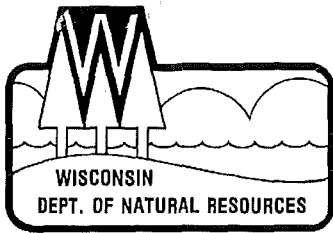


CR 95-35



George E. Meyer
Secretary

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

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STATE OF WISCONSIN)
)
DEPARTMENT OF NATURAL RESOURCES) SS

TO ALL TO WHOM THESE PRESENTS SHALL COME, GREETINGS:

I, George E. Meyer, 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. AM-8-95 was duly approved and adopted by this Department on June 29, 1995. 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 the Natural Resources Building in the City of Madison, this 1st day of September, 1995.



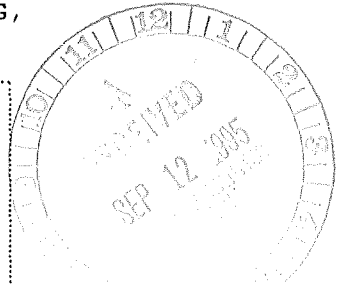
(SEAL)

George E. Meyer
George E. Meyer, Secretary



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

The Wisconsin Natural Resources Board proposes and order to **repeal** NR 440.02(1), (2), (15) and (31), 440.17(1)(title) and (a), 440.205(2)(1), 440.207(2)(k) and 440.32(5)(d)3. to 5.; to **renumber and amend** NR 440.02(21) and 440.17(1)(b) and (2)(h)1.; to **amend** NR 440.02(intro.), 440.03, 440.04 (title) and (5), 440.07 (title) and (4)(b) Figure 1, 440.14(1), (2)(a) and (5)(d), 440.17(2)(a)6., 20. and 38., (b)(intro.), (d), (e)1. and (h)(intro.), 440.18(6)(c), 440.19(6)(f)5.(intro.) and a. and (7)(b)2.(intro.), 440.20(2)(n) and (y), (5)(a)1., (7)(h)2. and (8)(b)2., 440.205(2)(zj), (3)(d)(intro.), (4)(b) and (f), (5)(g), (6)(d)2., (7)(g) and (h)1. and (10)(b), 440.207(3)(intro.), (b)1.(intro.) and 2.(intro.), (c)(intro.), (d) and (e)(intro.) and 2., (4)(a)(intro.) and 1., (b)(intro.) and (c) and (5)(j), 440.26(3)(a)(intro.), (4)(a) and (5)(a)(intro.), 440.285(2)(f)1. and (7)(e)2.a., 440.31(4)(b)1. and 4., 440.315(5)(c)1. and 2., 440.32(5)(d)2., 440.34(6)(a)2.b., 440.35(6)(a)2.b., 440.50(3)(a)3. and Note, (j) and (5)(c)3., 440.53(2)(a)10., (4)(c)1.a.3.(intro.) and (6)(c)(intro.), 440.59(5)(f) Note, 440.62(3)(a)3., (4)(b)2.f. Note and (10), 440.642(4)(o)3.a. and (5)(c), 440.647(4)(c), 440.66(3)(c), 440.675(4)(a)1.(intro.) and (d)1.a. and 3.a. and (5)(e)1.a., 440.684(5)(c)3., 440.686(5)(e)1.a. and b. and (8), 440.70(1)(b) and (15)(j)1., 440.71(4)(b)1.(intro.), 2.d. and e., 3.d. and e., 5.a.3)b) and 9.c., 440.74(4)(a)1.d. and e., 2.d. and e., 3.e.(intro.) and (b)1.d.2) and (8)(h); to **repeal and recreate** NR 440.02(10); and to **create** NR 440.02(6m), (13m), (18m), (25m) and (26m), 440.14(8) to (12), 440.17(2)(h)1. and 3. and (i)2., 440.215, 440.24(5)(e), 440.31(4)(b)5., 440.705 and 440.73 relating to incorporation of revisions and additions to the federal New Source Performance Standards.



AM-8-95

Analysis Prepared by the Department of Natural Resources

Authorizing statutes: ss. 144.31(1)(a), 144.375(4)(a), 144.38 and 227.11(2)(a), Stats.

Statutes interpreted: ss. 144.31(1)(f), 144.375(4)(a) and 144.38, Stats.

Under section 111 of the federal Clean Air Act, the Administrator of the United States Environmental Protection Agency (U.S. EPA) is required to adopt regulations establishing federal new sources performance standards (NSPS). These standards are adopted for categories of stationary air pollution sources which cause or contribute significantly to air pollution which may reasonably be anticipated to endanger public health or welfare.

As of July 1, 1994, NSPS have been adopted for 70 source categories as 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 state procedures to be adequate, it may delegate to the state the authority to implement and enforce the standards. Wisconsin has received this delegation of authority.

Section 144.375(4)(a), Stats., 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 limitations than the federal standard. The Department's last NSPS update, which took effect on August 1, 1993, adopted the federal NSPS which had been promulgated by U.S. EPA through July 1, 1991. The rules contained in this order adopt the changes to the federal NSPS occurring between July 1, 1991 and July 1, 1994, with one exception: the federal NSPS for Municipal Waste Combustors which was promulgated by U.S. EPA on February 11, 1991 and was not included in the previous rule package. This federal NSPS is included in this rule package. The rules contained in this order includes modifications to existing standards and the adoption of standards for new categories of sources. This order also includes minor changes in language to correct errors, improve clarity, and improve consistency within ch. NR 440 and with the other chapters of the NR 400 series. In accordance with section 227.14(lm)(a), Stats., the format for these rules is based on the format used in 40 CFR Part 60, the federal NSPS.

The rules contained in this order are proposed to comply with section 144.375(4)(a), Stats., and to enable U.S. EPA to continue delegation to the state of its authority to implement and enforce the present NSPS.

Approval for incorporation by reference in s. NR 440.17 of the cited technical standards will be sought from the Attorney General and the Revisor of Statutes.

SECTION 1. NR 440.02(intro.) is amended to read:

NR 440.02 DEFINITIONS. (intro.) ~~In addition to the definitions in this section, the~~ The definitions contained in ch. NR 400 s. NR 400.02 apply to the terms used in this chapter. In addition, the following definitions apply to the terms used in this chapter:

SECTION 2. NR 440.02(1) and (2) are repealed.

SECTION 3. NR 440.02(6m) is created to read:

NR 440.02(6m) "Clean coal technology demonstration project" means a project using funds appropriated under the heading 'Department of Energy Clean Coal Technology', up to a total amount of \$2,500,000,000 for commercial demonstrations of clean coal technology, or similar projects funded through appropriations for the U.S. environmental protection agency.

SECTION 4. NR 440.02(10) is repealed and recreated to read:

NR 440.02(10) "Electric utility steam generating unit" means any steam electric generating unit that is constructed for the purpose of supplying more than one third of its potential electric output capacity and more than 25 MW electrical output to any utility power distribution system for sale. Any steam supplied to a steam distribution system for the purpose of providing

steam to a steam electric generator that would produce electrical energy for sale is also considered in determining the electrical energy output capacity of the affected facility.

SECTION 5. NR 440.02(13m) is created to read:

NR 440.02(13m) "Existing unit", for purposes of s. NR 440.14(10), has the meaning given in s. NR 409.02(39).

SECTION 6. NR 440.02(15) is repealed.

