane.

= $2.41 \times 10^6$, for butane.

s = standard conditions, 20°C and 760 mm Hg.

7. The total organic compounds mass emissions shall be calculated 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/liter.

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

L = total volume of gasoline loaded, liters.

n = number of testing intervals.

(f) 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 department.

(5) (RESERVED)

(6) REPORTING AND RECORDKEEPING. (a) The tank truck vapor tightness documentation required under sub. (3)(e)1. shall be kept on file at the terminal in a permanent form available for inspection.

(b) The documentation file for each gasoline tank truck shall be updated at least once per year to reflect current test results as determined by Reference Method 27 in 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17. This documentation shall include, as a minimum, the following information:

1. Test Title: Gasoline Delivery Tank Pressure Test - EPA Reference Method 27.

2. Tank Owner and Address.

3. Tank Identification Number.

4. Testing Location.

5. Date of Test.

6. Tester Name and Signature.

7. Witnessing Inspector, if any: Name, Signature and Affiliation.

8. Test Results: Actual Pressure Change in 5 minutes, mm of water (average for 2 runs).

(c) A record of each monthly leak inspection required under sub. (3)(j) shall be kept on file at the terminal for at least 2 years. Inspection records shall include, as a minimum, the following information:

1. Date of Inspection.

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

3. Leak determination method.

4. Corrective Action (date each leak repaired; reasons for any repair interval in excess of 15 days).

5. Inspector Name and Signature.

(d) The terminal owner or operator shall keep documentation of all notifications required under sub. (3)(e)4. on file of the terminal for at least 2 years.

(e) (Reserved).

(f) The owner or operator of an affected facility shall keep records of all replacements or additions of components performed on an existing vapor processing system for at least 3 years.

(7) RECONSTRUCTION. For purposes of this section:

(a) The cost of the following frequently replaced components of the affected facility shall not be considered in calculating either the "fixed capital cost of the new components" or the "fixed capital costs that would be required to construct a comparable entirely new facility" under s. NR 440.15: pump seals, loading arm gaskets and swivels, coupler gaskets, overfill sensor couplers and cables, flexible vapor hoses and grounding cables and connectors.

(b) Under s. NR 440.15, the "fixed capital cost of the new components" includes the fixed capital cost of all depreciable components [except components specified in par. (a) which are or will be replaced pursuant to all continuous programs of component replacement which are commenced within 2-year period following December 17, 1980. For purposes of this paragraph "commenced" means that an owner or operator has undertaken a continuous program of component replacement or that an owner or operator has entered into a contractual obligation to undertake and complete, within a reasonable time, a continuous program of component replacement.

SECTION 54. NR 440.65 is created to read:

NR 440.65 FLEXIBLE VINYL AND URETHANE COATING AND PRINTING. (1) APPLICABILITY AND DESIGNATION OF AFFECTED FACILITY. (a) The affected facility to which the provisions of this section apply is each rotogravure printing line used to print or coat flexible vinyl or urethane products.

(b) This section applies to any affected facility which begins construction, modification, or reconstruction after January 18, 1983.

(c) For facilities controlled by a solvent recovery emission control device, the provisions of sub. (5)(a) requiring monitoring of operations will not apply until performance specifications are promulgated under 40 C.F.R. pt. 60, Appendix B, incorporated by reference in s. NR 440.17, for the continuous monitoring system. After the promulgation of performance specifications these provisions will apply to each affected facility under par. (b). Facilities controlled by a solvent recovery emission control device that become subject to the standard prior to promulgation of performance specifications must conduct performance tests in accordance with s. NR 440.13(2) after performance specifications are promulgated.

(2) DEFINITIONS AND SYMBOLS. (a) As used in this section all terms not defined in this subsection have the meaning designated in s. NR 440.02.

1. "Emission control device" means any solvent recovery or solvent destruction device used to control volatile organic compounds (VOC) emissions from flexible vinyl and urethane rotogravure printing lines.

2. "Emission control system" means the combination of an emission control device and a vapor capture system for the purpose of reducing VOC emissions from flexible vinyl and urethane rotogravure printing lines.

3. "Flexible vinyl and urethane products" means those products, except for resilient floor coverings (1977 Standard Industry Code 3996) and flexible packaging, that are more than 50 micrometers (0.002 inches) thick and that consist of or contain a vinyl or urethane sheet or a vinyl or urethane coated web.

4. "Gravure cylinder" means a plated cylinder with a printing image consisting of minute cells or indentations specifically engraved or etched into the cylinder's surface to hold ink when continuously resolved through a fountain of ink.

5. "Ink" means any mixture of ink, coating solids, organic solvents including dilution solvent and water that is applied to the web of flexible vinyl or urethane on a rotogravure printing line.

6. "Ink solids" means the solids content of an ink as determined by Reference Method 24, ink manufacturer's formulation data, or plant blending records.

7. "Inventory system" means a method of physically accounting for the quantity of ink, solvent and solids used at one or more affected facilities during a time period. The system is based on plant purchase or inventory records.

8. "Plant blending records" means those records which document the weight fraction of organic solvents and solids used in the formulation or preparation of inks at the vinyl or urethane printing plant where they are used.

9. Rotogravure print station" means any device designed to print or coat inks on one side of a continuous web or substrate using the intaglio printing process with a gravure cylinder.

10. "Rotogravure printing line" means any number of rotogravure print stations and associated dryers capable of printing or coating simultaneously on the same continuous vinyl or urethane web or substrate which is fed from a continuous roll.