SECTION 7. NR 440.02(18m) is created to read:

NR 440.02(18m) "New unit", for purposes s. NR 440.14(10), has the meaning given in s. NR 409.02(49).

SECTION 8. NR 440.02(21) is renumbered 400.02(60m) and amended to read:

NR 400.02(60m) "Opacity" means the degree to which emissions reduce the transmission of light and obscure the view of an object in the background.

Note: 20% opacity is equal to one unit on the Ringlemann Chart.

SECTION 9. NR 440.02(25m) and (26m) are created to read:

NR 440.02(25m) "Reactivation of a very clean coal fired electric utility steam generating unit" means any physical change or change in the method of operation associated with the commencement of commercial operations by a coal fired utility unit after a period of discontinued operation where the unit:

(a) Has not been in operation for the 2 year period prior to the enactment of the clean air act amendments of 1990, and the emissions from the unit continue to be carried in the department's emissions inventory at the time of enactment;

(b) Was equipped prior to shutdown with a continuous system of emissions control that achieves a removal efficiency for sulfur dioxide of no less than 85% and a removal efficiency for particulates of no less than 98%;

(c) Is equipped with low NO_x burners prior to the time of commencement

of operations following reactivation; and

(d) Is otherwise in compliance with the requirements of the act.

(26m) "Repowering" means replacement of an existing coal fired boiler with one of the following clean coal technologies: atmospheric or pressurized fluidized bed combustion, integrated gasification combined cycle, magnetohydrodynamics, direct and indirect coal fired turbines, integrated gasification fuel cells, or as determined by the administrator of the U.S. environmental protection agency, in consultation with the secretary of energy, a derivative of one or more of these technologies, and any other technology capable of controlling multiple combustion emissions simultaneously with improved boiler or generation efficiency and with significantly greater waste reduction relative to the performance of technology in widespread commercial use as of November 15, 1990. Repowering shall also include any oil, oil and gas or gas fired unit which has been awarded clean coal technology demonstration funding as of January 1, 1991 by the United States department of energy.

SECTION 10. NR 440.02(31) is repealed.

SECTION 11. NR 440.03 is amended to read:

NR 440.03 UNITS AND ABBREVIATIONS. Used in this chapter are The definitions contained in s. NR 400.03 apply to the abbreviations and symbols of units of measure used in this chapter. These are defined as follows In addition, the following definitions apply to the units and abbreviations used in this chapter:

(1) System international (SI) units of measure:

~~A~~ —ampere

~~g~~ —gram

~~Hz~~ —hertz

~~J~~ —joule

~~K~~ —degree Kelvin

~~kg~~ —kilogram

~~m~~ —meter

~~m³ - cubic meter.~~
~~mg - milligram 10⁻³ gram~~
~~mm - millimeter 10⁻³ meter~~
~~Mg - megagram 10⁶ gram~~
MJ - megajoule 10⁶ joule
~~mol - mole~~
~~N - newton~~
~~ng - nanogram 10⁻⁹ gram~~
~~nm - nanometer 10⁻⁹ meter~~
~~Pa - pascal~~
~~s - second~~
~~V - volt~~
~~W - watt~~

(2) Other units of measure:

~~Btu - British thermal unit~~
~~°C - degree Celsius (centigrade)~~
cal - calorie
~~cfm - cubic feet per minute~~
cu ft - cubic feet
~~def - dry cubic feet~~
~~dcm - dry cubic meter~~
~~dscf - dry cubic feet at standard conditions~~
~~dscm - dry cubic meter at standard conditions~~
~~eq - equivalent~~
~~°F - degree Fahrenheit~~
~~ft - feet~~
~~gal - gallon~~
~~gr - grain~~
~~hr - hour~~
~~in or " - inch~~
k - 1,000
~~l - liter~~
~~lpm - liter per minute~~

~~lb~~ - pound

~~min~~ - minute

~~ml~~ - milliliter

mol. wt. - molecular weight

ppb - parts per billion (by volume)

~~ppm or ppmv~~ - parts per million (by volume)

~~psia~~ - pounds per square inch absolute

~~psig~~ - pounds per square inch gauge

~~°R~~ - degree Rankine

scf - cubic feet at standard conditions

scfh - cubic feet per hour at standard conditions

scfm - cubic feet per minute at standard conditions

scm - cubic meter at standard conditions

sec - second

sq ft - square feet

std - at standard conditions

(3) Chemical nomenclature:

~~CdS~~ - cadmium sulfide

~~CO~~ - carbon monoxide

~~CO₂~~ - carbon dioxide

~~HCl~~ - hydrochloric acid

~~Hg~~ - mercury

~~H₂O~~ - water

~~H₂S~~ - hydrogen sulfide

~~H₂SO₄~~ - sulfuric acid

~~N₂~~ - nitrogen

~~NO~~ - nitric oxide

~~NO₂~~ - nitrogen dioxide

~~NO_x~~ - nitrogen oxides

~~O₂~~ - oxygen

~~SO₂~~ - sulfur dioxide

~~SO₃~~ - sulfur trioxide

~~SO_x~~ - sulfur oxides

P₂O₅ - phosphorus pentoxide

(4) Miscellaneous:

~~ASTM - American Society for Testing and Materials~~

DNR - Wisconsin Department of Natural Resources

SECTION 12. NR 440.04 (title) and (5) are amended to read:

NR 440.04 (title) ADDRESSES.

(5) DNR North Central District, 107 ~~Sutliff~~ Sutliff Ave., PO Box 818,
Rhineland, WI 54501.

SECTION 13. NR 440.07 (title) and (4)(b) Figure 1 are amended to read:

NR 440.07 (title) NOTIFICATION AND RECORDKEEPING.

(4)(b) Figure 1 -- Summary Report -- Gaseous and Opacity Excess Emission
and Monitoring System Performance

Pollutant (circle One -- SO₂/NO_x/TRS/H₂S/CO/Opacity)

Reporting period dates: From _____ to _____

Company:

Emission Limitation _____

Address:

Monitor Manufacturer and Model No. _____

Date of Latest CMS Certification or Audit _____

Process Unit(s) Description:

Total source operating time in reporting period¹. _____

Emission data summary¹

1. Duration of excess emissions in reporting period due to:
 - a. Startup/shutdown
 - b. Control equipment problems
 - c. Process problems
 - d. Other known causes
 - e. Unknown causes
2. Total duration of excess emission
3. $\frac{[\text{Total duration of excess emissions}] + x (100)}{[\text{Total source operating time}]}$ (%²):

CMS performance summary¹

1. CMS downtime in reporting period due to:
 - a. Monitor equipment malfunctions
 - b. Non-monitor equipment malfunctions
 - c. Quality assurance calibration
 - d. Other known causes
 - e. Unknown causes
2. Total CMS downtime
3. $\frac{[\text{Total CMS downtime}] + x (100)}{[\text{Total source operating time}]}$ (%²):

¹For opacity, record all times in minutes. For gases, record all times in hours.

²For the reporting period: If the total duration of excess emissions is 1% or greater of the total operating time or the total CMS downtime is 5% or greater of the total operating time, both the summary report form and the excess emission report described in sub. (3) shall be submitted.

On a separate page, describe any changes since last quarter in CMS, process or controls. I certify that the information contained in this report is true, accurate, and complete.