11. Vapor capture system" means any device or combination of devices designed to contain, collect and route organic solvent vapors emitted from the flexible vinyl or urethane rotogravure printing line.

(b) As used in this section all symbols not defined in this subsection have the meaning designated in s. NR 440.03.

1. "a" means the gas stream vents exiting the emission control device.

2. "b" means the gas stream vents entering the emission control device.

3. "f" means the gas stream vents which are not directed to an emission control device.

4. "$C_{aj}$" means the concentration of VOC in each gas stream (j) for the time period exiting the emission control device, in parts per million by volume.

5. "$C_{bi}$ means the concentration of VOC in each gas stream (i) for the time period entering the emission control device, in parts per million by volume.

6. "$C_{fk}$" means the concentration of VOC in each gas stream (k) for the time period which is not directed to an emission control device, in parts per million by volume.

7. "G" means the weighted average mass of VOC per mass of ink solids applied, in kilograms per kilogram.

8. "$M_{ci}$" means the total mass of each dilution solvent (j) added at the print line in the time period determined from plant records, in kilograms.

10. "$Q_{aj}$" means the volumetric flow rate of each effluent gas stream (j) exiting the emission control device, in standard cubic meters per hour.

11. "$Q_{bi}$" means the volumetric flow rate of each effluent gas stream (i) entering the emission control device, in standard cubic meters per hour.

12. "$Q_{fk}$" means the volumetric flow rate of each effluent gas stream (k) not directed to an emission control device, in standard cubic meters per hour.

13. "E" means the VOC emission reduction efficiency (as a fraction) of the emission control device during performance testing.

14. "F" means the VOC emission capture efficiency (as a fraction) of the vapor capture system during performance testing.

15. "$W_{oi}$" means the weight fraction of VOC in each ink (i) used in the time period as determined by Reference Method 24 of 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17, manufacturer's formulation data, or plant blending records, in kilograms per kilogram.

16. "$W_{xi}$" means the weight fraction of solids in each ink (i) used in the time period as determined from Reference Method 24 of 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17, manufacturer's formulation data, or plant blending records, in kilograms per kilogram.

17. "$W_{oj}$" means the weight fraction of VOC in each dilution solvent (j) added at the print line in the time period determined from Reference Method 24 of 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17, manufacturer's formulation data, or plant blending records, in kilograms per kilogram.

(3) STANDARD FOR VOLATILE ORGANIC COMPOUNDS. (a) On and after the date on which the performance test required by s. NR 440.08 has been completed each owner or operator subject to this section shall either:

1. Use inks with a weighted average VOC content less than 1.0 kilogram VOC per kilogram ink solids at each affected facility, or

2. Reduce VOC emissions to the atmosphere by 85% from each affected facility.

(4) TEST METHODS AND PROCEDURES. (a) Reference Methods in 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17, except as provided under s. NR 440.08(2), shall be used to determine compliance with sub. (3), as follows:

1. Method 24 for analysis of inks. If nonphotochemically reactive solvents are used in the inks standard gas chromatographic techniques may be used to identify and quantify these solvents. The results of Reference method 24 may be adjusted to subtract these solvents from the measured VOC content.

2. Method 24A for VOC concentration (the calibration gas shall be propane);

3. Method 1 for sample and velocity traverses;

4. Method 2 for velocity and volumetric flow rates;

5. Method 3 for gas analysis;

6. Method 4 for stack gas moisture.

(b) To demonstrate compliance with sub. (3)(a)1. the owner or operator of an affected facility shall determine the weighted average VOC content of the ink according to the following procedures:

1. Determine and record the VOC content and amount of each ink used at the print head, including the VOC content and amount of diluent solvent, for any time periods when VOC emission control equipment is not used.

2. Compute the weighted average VOC content by the following equation:

$$G = \frac{\sum_{i=1}^{n} (W_{oi}\ M_{ci}) + \sum_{j=1}^{m} (W_{oj}\ M_{dj})}{\sum_{i=1}^{n} (M_{ci}\ W_{si})}$$

3. The weighted average VOC content of the inks shall be calculated over a period that does not exceed one calendar month or four consecutive weeks. A facility that uses an accounting system based on quarters consisting of two 28 calendar day periods and one 35 calendar day period may use an averaging period of 35 calendar days four times per year, provided the use of such an accounting system is documented in the initial performance test.

4. Each determination of the weighted average VOC content shall constitute a performance test for any period when VOC emission control equipment is not used. Results of the initial performance test must be reported to the department. Reference Method 24 or ink manufacturers' formulation data along with plant blending records (if plant blending is done) may be used to determine VOC content. The department may require the use of Reference Method 24 if there is a question concerning the accuracy of the ink manufacturer's data or plant blending records.

5. If, during the time periods when emission control equipment is not used, all inks used contain less than 1.0 kilogram VOC per kilogram ink solids the owner or operator is not required to calculate the weighted average VOC content but must verify and record the VOC content of each ink (including any added dilution solvent) used as determined by Reference Method 24, ink manufacturers' formulation data or plant blending records.

(c) To demonstrate compliance with sub. (3)(a)1. the owner or operator may determine the weighted average VOC content using an inventory system.

1. The inventory system shall accurately account to the nearest kilogram for the VOC content of all inks and dilution solvent used, recycled and discarded for each affected facility during the averaging period. Separate records must be kept for each affected facility.

2. To determine VOC content of inks and dilution solvent used or recycled Reference Method 24 or ink manufacturers' formulation data must be used in combination with plant blending records (if plant blending is done) or inventory records or purchase records for new inks or dilution solvent.

3. For inks to be discarded only Reference Method 24 shall be used to determine the VOC content. Inks to be discarded may be combined prior to measurement of volume or weight and tested by Reference method 24.

4. The department may require the use of Reference Method 24 if there is a question concerning the accuracy of the ink manufacturer's data or plant records.

5. The department shall approve the inventory system of accounting for VOC content prior to the initial performance test.

(d) To demonstrate compliance with sub. (3)(a)2. the owner or operator of an affected facility controlled by a solvent recovery emission control device or an incineration control device shall conduct a performance test to determine overall VOC emission control efficiency according to the following procedures:

1. The performance test shall consist of three runs. Each test run must last a minimum of 30 minutes and shall continue until the printing operation is interrupted or until 180 minutes of continuous operation occurs. During each test run the print line shall be printing continuously and operating normally. The VOC emission reduction efficiency achieved from each test run is averaged over the entire test run period.

2. VOC concentration values at each site shall be measured simultaneously.

3. The volumetric flow rate shall be determined from one Method 2 measurement for each test run conducted immediately prior to, during, or after that test run. Volumetric flow rates at each site do not need to be measured simultaneously.

4. In order to determine capture efficiency from an affected facility all fugitive VOC emissions from the affected facility shall be captured and vented through stacks suitable for measurement. During a performance test the owner or operator of an affected facility located in an area with other sources of VOC shall isolate the affected facility from other sources of VOC. These two requirements shall be accomplished using one of the following methods:

a. Build a permanent enclosure around the affected facility;

b. Build a temporary enclosure around the affected facility and duplicate, to an extent that is reasonably feasible, the ventilation conditions that are in effect when the affected facility is not enclosed (one way to do this is to divide the room exhaust rate by the volume of the room and then duplicate that quotient or 20 air changes per hour, whichever is smaller, in the temporary enclosure); or

c. Shut down all other sources of VOC and continue to exhaust fugitive emissions from the affected facility through any building ventilation system and other room exhausts such as print line ovens and embossers.

5. For each affected facility compliance with sub. (3)(a)2. has been demonstrated if the average value of the overall control efficiency (EF) for the three runs is equal to or greater than 85 percent. An overall control efficiency is calculated for each run as follows:

a. For efficiency of the emission control device.

$$E = \frac{\sum_{i=1}^{n} (Q_{bi}\ C_{bi}) - \sum_{j=1}^{m} (Q_{aj}\ C_{aj})}{\sum_{i=1}^{n} (Q_{bi}\ C_{bi})}$$

b. For efficiency of the vapor capture system.

$$F = \frac{\sum_{i=1}^{n} (Q_{bi}\ C_{bi})}{\sum_{i=1}^{n} (Q_{bi}\ C_{bi}) + \sum_{k=1}^{p} (Q_{fk}\ C_{fk})}$$

(5) MONITORING OF OPERATIONS AND RECORDKEEPING REQUIREMENTS. (a) The owner or operator of an affected facility controlled by a solvent recovery emission control device shall install, calibrate, operate and maintain a monitoring system which continuously measures and records the VOC concentration of the exhaust vent stream from the control device and shall comply with the following requirements:

1. The continuous monitoring system shall be installed in a location that is representative of the VOC concentration in the exhaust vent at least two equivalent stack diameters from the exhaust point and protected from interferences due to wind, weather, or other processes.

2. During the performance test the owner or operator shall determine and record the average exhaust vent VOC concentration in parts per million by volume. After the performance test the owner or operator shall determine and, in addition to the record made by the continuous monitoring device, record the average exhaust vent VOC concentration for each 3-hour clock period of printing operation when the average concentration is greater than 50 ppm and more than 20 percent greater than the average concentration value demonstrated during the most recent performance test.

(b) The owner or operator of an affected facility controlled by a thermal incineration emission control device shall install, calibrate, operate and maintain a monitoring device that continuously measures and records the temperature of the control device exhaust gases and shall comply with the following requirements:

1. The continuous monitoring device shall be calibrated annually and have an accuracy of ±0.75 percent of the temperature being measured or ±2.5°C, whichever is greater.

2. During the performance test the owner or operator shall determine and record the average temperature of the control device exhaust gases. After the performance test the owner or operator shall determine and record, in addition to the record made by the continuous monitoring device, the average temperature for each 3-hour clock period of printing operation when the average temperature of the exhaust gases is more than 28°C below the average temperature demonstrated during the most recent performance test.

(c) The owner or operator of an affected facility controlled by a catalytic incineration emission control device shall install, calibrate, operate and maintain monitoring devices that continuously measure and record the gas temperatures both upstream and downstream of the catalyst bed and shall comply with the following requirements:

1. Each continuous monitoring device shall be calibrated annually and have an accuracy of ±0.75 percent of the temperature being measured or ±2.5°C, whichever is greater.

2. During the performance test the owner or operator shall determine and record the average gas temperature both upstream and downstream of the catalyst bed. After the performance test the owner or operator shall determine and record, in addition to the record made by the continuous monitoring device, the average temperatures for each 3-hour clock period of printing operation when the average temperature of the gas stream before the catalyst bed is more than 28°C below the average temperature demonstrated during the most recent performance test or 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 performance test.

(d) The owner or operator of an affected facility shall record time periods of operation when an emission control device is not in use.