Name _____

Name _____

Signature _____

Title _____

Date _____

SECTION 14. NR 440.14(1), (2)(a) and (5)(d) are amended to read:

NR 440.14(1) Except as provided under subs. (5), ~~and (6)~~ and (8) to (12), any physical or operational change to an existing facility which results in an increase in the emission rate to the atmosphere of any pollutant to which a standard applies shall be considered a modification within the meaning of this chapter. Upon modification, an existing facility becomes an affected facility for each pollutant to which a standard applies and for which there is an increase in the emission rate to the atmosphere.

(2)(a) Emission factors as specified in ~~the latest issue of~~ "Compilation of Air Pollutant Emission Factors," ~~EPA Publication No. AP-42,~~ Volume 1: Stationary Point and Area Sources, USEPA-OAQPS, as amended, incorporated by reference in s. NR 440.17, or other emission factors determined by the department to be superior to AP-42 emission factors, in cases where utilization of emission factors demonstrate that the emission level resulting from the physical or operational change will either clearly increase or clearly not increase.

(5)(d) Use of an alternative fuel or raw material if, prior the date any standard under this chapter became applicable to that source type, the existing facility was designed to accommodate that alternative use. A facility shall be considered to be designed to accommodate an alternative fuel or raw material if that use could be accomplished under the facility's construction specifications as amended prior to the change. Conversion to coal required for energy considerations, as specified in section ~~7411~~ 111(a)(8) of the act (42 USC 7411(a)(8)), will not be considered a modification under this chapter.

SECTION 15. NR 440.14(8) to (12) are created to read:

NR 440.14(8) No physical change or change in the method of operation at an existing electric utility steam generating unit may be treated as a modification for the purposes of this section provided that the change does not increase the maximum hourly emissions of any pollutant regulated under this section above the maximum hourly emissions achievable at that unit during the 5 years prior to the change.

(9) Repowering projects that are awarded funding from the department of energy as permanent clean coal technology demonstration projects, or similar projects funded by the U.S. environmental protection agency, are exempt from the requirements of this section provided that the change does not increase the maximum hourly emissions of any pollutant regulated under this section above the maximum hourly emissions achievable at that unit during the 5 years prior to the change.

(10)(a) Repowering projects that qualify for an extension under section 409(b) of the act (42 USC 7651h(b)) are exempt from the requirements of this section provided that the change does not increase the actual hourly emissions of any pollutant regulated under this section above the actual hourly emissions achievable at that unit during the 5 years prior to the change.

(b) This exemption does not apply to any new unit that:

1. Is designated as a replacement for an existing unit;
2. Qualifies under section 409(b) of the act (42 USC 7651h(b)) for an extension of an emission limitation compliance date under section 405 of the act (42 USC 7651d) and;
3. Is located at a different site than the existing unit.

(11) The installation, operation, cessation or removal of a temporary clean coal technology demonstration project is exempt from the requirements of this section. A temporary clean coal control technology demonstration project for the purposes of this section is a clean coal technology demonstration project that is operated for a period of 5 years or less and which complies with the state implementation plan for the state in which the project is located and other requirements necessary to attain and maintain the national ambient air quality standards during the project and after it is terminated.

(12) The reactivation of a very clean coal fired electric utility steam

generating unit is exempt from the requirements of this section.

SECTION 16. NR 440.17(1)(title) and (a) are repealed.

SECTION 17. NR 440.17(1)(b) is renumbered NR 440.17(1) and amended to read:

NR 440.17(1) APPENDICES. Appendices A, B, C and F of 40 CFR part 60 and Appendix B of 40 CFR part 61 as in effect on July 1, ~~1991~~ 1994 are incorporated by reference and made a part of this chapter. Copies of these appendices are available for inspection in the offices of the department of natural resources, secretary of state and revisor of statutes, Madison, Wisconsin, or may be purchased for personal use from the superintendent of documents, U.S. government printing office, Washington, ~~D.C.~~ DC 20402.

SECTION 18. NR 440.17(2)(a)6., 20. and 38., (b)(intro.), (d), (e)1. and (h)(intro.) are amended to read:

NR 440.17(2)(a)6. ASTM D1946-77, Standard Method for Analysis of Reformed Gas by Gas Chromatography, for ss: NR 440.18(6)(a), 440.19(6)(f)5. a., 440.647(6)(f), 440.675(5)(d)3. b. and (d)5. ~~and~~ 440.686(5)(d)2. b. and (d)4. and 440.705(5)(d)2. b. and 4.

20. ASTM D1072-80, Standard Method for Total Sulfur in Fuel Gases, for s. NR 440.50(6) ~~(b)2~~ (d).

38. ASTM D2382-76 (reapproved 1980), Heat of Combustion of Hydrocarbon Fuels by Bomb Calorimeter (High Precision Method), for ss. NR 440.18(6), 440.62(6)(g)6., 440.647(6)(f), 440.675(5)(d)5. ~~and~~ 440.686(5)(d)4. and 440.705(5)(d)4.

(b)(intro.) The following material is available for purchase from the Association of Official Analytical Chemists, 1111 North 19th Street, Suite 210, Arlington, ~~Virginia~~ VA 22209-:

(d) The following material is available for purchase from the Technical Association of the Pulp and Paper Industry (TAPPI), Dunwoody Park, Atlanta, ~~Georgia~~ GA 30341-:

(e)1. Method 2540 B., Total ~~Residue~~ Solids Dried at 103-105°C, in Standard Methods for the Examination of Water and Wastewater, 17th edition,

1989, for s. NR 440.69(4)(b).

(h)(intro.) The following material is available for purchase from the following address: The American Society of Mechanical Engineers (ASME), ~~22 Law Dr., Box 2350, Fairfield NJ 07007-2350~~, 345 East 47th Street, New York NY 10017:

SECTION 19. NR 440.17(2)(h)1. is renumbered 440.17(2)(h)2. and amended to read:

NR 440.17(2)(h)2. ASME PTC 4.1, Power Test Codes 4.1, August 8: Test Code for Steam Generating Units, 1972 1964, for ~~s.~~ ss. NR 440.205(7)(g) and 440.215(9)(h).

SECTION 20. NR 440.17(2)(h)1. and 3. and (i)2. are created to read:

NR 440.17(2)(h)1. ASME QRO-1-1989. Standard for the Qualification and Certification of Resource Recovery Facility Operators, for s. NR 440.215(7).

3. ASME Interim Supplement 19.5 on Instruments and Apparatus; Application, Part II of Fluid Meters, 6th Edition, 1971, for s. NR 440.215(9)(h).

(i)2. Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, as amended by Supplement B in September, 1989, Supplement C in September, 1990, Supplement D in September, 1990, Supplement E in October, 1992, and Supplement F in July, 1993, for s. NR 440.14(2)(a).

SECTION 21. NR 440.18(6)(c) is amended to read:

NR 440.18(6)(c) The net heating value of the gas being combusted in a flare shall be calculated using the following equation:

$$H_T = K \sum_{i=1}^n C_i H_i$$

where:

H_T is the net heating value of the sample, MJ/scm; where the net enthalpy per mole of offgas is based on combustion at 25°C and 700 mm Hg, but the

standard temperature for determining the volume corresponding to one mole is 20°C;

K is the conversion constant, 1.740×10^{-7} $\left[\frac{1}{\text{ppm}} \right] \left[\frac{\text{g-mole}}{\text{scm}} \right] \left[\frac{\text{MJ}}{\text{kcal}} \right]$

where the standard temperature for (g-mole)/scm is 20°C;

C_i is the concentration of sample component i in ppm on a wet basis, as measured for organics by Reference Method 18 in 40 CFR part 60, Appendix A, incorporated by reference in s. NR 440.17, and measured for hydrogen and carbon monoxide by ASTM D1946-77, incorporated by reference in s. NR 440.17; and

H_i is the net heat of combustion of sample component i, kcal/(g-mole) at 25°C and 760 mm Hg. 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.