(6) REPORTING REQUIREMENTS. (a) For all affected facilities subject to compliance with sub. (3) the performance test data and results from the performance test shall be submitted to the department as specified in s. NR 440.08(1).

(b) The owner or operator of each affected facility shall submit semi-annual reports to the department of occurrences of the following:

1. Exceedances of the weighted average VOC content specified in sub. (3)(a)1.;

2. Exceedances of the average value of the exhaust vent VOC concentration as defined under sub. (5)(a)2.;

3. Drops in the incinerator temperature as defined under sub. (5)(b)2.; and

4. Drops in the average temperature of the gas stream immediately before the catalyst bed or drops in the average temperature across the catalyst bed as defined under sub. (5)(c)2.

(c) The reports required under par. (b) shall be postmarked within 30 days following the end of the second and fourth calendar quarters.

(d) The requirements of this subsection remain in force until and unless the department approves reporting requirements or an alternative means of compliance surveillance. In that event affected sources will be relieved of the obligation to comply with this subsection, provided they comply with the requirements established by the department.

SECTION 55. NR 440.66 is created to read:

NR 440.66 EQUIPMENT LEAKS OF VOC IN PETROLEUM REFINERIES. (1) APPLICABILITY AND DESIGNATION OF AFFECTED FACILITY. (a)1. The provisions of this section apply to affected facilities in petroleum refineries.

2. A compressor is an affected facility.

3. The group of all the equipment (defined in sub. (2)) within a process unit is an affected facility.

(b) Any affected facility under par. (a) that commences construction or modification after January 4, 1983, is subject to the requirements of this section.

(c) Addition or replacement of equipment (defined in sub. (2)) for the purpose of process improvement which is accomplished without a capital expenditure shall not by itself be considered a modification under this section.

(d) Facilities subject to s. NR 440.62 or 440.68 are excluded from this section.

(2) DEFINITIONS. As used in this section all terms not defined in this subsection have the meaning designated in s. NR 440.02 or 440.62.

(a) "Alaskan North Slope" means the approximately 69,000 square mile area extending from the Brooks Range to the Arctic Ocean.

(b) "Equipment" means each valve, pump, pressure relief device, sampling connection system, open-ended valve or line and flange or other connector in VOC service. Compressors are considered equipment only for the purposes of recordkeeping and reporting.

(c) "In Hydrogen Service" means that a compressor contains a process fluid that meets the conditions specified in sub. (4)(b).

(d) "In Light Liquid Service" means that the piece of equipment contains a liquid that meets the conditions specified in sub. (4)(c).

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

(f) "Petroleum" means the crude oil removed from the earth and the oils derived from tar sands, shale and coal.

(g) "Process Unit" means components assembled to produce intermediate or final products from petroleum, unfinished petroleum derivatives, or other intermediates; a process unit can operate independently if supplied with sufficient feed or raw materials and sufficient storage facilities for the product.

(3) STANDARDS. (a) Each owner or operator subject to the provisions of this section shall comply with the requirements of s. NR 440.62(3)(a) to (j) as soon as practicable, but no later than 180 days after initial startup.

(b) An owner or operator may elect to comply with the requirements of s. NR 440.62(4)(a) and (b).

(c) An owner or operator may apply to the department for a determination of equivalency for any means of emission limitation that achieves a reduction in emissions of VOC at least equivalent to the reduction in emissions of VOC achieved by the controls required in this section. In doing so the owner or operator shall comply with requirements of s. NR 440.62(5).

(d) Each owner or operator subject to the provisions of this section shall comply with the provisions of s. NR 440.62(6) except as provided in sub. (4).

(e) Each owner or operator subject to the provisions of this section shall comply with the provisions of s. of NR 440.62(7) and (8).

(4) EXCEPTIONS. (a) Each owner or operator subject to the provisions of this section may comply with the following exceptions to the provisions of s. NR 440.62.

(b)1. Compressors in hydrogen service are exempt from the requirements of sub. (3) if an owner or operator demonstrates that a compressor is in hydrogen service.

2. Each compressor is presumed not to be in hydrogen service unless an owner or operator demonstrates that the piece of equipment is in hydrogen service. For a piece of equipment to be considered in hydrogen service it must be determined that the percent hydrogen content can be reasonably expected always to exceed 50% by volume. For purposes of determining the percent hydrogen content in the process fluid that is contained in or contacts a compressor procedures that conform to the general method described in ASTM E-260, E-168, or E-169, incorporated by reference in s. NR 440.17, shall be used.

3.a. An owner or operator may use engineering judgment rather than procedures in subd. 2. to demonstrate that the percent content exceeds 50% by volume, provided the engineering judgment demonstrates that the content clearly exceeds 50% by volume. When an owner or operator and the department do not agree on whether a piece of equipment is in hydrogen service however, the procedures in subd. 2. shall be used to resolve the disagreement.

b. If an owner or operator determines that a piece of equipment is in hydrogen service the determination can be revised only after following the procedures in subd. 2.

(c) Any existing reciprocating compressor that becomes an affected facility under provisions of s. NR 440.14 or 440.15 is exempt from s. NR 440.62(3)(c)1., 2., 3., 4., 5. and 8., provided the owner or operator demonstrates that recasting the distance piece or replacing the compressor are the only options available to bring the compressor into compliance with the provisions of s. NR 440.62(3)(c)1., 2., 3., 4., 5. and 8.