SECTION 22. NR 440.19(6)(f)5.(intro.) and a. and (7)(b)2.(intro.) are amended to read:

NR 440.19(6)(f)5.(intro.) The owner or operator may use the following equation to determine an F factor (dscm/J or dscf/million Btu) on a dry basis (if it is desired to calculate F on a wet basis, consult the department) or F_c factor (scm CO₂/J, or scf CO₂/million Btu) on either basis in lieu of the F or F_c factors specified in subd. 4.:

$$F = \frac{10^{-6} [227.2(\%H) + 95.5(\%C) + 35.6(\%S) + 8.7(\%N) - 28.7(\%O)]}{\text{GCV}} \quad \text{(SI units)}$$

$$F_c = \frac{2.0 \times 10^{-5} (\%C)}{\text{GCV}} \quad \text{(SI units)}$$

$$F = \frac{10^6 [3.64(\%H) + 1.53(\%C) + 0.57(\%S) + 0.14(\%N) - 0.46(\%O)]}{\text{GCV}} \quad \text{(English units)}$$

$$F_c = \frac{321 \times 10^3 (\%C)}{\text{GCV}} \quad \text{(English units)}$$

a. H, C, S, N, and O are content by weight of hydrogen, carbon, sulfur, nitrogen, and oxygen (expressed as percent), respectively, as determined on the same basis as GCV by ultimate analysis of the fuel fired, using ASTM method D3178-73 or D3176-74 (solid fuels), or computed from results using ASTM

~~methods~~ method D1137-53(1975), D1945-64(1976) or D1946-77 (gaseous fuels) as applicable. These 5 ASTM methods are incorporated by reference in s. NR 440.17.

(7)(b)2.(intro.) Method 5 shall be used to determine the ~~particular~~ particulate matter concentration (C) at affected facilities without wet flue-gas-desulfurization (FGD) systems and Method 5B shall be used to determine the particulate matter concentration (C) after FGD systems.

SECTION 23. NR 440.20(2)(n) and (y), (5)(a)1., (7)(h)2. and (8)(b)2. are amended to read:

NR 440.20(2)(n) "Lignite" means coal that is classified as lignite A or B according to the ~~American Society for Testing and Materials (ASTM)~~ Standard Specification for Classification of Coals by Rank, D388-77, incorporated by reference in s. NR 440.17.

(y) "Subbituminous coal" means coal that is classified as subbituminous A, B or C according to the ~~American Society for Testing and Materials (ASTM)~~ Standard Specification for Classification of Coals by Rank, D388-77, incorporated by reference in s. NR 440.17.

(5)(a)1. NO_x emission limits.

Fuel Type	Emission limit for heat input	
	ng/J	(lb/million BTU)
Gaseous fuels:		
Coal-derived fuels	210	0.50
All other fuels	86	0.20
Liquid fuels:		
Coal-derived fuels	210	0.50
Shale oil	210	0.50
All other fuels	130	0.30
Solid fuels:		
Coal-derived fuels	210	0.50
Any fuel containing more than 25%, by weight, coal refuse	(¹)	(¹)
Any fuel containing more than 25%, by weight, lignite if the lignite is mined in North Dakota, South Dakota, or Montana, and is combusted in a slag tap furnace ²	340	0.80
Any fuel containing more than 25%, by weight, lignite not subject to the 340 ng/J heat input emission limit ²	260	0.60
Subbituminous coal	210	0.50
Bituminous coal	260	0.60
Anthracite coal	260	0.60
All other fuels	260	0.60

¹Exempt from NO_x standards and NO_x monitoring requirements.

²Any fuel containing less than 25%, by weight, lignite is not prorated but its percentage is added to the percentage of the predominant fuel.

(7)(h)2. Method 7 shall be used to determine the NO_x concentration at the same location as the ~~concentration at the same location as the~~ NO_x monitor.

Samples shall be taken at 30-minute intervals. The arithmetic average of ~~two~~ 2 consecutive samples represent a 1-hour average.

(8)(b)2. For the ~~particular~~ particulate matter concentration, Method 5 shall be used at affected facilities without wet FGD systems and Method 5B shall be used after wet FGD systems.

SECTION 24. NR 440.205(2)(1) is repealed.

SECTION 25. NR 440.205(2)(zj), (3)(d)(intro.), (4)(b) and (f), (5)(g), (6)(d)2., (7)(g) and (h)1. and (10)(b) are amended to read:

NR 440.205(2)(zj) "Very low sulfur oil" means an oil that contains no more than ~~0.5~~ 0.50 weight percent sulfur or that, when combusted without sulfur dioxide emission control, has a sulfur dioxide emission rate equal to or less than 215 ng/J (~~0.5~~ 0.50 lb/million Btu) heat input.

(3)(d)(intro.) On and after the date on which the performance test is completed or required to be completed under s. NR 440.08, whichever comes first, no owner or operator of an affected facility listed in subd. 1., 2.7 or 3.7 may cause to be discharged into the atmosphere any gases that contain sulfur dioxide in excess of 520 ng/J (1.2 lb/million Btu) heat input if the affected facility combusts coal, or 215 ng/J (~~0.5~~ 0.50 lb/million Btu) heat input if the affected facility combusts oil other than very low sulfur oil. Percent reduction requirements are not applicable to affected facilities under this paragraph.

(4)(b) On or after the date on which the performance test is completed or required to be completed under s. NR 440.08, whichever date comes first, no owner or operator of an affected facility that combusts oil, or mixtures of oil with other fuels, and uses a conventional or emerging technology to reduce sulfur dioxide emissions ~~shall~~ may discharge into the atmosphere from that affected facility any gases that contain particulate matter in excess of 43 ng/J (0.10 lb/million Btu) heat input.

(f) On and after the date on which the initial performance test is completed or is required to be completed under s. NR 440.08, whichever date comes first, no owner or operator of an affected facility that combusts coal,

oil, wood or mixtures of these fuels with any other fuels ~~shall~~ may cause to be discharged into the atmosphere any gases that exhibit greater than 20% opacity (6-minute average), except for one 6-minute period per hour of not more than 27% opacity.

(5)(g) Any owner or operator of an affected facility that combusts hazardous waste, as defined by 40 CFR part 261 or 40 CFR part 761, ~~incorporated by reference in s. NR 440.17,~~ as in effect on July 1, 1994, with natural gas or oil may petition the administrator within 180 days of the initial startup of the affected facility for a waiver from compliance with the nitrogen oxides emission limit which applies specifically to that affected facility. The petition shall include sufficient and appropriate data, as determined by the administrator, on nitrogen oxides emissions from the affected facility, waste destruction efficiencies, waste composition (including nitrogen content), the quantity of specific wastes to be combusted and combustion conditions, to allow the administrator to determine if the affected facility is able to comply with the nitrogen oxides emission limits required by this subsection. The owner or operator of the affected facility shall demonstrate that when hazardous waste is combusted in the affected facility, thermal destruction efficiency requirements for hazardous waste specified in an applicable federally enforceable requirement preclude compliance with the nitrogen oxides emission limits of this subsection. The nitrogen oxides emission limits for natural gas or distillate oil in par. (a)1. or for residual oil in par. (a)2., as appropriate, are applicable to the affected facility until and unless the petition is approved by the administrator.

(6)(d)2. Determine compliance with the standards after the initial performance test based on the arithmetic average of the hourly emissions data during each steam generating unit operating day if a continuous emission ~~measurement~~ monitoring system (CEMS) is used, or based on a daily average if Method 6B, Appendix A of 40 CFR part 60, incorporated by reference in s. NR 440.17, or fuel sampling and analysis procedures under Method 19, Appendix A of 40 CFR part 60, incorporated by reference in s. NR 440.17, are used.

(7)(g) The owner or operator of an affected facility described in

sub. (5)(j) or (k) shall demonstrate the maximum heat input capacity of the steam generating unit by operating the facility at maximum capacity for 24 hours. The owner or operator of an affected facility shall determine the maximum heat input capacity using the heat loss method described in Sections 5 and 7.3 of the ASME Power Test Codes 4.1, incorporated by reference in s. NR 440.17~~(h)~~. This demonstration of maximum heat input capacity shall be made during the initial performance test for affected facilities that meet the criteria of sub. (5)(j). It shall be made within 60 days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup of each facility, for affected facilities meeting the criteria of sub. (5)(k). Subsequent demonstrations may be required by the department at any other time. If this demonstration indicates that the maximum heat input capacity of the affected facility is less than that stated by the manufacturer of the affected facility, the maximum heat input capacity determined during this demonstration shall be used to determine the capacity utilization rate for the affected facility. Otherwise, the maximum heat input capacity provided by the manufacturer is used.

(h)1. Conduct an initial performance test as required under s. NR 440.08 over a minimum of 24 consecutive steam generating unit operating hours at maximum heat input capacity to demonstrate compliance with the nitrogen oxides emission standards under sub. (5) using Method 7, 7A~~7~~ or 7E of 40 CFR part 60, Appendix A, incorporated by reference in s. NR 440.17, or other approved reference methods; and

(10)(b) The owner or operator of each affected facility subject to the sulfur dioxide, particulate matter, ~~and~~ or nitrogen oxides emission limits under subs. (3), (4), and (5) shall submit to the department the performance test data from the initial performance test and the performance evaluation of the CEMS using the applicable performance specifications in Appendix B, 40 CFR part 60, incorporated by reference in s. NR 440.17. The owner or operator of each affected facility described in sub. (5)(j) or (k) shall submit to the department the maximum heat input capacity data from the demonstration of the maximum heat input capacity of the affected facility.

SECTION 26. NR 440.207(2)(k) is repealed.

SECTION 27. NR 440.207(3)(a)(intro.), (b)1.(intro.) and 2.(intro.), (c)(intro.), (d) and (e)(intro.) and 2., (4)(a)(intro.) and 1., (b)(intro.) and (c) and (5)(j) are amended to read:

NR 440.207(3)(a)(intro.) Except as provided in pars. (b), (c) and (e), on and after the date on which the initial performance test is completed or required to be completed under s. NR 440.08, whichever date comes first, the owner ~~the or~~ operator of an affected facility that combusts only coal ~~shall~~ may neither:

(b)1.(intro.) Combusts coal refuse alone in a fluidized bed combustion steam generating unit ~~shall~~ may neither:

2.(intro.) Combusts only coal and that uses an ~~emergency~~ emerging technology for the control of SO₂ emissions ~~shall~~ may neither:

(c)(intro.) On and after the date on which the initial performance test is completed or required to be completed under s. NR 440.08, whichever date comes first, no owner or operator of an affected facility that combusts coal, alone or in combination with any other fuel, and is listed in subd. 1., 2., 3. or 4. ~~shall~~ may cause to be discharged into the atmosphere from that affected facility any gases that contain SO₂ in excess of the emission limit determined pursuant to par. (e)2. Percent reduction requirements are not applicable to affected facilities under this paragraph.

(d) On and after the date on which the initial performance test is completed or required to be completed under s. NR 440.08, whichever date comes first, no owner or operator of an affected facility that combusts oil ~~shall~~ may cause to be discharged into the atmosphere from that affected facility any gases that ~~contains~~ contain SO₂ in excess of 215 ng/J (0.50 lb/million Btu) heat input; or, as an alternative, no owner or operator of an affected facility that combusts oil shall combust oil in the affected facility that contains greater than 0.5 weight percent sulfur. The percent reduction requirements are not applicable to affected facilities under this paragraph.

(e)(intro.) On and after the date on which the initial performance test is completed or required to be completed under ~~or s.~~ s. NR 440.08, whichever

~~date~~ date comes first, no owner or operator of an affected facility that combusts coal, oil, or coal and oil with any other fuel ~~shall~~ may cause to be discharged into the atmosphere from that affected facility any gases that contain SO₂ in excess of the following:

2. The emission limit determined according to the following formula for any affected facility that combusts coal, oil, or coal and oil with any other fuel:

$$E_s = (K_a H_a + K_b H_b + K_c H_c) / (H_a + H_b + H_c)$$

where:

E_s is the SO₂ emission limit, expressed in ng/J or lb/million Btu heat input

K_a is 520 ng/J (1.2 lb/million Btu)

K_b is 260 ng/J (0.60 lb/million Btu)

K_c is 215 ng/J (0.50 lb/million Btu)

H_a is the heat input from the combustion of coal, except coal combusted in an affected facility subject to par. (b)2., in joules (J) (million Btu)

H_b is the heat input from the combustion of coal, ~~except coal combusted in~~ an affected facility subject to par. (b)2., in J (million Btu)

H_c is the heat input from the combustion of oil, in J (million Btu)

(4)(a)(intro.) On and after the date on which the initial performance test is completed or required to be completed under s. NR 440.08, whichever date comes first, no owner or operator of an affected facility that combusts coal or combusts mixtures of coal with other fuels and has a heat input capacity of 8.7 MW (30 million Btu/hr) or greater, ~~shall~~ may cause to be discharged into the atmosphere from that affected facility any gases that contain PM in excess of the following emission limits:

1. 22 ng/J (~~0.05~~ 0.050 lb/million Btu) heat input if the affected facility combusts only coal, or combusts coal with other fuels and has an annual capacity factor for the other fuels of 10% (0.10) or less.

(b)(intro.) On and after the date on which the initial performance test

is completed or required to be completed under s. NR 440.08, whichever date comes first, no owner or operator of an affected facility that combusts mixtures of wood with other fuels, except coal, and has a heat input capacity of 8.7 MW (30 million Btu) or greater, ~~shall~~ may cause to be discharged into the atmosphere from that affected facility any gases that contain PM in excess of the following emission limits:

(c) On and after the date on which the initial performance test is completed or required to be completed under s. NR 440.08, whichever date comes first, no owner or operator of an affected facility that combusts coal, wood or oil and has a heat input capacity of 8.7 MW (30 ~~lb~~/million Btu/hr) or greater ~~shall~~ may cause to be discharged into the atmosphere from that affected facility any gases that exhibit greater than 20% opacity (6-minute average), except for one 6-minute period per hour of not more than 27% opacity.