(d) An owner or operator may use the following provision in addition to s. NR 440.62(6)(e).: Equipment is in light liquid service if the percent evaporated is greater than 10% at 150°C as determined by ASTM Method D-86 incorporated by reference in s. NR 440.17.

SECTION 56. NR 440.67 is created to read:

NR 440.67 SYNTHETIC FIBER PRODUCTION FACILITIES. (1) APPLICABILITY AND DESIGNATION OF AFFECTED FACILITY. (a) Except as provided in par. (b) the affected facility to which the provisions of this section apply is each solvent-spun synthetic fiber process that produces more than 500 megagrams of fiber per year.

(b) The provisions of this section do not apply to any facility that uses the reaction spinning process to produce spandex fiber or the viscose process to produce rayon fiber.

(c) The provisions of this section apply to each facility as identified in par. (a) that commences construction or reconstruction after November 23, 1982. The provisions of this section do not apply to facilities that commence modification but not reconstruction after November 23, 1982.

(2) DEFINITIONS. (a) As used in this section all terms not defined in this subsection have the meaning designated in s. NR 440.02.

1. "Acrylic fiber" means a manufactured synthetic fiber in which the fiber-forming substance is any long-chain synthetic polymer composed of at least 85% by weight of acrylonitrile units.

2. "Makeup solvent" means the solvent introduced into the affected facility that compensates for solvent lost from the affected facility during the manufacturing process.

3. "Nongaseous losses" means the solvent that is not volatilized during fiber production and escapes the process and is unavailable for recovery or is in a form or concentration unsuitable for economical recovery.

4. "Polymer" means any of the natural or synthetic compounds of usually high molecular weight that consist of many repeated links each link being a relatively light and simple molecule.

5. "Precipitation bath" means the water, solvent, or other chemical bath into which the polymer or prepolymer (partially reacted material) solution is extruded and causes physical or chemical changes to occur in the extruded solution to result in a semihardened polymeric fiber.

6. "Rayon fiber" means a manufactured fiber composed of regenerated cellulose as well as manufactured fibers composed of regenerated cellulose in which substituents have replaced not more than 5 percent of the hydrogens of the hydroxyl groups.

7. "Reaction spinning process" means the fiber-forming process where a prepolymer is extruded into a fluid medium and solidification takes place by chemical reaction to form the final polymeric material.

8. "Recovered solvent" means the solvent captured from liquid and gaseous process streams that is concentrated in a control device and that may be purified for reuse.

9. "Solvent feed" means the solvent introduced into the spinning solution preparation system or precipitation bath. This feed stream includes the combination of recovered solvent and makeup solvent.

10. "Solvent inventory variation" means the normal changes in the total amount of solvent contained in the affected facility.

11. "Solvent recovery system" means the equipment associated with capture, transportation, collection, concentration and purification of organic solvents. It may include enclosures, hoods, ducting, piping, scrubbers, condensers, carbon adsorbers, distillation equipment and associated storage vessels.

12. "Solvent-spun synthetic fiber" means any synthetic fiber produced by a process that uses an organic solvent in the spinning solution, the precipitation bath, or processing of the spun fiber.

13. "Solvent-spun synthetic fiber process" means the total of all equipment having a common spinning solution preparation system or a common solvent recovery system and is used in the manufacture of solvent-spun synthetic fiber. It includes spinning solution preparation, spinning, fiber processing and solvent recovery but does not include the polymer production equipment.

14. "Spandex fiber" means a manufactured fiber in which the fiber-forming substance is a long chain synthetic polymer comprised of at least 85% of a segmented polyurethane.

15. "Spinning solution" means the mixture of polymer, prepolymer, or copolymer and additives dissolved in solvent. The solution is prepared at a viscosity and solvent-to-polymer ratio that is suitable for extrusion into fibers.

16. "Spinning solution preparation system" means the equipment used to prepare spinning solutions; the system includes equipment for mixing, filtering, blending and storage of the spinning solutions.

17. "Synthetic fiber" means any fiber composed partially or entirely of materials made by chemical synthesis or made partially or entirely from chemically-modified naturally-occurring materials.

18. "Viscose process" means the fiber forming process where cellulose and concentrated caustic soda are reacted to form soda or alkali cellulose. This reacts with carbon disulfide to form sodium cellulose xanthate which is then dissolved in a solution of caustic soda. The solution is spun into an acid coagulating bath after ripening. This precipitates the cellulose in the form of a regenerated cellulose filament.

(3) STANDARD FOR VOLATILE ORGANIC COMPOUNDS. (a) On and after the date on which the initial performance test required to be conducted by s. NR 440.08 is completed no owner or operator subject to the provisions of this section shall cause the discharge into the atmosphere from any affected facility that produces acrylic fibers VOC emissions that exceed 10 kilograms (Kg) VOC per megagram (Mg) solvent feed to the spinning solution preparation system or precipitation bath. VOC emissions from affected facilities that produce both acrylic and nonacrylic fiber types shall not exceed 10 Kg VOC per Mg solvent feed. VOC emissions from affected facilities that produce only nonacrylic fiber types shall not exceed 17 Kg VOC per Mg solvent feed. Compliance with the emission limitations is determined on a 6-month rolling average basis as described in sub. (4).

(4) PERFORMANCE TEST AND COMPLIANCE PROVISIONS. (a) Section NR 440.08(6) does not apply to the performance test procedures required by this section.

(b) Each owner or operator of an affected facility shall determine compliance with the applicable standard in sub. (3)(a) by determining and recording monthly the VOC emissions per Mg solvent feed from each affected facility for the current and preceding 5 consecutive calendar months and using these values to calculate the 6-month average emissions. Each calculation is considered a performance test. The owner or operator of an affected facility shall use the following procedure to determine VOC emissions for each calendar month;

1. Install, calibrate, maintain and operate monitoring devices that continuously measure and permanently record for each calendar month the amount of makeup solvent and solvent feed. These values shall be used in calculating VOC emissions according to subd. 2. All monitoring devices, meters and peripheral equipment shall be calibrated and any error recorded. Total compounded error of the flow measuring and recording devices may not exceed 1% accuracy over the operating range. As an alternative to measuring solvent feed the owner or operator may:

a. Measure the amount of recovered solvent returned to the solvent feed storage tanks and use the following equation to determine the amount of solvent feed:

Solvent Feed = Makeup Solvent + Recovered Solvent + Change in the Amount of Solvent Contained in the Solvent Feed Holding Tank.

b. Measure and record the amount of polymer introduced into the affected facility and the solvent-to-polymer ratio of the spinning solutions and use the following equation to determine the amount of solvent feed:

$$\text{Solvent Feed} = \sum_{i=1}^{n} (\text{Polymer Used})_i \times (\text{Solvent-to-Polymer Ratio})_i$$

where subscript "i" denotes each particular spinning solution used during the test period; values of "i" vary from one to the total number of spinning solutions, "n," used during the calendar month.

2. VOC emissions shall be determined each calendar month by use of the following equations:

$$E = \frac{M}{S_w} - N - I \quad \text{and} \quad M_w = M_v S_p D$$

$$S_w = \frac{S_v S_p D}{1000} \qquad I = \frac{I_e \; I_s}{S_w}$$

where all values are for the calendar month only and where:

E = Emissions in Kg per Mg solvent feed;

$S_V$ = Measured or calculated volume of solvent feed in liters;

$S_W$ = Weight of solvent feed in Mg;

$M_V$ = Measured volume of makeup solvent in liters;

$M_W$ = Weight of makeup in Kg;

N = Allowance for nongaseous losses per Mg solvent feed; 13 Kg per Mg solvent feed to the spinning solution preparation system and precipitation bath. This value shall be used in all cases unless an owner or operator demonstrates to the satisfacton of the department that greater nongaseous losses occur at the affected facility. In this case, the greater value may be substituted in the equation.

$S_P$ = Fraction of measured volume that is actual solvent (excludes water);

D = Density of the solvent in Kg/ liter;

I = Allowance for solvent inventory variation or changes in the amount of solvent contained in the affected facility per Mg solvent feed (may be positive or negative);

$I_S$ = Amount in Kg of solvent contained in the affected facility at the beginning of test period, as determined by owner or operator;

$I_E$ = Amount in Kg of solvent contained in the affected facility at the close of test period, as determined by owner or operator.

(5) REPORTING REQUIREMENTS. (a) The owner or operator of an affected facility shall submit a written report to the department of the following:

1. The results of the initial performance test; and

2. The results of subsequent performance tests that indicate that VOC emissions exceed the standards in sub. (3). These reports shall be submitted semiannually at six month intervals, after the initial performance test.

(b) Solvent-spun synthetic fiber producing facilities exempted from these standards in sub. (1)(a) (those producing less than 500 megagrams annually) shall report to the department within 30 days whenever extruded fiber for the preceding 12 calendar months exceeds 500 megagrams.

(c) The requirements of this section remain in force until and unless the department approves reporting requirements or an alternative means of compliance surveillance. In that event affected sources will be relieved of the obligation to comply with this section.

SECTION 57. NR 440.68 is created to read:

NR 440.68 PETROLEUM DRY CLEANERS. (1) APPLICABILITY AND DESIGNATION OF AFFECTED FACILITY. (a) The provisions of this section are applicable to the following affected facilities located at a petroleum dry cleaning plant with a total manufacturer's rated dryer capacity equal to or greater than 38 kilograms (84 pounds): Petroleum solvent dry cleaning dryers, washers, filters, stills and settling tanks.

1. When the affected facility is installed in an existing plant that is not expanding the manufacturer's rated capacity of its petroleum solvent dryer(s) the total manufacturer's rated dryer capacity is the summation of the manufacturer's rated capacity for each existing petroleum solvent dryer.

2. When the affected facility is installed in a plant that is expanding the manufacturer's rated capacity of its petroleum solvent dryers the total manufacturer's rated dryer capacity is the summation of the manufacturer's rated dryer capacity for each existing and proposed new petroleum solvent dryer.

3. When the affected facility is installed in a new plant the total manufacturer's rated dryer capacity is the summation of the manufacturer's rated dryer capacity for each proposed new petroleum solvent dryer.

4. The petroleum solvent dryers considered in the determination of the total manufacturer's rated dryer capacity are those new and existing dryers in the plant that will be in service at any time after the proposed new source or modification commences operation.

(b) Any facility under par. (a) that commences construction or modification after December 14, 1982, is subject to the requirements of this section.

(2) DEFINITIONS. As used in this section all terms not defined in this subsection have the meaning designated in s. NR 440.02.

(a) "Cartridge filter" means a discrete filter unit containing both filter paper and activated carbon that traps and removes contaminants from petroleum solvent together with the piping and ductwork used in the installation of this device.

(b) "Dryer" means a machine used to remove petroleum solvent from articles of clothing or other textile or leather goods, after washing and removing of excess petroleum solvent, together with the piping and ductwork used in the installation of this device.