(5)(j) The owner or operator of an affected facility shall use all valid SO₂ ~~affected facility shall use all valid SO₂ emissions data~~ data in calculating %P₂ and E_{h_o} under ~~para-~~ par. (d), (e) or (f), as applicable, whether or not the minimum emissions data requirements under sub. (7)(f) are achieved. All valid emissions data, including valid data collected during periods of startup, shutdown and malfunction shall be used in calculating %P₂ or E_{h_o} pursuant to ~~para-~~ par. (d), (e) or (f), as applicable.

SECTION 28. NR 440.215 is created to read:

NR 440.215 MUNICIPAL WASTE COMBUSTORS (1) APPLICABILITY. (a) The affected facility to which this section applies is each MWC unit with an MWC unit capacity greater than 225 megagrams per day (250 tons per day) of MSW or RDF for which construction, modification or reconstruction is commenced after December 20, 1989.

(c) Affected facilities that combust tires or fuel derived solely from tires and that combust no other MSW or RDF are exempt from this section except the initial report required under sub. (10)(a).

(d) Cofired combustors, as defined under sub. (2), are exempt from this section except the initial report required under sub. (10)(a) and records and

reports of the daily weight of MSW or RDF and other fuels fired as required under sub. (10)(b)14. and (m).

(e) Cofired combustors that are subject to a federally enforceable permit limiting the operation of the combustor to no more than 225 megagrams per day (250 tons per day) of MSW or RDF are exempt from this section.

(f) Physical or operational changes made to an existing MWC unit solely to comply with emission guidelines under 40 CFR part 60 subpart Ca, as in effect on July 1, 1994, are not considered a modification or reconstruction and do not bring an existing MWC unit under this section.

(g) Municipal waste combustors combusting medical waste combined with other MSW are subject to this section. Units combusting solely medical waste are not covered by this section.

(2) DEFINITIONS. All terms not defined in this section have the meanings given in s. NR 440.02. In this section:

(a) "Batch MWC" means an MWC unit designed such that it cannot combust MSW continuously 24 hours per day because the design does not allow waste to be fed to the unit or ash to be removed while combustion is occurring.

(b) "Bubbling fluidized bed combustor" means a fluidized bed combustor in which the majority of the bed material remains in a fluidized state in the primary combustion zone.

(bm) "Chief facility operator" means the person in direct charge and control of the operation of an MWC and who is responsible for daily on site supervision, technical direction, management and overall performance of the facility.

(c) "Circulating fluidized bed combustor" means a fluidized bed combustor in which the majority of the fluidized bed material is carried out of the primary combustion zone and is transported back to the primary zone through a recirculation loop.

(cm) "Coal/RDF mixed fuel fired combustor" means a combustor that fires coal and RDF simultaneously.

(d) "Cofired combustor" means a unit combusting MSW or RDF with a non-MSW fuel and subject to a federally enforceable permit limiting the unit to combusting a fuel feed stream, 30% or less of the weight of which is

comprised, in aggregate, of MSW or RDF as measured on a 24 hour daily basis. A unit combusting a fuel feed stream, more than 30% of the weight of which is comprised, in aggregate, of MSW or RDF shall be considered an MWC unit and not a cofired combustor. Cofired combustors which fire less than 30% segregated medical waste and no other municipal solid waste are not covered by this section.

(dm) "Continuous emission monitoring system" or "CEMS" means a monitoring system for continuously measuring the emissions of a pollutant from an affected facility.

(e) "Dioxin/furan" means total tetra through octa-chlorinated dibenzo-p-dioxins and dibenzofurans.

(em) "Four-hour block average" or "4-hour block average" means the average of all hourly emission rates when the affected facility is operating and combusting MSW measured over 4-hour periods of time from 12:00 midnight to 4 a.m., 4 a.m. to 8 a.m., 8 a.m. to 12:00 noon, 12:00 noon to 4 p.m., 4 p.m. to 8 p.m., and 8 p.m. to 12:00 midnight.

(f) "Large MWC plant" means an MWC plant with an MWC plant capacity greater than 225 megagrams per day (250 tons per day) of MSW.

(fm) "Mass burn refractory MWC" means a combustor that combusts MSW in a refractory wall furnace. This does not include rotary combustors without waterwalls.

(g) "Mass burn rotary waterwall MWC" means a combustor that combusts MSW in a cylindrical rotary waterwall furnace. This does not include rotary combustors without waterwalls.

(gm) "Mass burn waterwall MWC" means a combustor that combusts MSW in a conventional waterwall furnace.

(h) "Maximum demonstrated MWC unit load" means the maximum 4-hour block average MWC unit load achieved during the most recent dioxin/furan test demonstrating compliance with the applicable standard for MWC organics specified under sub. (4).

(hm) "Maximum demonstrated particulate matter control device temperature" means the maximum 4-hour block average temperature measured at the final particulate matter control device inlet during the most recent dioxin/furan

test demonstrating compliance with the applicable standard for MWC organics specified under sub. (4). If more than one particulate matter control device is used in series at the affected facility, the maximum 4-hour block average temperature is measured at the final particulate matter control device.

(i) "Medical waste" means any solid waste which is generated in the diagnosis, treatment or immunization of human beings or animals, in research pertaining thereto or in production or testing of biologicals. Medical waste does not include any hazardous waste identified under subtitle C of the resource conservation and recovery act (42 USC 6921 et seq.) or any household waste as defined in regulations under subtitle C of the resource conservation and recovery act (42 USC 6921 et seq.).

Note: The references to 42 USC 6921 et seq. refers to those laws in effect on the effective date of this section... [revisor inserts date].

(im) "Modular excess air MWC" means a combustor that combusts MSW and that is not field erected and has multiple combustion chambers, all of which are designed to operate at conditions with combustion air amounts in excess of theoretical air requirements.

(j) "Modular starved air MWC" means a combustor that combusts MSW and that is not field erected and has multiple combustion chambers in which the primary combustion chamber is designed to operate at substoichiometric conditions.

(jm) "Municipal type solid waste" or "MSW" means household, commercial, retail or institutional waste. Household waste includes material discarded by single and multiple residential dwellings, hotels, motels and other similar permanent or temporary housing establishments or facilities. Commercial or retail waste includes material discarded by stores, offices, restaurants, warehouses, nonmanufacturing activities at industrial facilities and other similar establishments or facilities. Institutional waste includes material discarded by schools, hospitals, nonmanufacturing activities at prisons and government facilities and other similar establishments or facilities. Household, commercial or retail and institutional waste do not include sewage, wood pallets, construction and demolition wastes, industrial process or manufacturing wastes or motor vehicles including motor vehicle parts or

vehicle fluff. Municipal type solid waste does include motor vehicle maintenance materials, limited to vehicle batteries, used motor oil and tires. Municipal type solid waste does not include wastes that are solely segregated medical wastes. Any mixture of segregated medical wastes and other wastes which contains more than 30% waste medical waste discards is considered to be municipal type solid waste.

(k) "Municipal waste combustor" or "MWC" or "MWC unit" means any device that combusts solid, liquid or gasified MSW including, but not limited to, field erected incinerators with or without heat recovery; modular incinerators; starved air or excess air boilers or steam generating units; furnaces whether suspension fired, grate fired, mass fired or fluidized bed fired; and gasification combustion units. This does not include combustion units, engines or other devices that combust landfill gases collected by landfill gas collection systems.