(c) "Manufacturers' rated dryer capacity" means the dryer's rated capacity of articles, in pounds or kilograms of clothing articles per load, dry basis, that is typically found on each dryer on the manufacturer's name-plate or in the manufacturer's equipment specifications.

(d) "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 or solvent, or solvent laden waste standing open to the atmosphere.

(e) "Petroleum dry cleaner" means a dry cleaning facility that uses petroleum solvent in a combination of washers, dryers, filters, stills and settling tanks.

(f) "Settling tank" means a container that gravimetrically separates oils, grease and dirt from petroleum solvent together with the piping and ductwork used in the installation of this device.

(g) "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.

(h) "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.

(i) "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) "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.

(3) STANDARDS FOR VOLATILE ORGANIC COMPOUNDS. (a) Each affected petroleum solvent dry cleaning dryer that is installed at a petroleum dry cleaning plant shall be a solvent recovery dryer. The solvent recovery dryers shall be properly installed, operated and maintained.

(b) Each affected petroleum solvent filter that is installed at a petroleum dry cleaning plant shall be a cartridge filter. Cartridge filters shall be drained in their sealed housings for at least 8 hours prior to their removal.

(c) Each manufacturer of an affected petroleum solvent dryer shall include leak inspection and leak repair cycle information in the operating manual and on a clearly visible label posted on each affected facility. Such information should state:

To protect against fire hazards, loss of valuable solvents and emissions of solvent to the atmosphere, periodic inspection of this equipment for evidence of leaks and prompt repair of any leaks is recommended. The Wisconsin Department of Natural Resources recommends that the equipment be inspected every 15 days and all vapor or liquid leaks be repaired within the subsequent 15 day period.

(4) EQUIVALENT EQUIPMENT AND PROCEDURES. (a) Upon written application from any person the department may approve the use of equipment or procedures that have been demonstrated to its satisfaction to be equivalent, in terms of reducing VOC emissions to the atmosphere, to those prescribed for compliance within a specified subsection of this section. The application must contain a complete description of the equipment or procedure; the testing method; the date, time and location of the test; and a description of the test results. Written applications shall be submitted to Department of Natural Resources, Bureau of Air Management, 101 South Webster Street, P.O. Box 7921, Madison, WI 53707.

(b) The department will make a preliminary determination of whether or not the application for equivalency is approvable and will publish a notice of these findings. The department will publish the final determination after notice and opportunity for public hearing.

(5) TEST METHODS AND PROCEDURES. Each owner or operator of an affected facility subject to the provisions of sub. (3)(a) shall perform an initial test to verify that the flow rate of recovered solvent from the solvent recovery dryer at the termination of the recovery cycle is no greater than 0.05 liters per minute. This test shall be conducted for a duration of no less than 2 weeks during which no less than 50% of the dryer loads shall be monitored for their final recovered solvent flow rate. The suggested point for measuring the flow rate of recovered solvent is from the outlet of the solvent-water separator. Near the end of the recovery cycle the entire flow of recovered solvent should be diverted to a graduated cylinder. As the recovered solvent collects in the graduated cylinder the elapsed time is monitored and recorded in periods of greater than or equal to 1 minute. At the same time the volume of solvent in the graduated cylinder is monitored and recorded to determine the volume of recovered solvent that is collected during each time period. The recovered solvent flow rate is calculated by dividing the volume of solvent collected per period by the length of time elapsed during the period and converting the result with appropriate factors into units of liters per minute. The recovery cycle and the monitoring procedure should continue until the flow rate of solvent is less than or equal to 0.05 liter per minute. The type of articles cleaned and the total length of the cycle should then be recorded.

(6) RECORDKEEPING REQUIREMENTS. Each owner or operator of an affected facility subject to the provisions of this section shall maintain a record of the performance test required under sub. (5).

SECTION 58. NR 440.69 is created to read:

NR 440.69 WOOL FIBERGLASS INSULATION MANUFACTURING PLANTS. (1) APPLICABILITY AND DESIGNATION OF AFFECTED FACILITY. (a) The affected facility to which the provisions of this section apply is each rotary spin wool fiberglass insulation manufacturing line.

(b) The owner or operator of any facility under par. (a) that commences construction, modification, or reconstruction after February 7, 1984, is subject to the requirements of this section.

(2) DEFINITIONS. As used in this section all terms not defined in this subsection have the meaning designated in s. NR 440.02.

(a) "Glass pull rate" means the mass of molten glass utilized in the manufacture of wool fiberglass insulation at a single manufacturing line in a specified time period.

(b) "Manufacturing line" means the manufacturing equipment comprising the forming section, where molten glass is fiberized and a fiberglass mat is formed; the curing section, where the binder resin in the mat is thermally "set"; and the cooling section, where the mat is cooled.

(c) "Rotary spin" means a process used to produce wool fiberglass insulation by forcing molten glass through numerous small orifices in the side wall of a spinner to form continuous glass fibers that are then broken into discrete lengths by high velocity air flow.

(d) "Wool fiberglass insulation" means a thermal insulation material composed of glass fibers and made from glass produced or melted at the same facility where the manufacturing line is located.

(3) STANDARD FOR PARTICULATE MATTER. On and after the date on which the performance test required to be conducted by s. NR 440.08 is completed no owner or operator subject to the provisions of this section may cause to be discharged into the atmosphere from any affected facility any gases which contain particulate matter in excess of 5.5 Kg per Mg (11.0 lb/ton) of glass pulled.