(l) "MWC acid gases" means all acid gases emitted in the exhaust gases from MWC units including but not limited to sulfur dioxide and hydrogen chloride gases.

(m) "MWC metals" means metals and metal compounds emitted in the exhaust gases from MWC units.

(n) "MWC organics" means organic compounds emitted in the exhaust gases from MWC units and includes total tetra through octa-chlorinated dibenzo-p-dioxins and dibenzofurans.

(o) "MWC plant" means one or more MWC units at the same location for which construction, modification or reconstruction is commenced after December 20, 1989.

(p) "MWC plant capacity" means the aggregate MWC unit capacity of all MWC units at an MWC plant for which construction, modification or reconstruction commenced after December 20, 1989. Any MWC units for which construction, modification or reconstruction is commenced on or before December 20, 1989 are not included for determining applicability under this section.

(q) "MWC unit capacity" means the maximum design charging rate of an MWC unit expressed in megagrams per day or tons per day of MSW combusted,

calculated according to the procedures under sub. (9)(j). Municipal waste combustor unit capacity is calculated using a design heating value of 10,500 kilojoules per kilogram (4,500 British thermal units per pound) for MSW and 19,800 kilojoules per kilogram (8,500 British thermal units per pound) for medical waste. The calculational procedures under sub. (9)(j) include procedures for determining MWC unit capacity for batch MWCs and cofired combustors and combustors firing mixtures of medical waste and other MSW.

(r) "Particulate matter" means total particulate matter emitted from MWC units as measured by Method 5 of Appendix A of 40 CFR part 60, incorporated by reference in s. NR 440.17.

(s) "Potential hydrogen chloride emission rate" means the hydrogen chloride emission rate that would occur from combustion of MSW in the absence of any hydrogen chloride emissions control.

(t) "Potential sulfur dioxide emission rate" means the sulfur dioxide emission rate that would occur from combustion of MSW in the absence of any sulfur dioxide emissions control.

(u) "RDF stoker" means a steam generating unit that combusts RDF in a semi-suspension firing mode using air fed distributors.

(v) "Refuse derived fuel" or "RDF" means a type of MSW produced by processing MSW through shredding and size classification. This includes all classes of RDF including low density fluff RDF through densified RDF and RDF fuel pellets.

(w) "Same location" means the same or contiguous property that is under common ownership or control, including properties that are separated only by a street, road, highway or other public right of way. Common ownership or control includes properties that are owned, leased or operated by the same entity, parent entity, subsidiary, subdivision or any combination thereof, including any municipality or other governmental unit or any quasi-governmental authority such as a public utility district or regional waste disposal authority.

(x) "Shift supervisor" means the person in direct charge and control of the operation of an MWC and who is responsible for on site supervision,

technical direction, management and overall performance of the facility during an assigned shift.

(y) "Standard conditions" means a temperature of 293 K (68°F) and a pressure of 101.3 kPa (29.92 in Hg).

(z) "Twenty-four-hour daily average" or "24-hour daily average" means the arithmetic or geometric mean as specified in sub. (9)(e), (g) or (h), as applicable, of all hourly emission rates when the affected facility is operating and firing MSW measured over a 24-hour period between 12:00 midnight and the following midnight.

(3) STANDARD FOR MUNICIPAL WASTE COMBUSTOR METALS. (a) On and after the date on which the initial compliance test is completed or is required to be completed under s. NR 440.08, no owner or operator of an affected facility located within a large MWC plant may cause to be discharged into the atmosphere from that affected facility any gases that contain particulate matter in excess of 34 milligrams per dry standard cubic meter (0.015 grains per dry standard cubic foot), corrected to 7% oxygen dry basis.

(b) On and after the date on which the initial compliance test is completed or is required to be completed under s. NR 440.08, no owner or operator of an affected facility subject to the particulate matter emission limit under par. (a) may cause to be discharged into the atmosphere from that affected facility any gases that exhibit greater than 10% opacity (6-minute average).

(4) STANDARD FOR MUNICIPAL WASTE COMBUSTOR ORGANICS.

(b) On and after the date on which the initial compliance test is completed or is required to be completed under s. NR 440.08, no owner or operator of an affected facility located within a large MWC plant may cause to be discharged into the atmosphere from that affected facility any gases that contain dioxin/furan emissions that exceed 30 nanograms per dry standard cubic meter (12 grains per billion dry standard cubic feet), corrected to 7% oxygen dry basis.

(5) STANDARD FOR MUNICIPAL WASTE COMBUSTOR ACID GASES.

(c) On and after the date on which the initial compliance test is

completed or is required to be completed under s. NR 440.08, no owner or operator of an affected facility located within a large MWC plant shall cause to be discharged into the atmosphere from that affected facility any gases that contain sulfur dioxide in excess of 20% of the potential sulfur dioxide emission rate (80% reduction by weight or volume) or 30 parts per million by volume, corrected to 7% oxygen dry basis, whichever is less stringent. The averaging time is specified in sub. (9)(e).

(d) On and after the date on which the initial compliance test is completed or is required to be completed under s. NR 440.08, no owner or operator of an affected facility located within a large MWC plant may cause to be discharged into the atmosphere from that affected facility any gases that contain hydrogen chloride in excess of 5% of the potential hydrogen chloride emission rate (95% reduction by weight or volume) or 25 parts per million by volume, corrected to 7% oxygen dry basis, whichever is less stringent.

(6) STANDARD FOR NITROGEN OXIDES. On and after the date on which the initial compliance test is completed or is required to be completed under s. NR 440.08, no owner or operator of an affected facility located within a large MWC plant may cause to be discharged into the atmosphere from that affected facility any gases that contain nitrogen oxides in excess of 180 parts per million by volume, corrected to 7% oxygen dry basis. The averaging time is specified under sub. (9)(g).

(7) STANDARDS FOR MUNICIPAL WASTE COMBUSTOR OPERATING PRACTICES. (a) On and after the date on which the initial compliance test is completed or is required to be completed under s. NR 440.08, no owner or operator of an affected facility located within a large MWC plant may cause the facility to exceed the carbon monoxide standards shown in Table 1.

Table 1 - MWC Operating Standards

MWC Technology	Carbon monoxide emission limit (parts per million by volume) ¹
Mass burn waterwall	100
Mass burn refractory	100
Mass burn rotary waterwall	100
Modular starved air	50
Modular excess air	50
RDF Stoker	150
Bubbling fluidized bed combustor	100
Circulating fluidized bed combustor	100
Coal/RDF mixed fuel fired combustors	150

¹ Measured at the combustor outlet in conjunction with a measurement of oxygen concentration, corrected to 7% oxygen dry basis. The averaging times are specified in sub. (9)(h).

(b) No owner or operator of an affected facility located within a large MWC plant may cause the facility to operate at a load level greater than 110% of the maximum demonstrated MWC unit load as defined in sub. (2). The averaging time is specified under sub. (9)(h).

(c) No owner or operator of an affected facility located within a large MWC plant may cause the facility to operate at a temperature, measured at the final particulate matter control device inlet, exceeding 17° Centigrade (30° Fahrenheit) above the maximum demonstrated particulate matter control device temperature as defined in sub. (2). The averaging time is specified under sub. (9)(h).

(d) Within 24 months from the date of startup of an affected facility or before February 11, 1993, whichever is later, each chief facility operator and shift supervisor of an affected facility located within a large MWC plant shall obtain and keep current either a provisional or operator certification in accordance with ASME QRO-1-1989, incorporated by reference in s. NR 440.17, or an equivalent state approved certification program.