(4) MONITORING OPERATIONS. (a) An owner or operator subject to the provisions of this section who uses a wet scrubbing control device to comply with the mass emission standard shall install, calibrate, maintain and operate monitoring devices that measure the gas pressure drop across each scrubber and the scrubbing

liquid flow rate to each scrubber. The pressure drop monitor is to be certified by its manufacturer to be accurate within plus or minus 250 pascals (± 1 inch water gauge) over its operating range and the flow rate monitor is to be certified by its manufacturer to be accurate within plus or minus 5% over its operating range.

(b) An owner or operator subject to the provisions of this section who uses a wet electrostatic precipitator control device to comply with the mass emission standard shall install, calibrate, maintain and operate monitoring devices that measure the primary and secondary current (amperes) and voltage in each electrical field and the inlet water flow rate. In addition the owner or operator shall determine the total residue (total solids) content of the water entering the control device once per day using Method 209A, "Total Residue Dried at 103-105°C," in Standard Methods for the Examination of Water and Wastewater, 15th Edition, 1980, of 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17. Total residue shall be reported as percent by weight. All monitoring devices required under this paragraph are to be certified by their manufacturers to be accurate within plus or minus 5% over their operating range.

(c) All monitoring devices required under this subsection are to be recalibrated quarterly in accordance with procedures under s. NR 440.13(2).

(5) RECORDKEEPING AND REPORTING REQUIREMENTS. (a) At 30-minute intervals during each 2-hour test run of each performance test of a wet scrubber control device, and at least once every 4 hours thereafter, the owner or operator shall record the measurements required by sub. (4)(a).

(b) At 30-minute intervals during each 2-hour test run of each performance test of a wet electrostatic precipitator control device, and at least once every 4 hours thereafter, the owner or operator shall record the measurements required by sub. (4)(b), except that the concentration of total residue in the water shall be recorded once during each performance test and once per day thereafter.

(c) Records of the measurements required in pars. (a) and (b) must be retained for at least 2 years.

(d) Each owner or operator shall submit written semi-annual reports of exceedances of control device operating parameters required to be monitored by pars. (a) and (b) and written documentation of, and a report of corrective maintenance required as a result of, quarterly calibrations of the monitoring devices required in sub. (4)(c). For the purpose of these reports exceedances are defined as any monitoring data that are less than 70 percent of the lowest values or greater than 130% of the highest value of each operating parameter recorded during the most recent performance test.

(e) The requirements of this section remain in force until and unless the department approves reporting requirements or an alternative means of compliance surveillance. In that event affected facilities will be relieved of the obligation to comply with this section, provided that they comply with the requirements established by the department.

(6) TEST METHODS AND PROCEDURES. (a) Reference methods in 40 C.F.R. pt. 60, Appendix A, incorporated by reference in s. NR 440.17, except as provided under s. NR 440.08(2), shall be used to determine compliance with sub. (3) as follows:

1. Method 1 for sample and velocity traverses:
2. Method 2 for stack gas velocity and volumetric flow rate;
3. Method 3 for stack gas dry molecular weight;
4. Method 4 for stack gas moisture content; and
5. Method 5E for the measurement of particulate emissions.

(b) The sampling time for each test run shall be at least 2 hours and the minimum volume of gas sampled shall be 2.55 dscm.

(c) The performance test shall be conducted while the product with the highest loss on ignition (LOI) expected to be produced by the affected facility is being manufactured.

(d) For each test run the particulate mass emission rate, R, shall be computed as follows:

$$R = C_t \times Q_{std} \times \frac{6 \times 10^{-5} \text{ min.-kg}}{\text{h-mg}}$$

where:

R = mass emission rate (kg/h).

$C_t$ = particulate concentration as determined by Reference Method 5E (mg/dscm) in 40 CFR, pt. 60, Appendix A, incorporated by reference in s. NR 440.17.

$Q_{std}$ = stack gas volumetric flow rate as determined by Method 2 (dscm/min.) in 40 CFR, pt. 60, Appendix A, incorporated by reference in s. NR 440.17.

(e) The glass pull rate, P, for the manufacturing line shall be computed as follows:

$$P = L_g \times W_m \times M \times \frac{100\text{-}LOI}{100} \times \frac{6 \times 10^{-5}\ \text{min-Mg}}{\text{h-g}}$$

where:

P = glass pull rate (Mg/h).

$L_g$ = line speed (m/min.)

$W_m$ = trimmed mat width (m).

M = mat gram weight ($g/m^2$).

LOI = loss on ignition (weight percent), as determined by ASTM Standard Test Method D2584-68 (Reapproved 1979), "Ignition Loss of Cured Reinforced Resins" (incorporated by reference in s. NR 440.17).

For each 2-hour test run the average glass pull rate shall be computed from at least three glass pull rates determined at intervals of at least 30 minutes during the test run.

(f) For each test run the particulate mass emission level, E, shall be computed as follows:

$$E = \frac{R}{P_{avg}}$$

where:

E = mass emission level (kg/Mg).

R = mass emission rate (kg/h).

$P_{avg}$ = average glass pull rate (Mg/h).

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The foregoing rules were approved and adopted by the State of Wisconsin Natural Resources Board on March 27, 1986.

The rules contained herein shall take effect as provided in s. 227.026(1)(intro.), Stats.

DATED AT MADISON, WISCONSIN May 30 1986.

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

Carroll D. Besadny
Carroll D. Besadny, Secretary

(SEAL)