(e) No owner or operator of an affected facility may allow the affected facility located at a large MWC plant to operate at any time without a certified shift supervisor, as provided under par. (d), on duty at the affected facility. This requirement shall take effect 24 months after the

date of start up of the affected facility or on and after February 11, 1993, whichever is later.

(f) The owner or operator of an affected facility located within a large MWC plant shall develop and update on a yearly basis a site specific operating manual that shall, at a minimum, address the following elements of MWC unit operation:

1. Summary of the applicable standards under this section;
2. Description of basic combustion theory applicable to an MWC unit;
3. Procedures for receiving, handling and feeding MSW;
4. MWC unit startup, shutdown and malfunction procedures;
5. Procedures for maintaining proper combustion air supply levels;
6. Procedures for operating the MWC unit within the standards established under this section;
7. Procedures for responding to periodic upset or off specification conditions;
8. Procedures for minimizing particulate matter carryover;
9. Procedures for monitoring the degree of MSW burnout;
10. Procedures for handling ash;
11. Procedures for monitoring MWC unit emissions; and
12. Reporting and recordkeeping procedures.

(g) The owner or operator of an affected facility located within a large MWC plant shall establish a program for reviewing the operating manual annually with each person who has responsibilities affecting the operation of an affected facility including, but not limited to, chief facility operators, shift supervisors, control room operators, ash handlers, maintenance personnel and crane or load handlers.

(h) The initial review of the operating manual, as specified under par. (g), shall be conducted prior to assumption of responsibilities affecting MWC unit operation by any person required to undergo training under par. (g). Subsequent reviews of the manual shall be carried out annually by each such person.

(i) The operating manual shall be kept in a readily accessible location for all persons required to undergo training under par. (g). The operating

manual and records of training shall be available for inspection by U.S. EPA or the department upon request.

(9) COMPLIANCE AND PERFORMANCE TESTING. (a) The standards under this section apply at all times except during periods of start up, shutdown or malfunction, provided that the duration of the period of start up, shutdown or malfunction does not exceed 3 hours per occurrence.

1. The startup period commences when the affected facility begins the continuous burning of MSW and does not include any warm up period when the affected facility is combusting only a fossil fuel or other non-MSW fuel and no MSW is being combusted.

2. Continuous burning is the continuous, semicontinuous or batch feeding of MSW for purposes of waste disposal, energy production or providing heat to the combustion system in preparation for waste disposal or energy production. The use of MSW solely to provide thermal protection of grate or hearth during the start up period is not considered to be continuous burning.

(b) The procedures and test methods in this paragraph shall be used to determine compliance with the emission limits for particulate matter under sub. (3). The cited procedures and test methods are contained in Appendix A of 40 CFR part 60, incorporated by reference in s. NR 440.17.

1. Method 1 shall be used to select sampling site and number of traverse points.

2. Method 3 shall be used for gas analysis.

3. Method 5 shall be used for determining compliance with the particulate matter emission standard. The minimum sample volume shall be 1.7 cubic meters (60 cubic feet). The probe and filter holder heating systems in the sample train shall be set to provide a gas temperature no greater than $160^{\circ} \pm 14^{\circ}$ Centigrade ($320^{\circ} \pm 25^{\circ}$ Fahrenheit). An oxygen or carbon dioxide measurement shall be obtained simultaneously with each Method 5 run.

4. For each Method 5 run, the emission rate shall be determined using:

a. Oxygen or carbon dioxide measurements;

b. Dry basis F factor; and

c. Dry basis emission rate calculation procedures in Method 19.

5. An owner or operator may request that compliance be determined using

carbon dioxide measurements corrected to an equivalent of 7% oxygen. The relationship between oxygen and carbon dioxide levels for the affected facility shall be established during the initial compliance test.

6. The owner or operator of an affected facility shall conduct an initial compliance test for particulate matter and opacity as required under s. NR 440.08.

7. Method 9 shall be used for determining compliance with the opacity limit.

8. The owner or operator of an affected facility shall install, calibrate, maintain and operate a CEMS for measuring opacity and record the output of the system on a 6-minute average basis.

9. Following the date the initial compliance test for particulate matter is completed or is required to be completed under s. NR 440.08 for an affected facility located within a large MWC plant, the owner or operator shall conduct a performance test for particulate matter on an annual basis (no more than 12 calendar months following the previous compliance test).

(d) The procedures and test methods in this paragraph shall be used to determine compliance with the limits for dioxin/furan emissions under sub.

(4). The cited procedures and test methods are contained in Appendix A of 40 CFR part 60, incorporated by reference in s. NR 440.17.

1. Method 23 shall be used for determining compliance with the dioxin/furan emission limits. The minimum sample time shall be 4 hours per test run.

2. The owner or operator of an affected facility shall conduct an initial compliance test for dioxin/furan emissions as required under s. NR 440.08.

3. Following the date of the initial compliance test or the date on which the initial compliance test is required to be completed under s. NR 440.08, the owner or operator of an affected facility located within a large MWC plant shall conduct a performance test for dioxin/furan emissions on an annual basis (no more than 12 calendar months following the previous compliance test).

5. An owner or operator may request that compliance with the dioxin/furan emissions limit be determined using carbon dioxide measurements corrected to an equivalent of 7% oxygen. The relationship between oxygen and carbon

dioxide levels for the affected facility shall be established during the initial compliance test.

(e) The procedures and test methods in this paragraph shall be used for determining compliance with the sulfur dioxide limit under sub. (5). The cited procedures and test methods are contained in Appendix A of 40 CFR part 60, incorporated by reference in s. NR 440.17.

1. Method 19, section 5.4, shall be used to determine the daily geometric average percent reduction in the potential sulfur dioxide emission rate.

2. Method 19, section 4.3, shall be used to determine the daily geometric average sulfur dioxide emission rate.

3. An owner or operator may request that compliance with the sulfur dioxide emissions limit be determined using carbon dioxide measurements corrected to an equivalent of 7% oxygen. The relationship between oxygen and carbon dioxide levels for the affected facility shall be established during the initial compliance test.

4. The owner or operator of an affected facility shall conduct an initial compliance test for sulfur dioxide as required under s. NR 440.08. Compliance with the sulfur dioxide emission limit and percent reduction is determined by using a CEMS to measure sulfur dioxide and calculating a 24-hour daily geometric mean emission rate and daily geometric mean percent reduction using Method 19 sections 4.3 and 5.4, as applicable, except as provided under subd. 5.

5. For batch MWCs or MWC units that do not operate continuously, compliance shall be determined using a daily geometric mean of all hourly average values for the hours during the day that the affected facility is combusting MSW.

6. The owner or operator of an affected facility shall install, calibrate, maintain and operate a CEMS for measuring sulfur dioxide emissions discharged to the atmosphere and record the output of the system.

7. Following the date of the initial compliance test or the date on which the initial compliance test is required to be completed under s. NR 440.08, compliance with the sulfur dioxide emission limit or percent reduction shall be determined based on the geometric mean of the hourly arithmetic average

emission rates during each 24-hour daily period measured between 12:00 midnight and the following midnight using: CEMS inlet and outlet data, if compliance is based on a percent reduction; or CEMS outlet data only if compliance is based on an emission limit.

8. At a minimum, valid CEMS data shall be obtained for 75% of the hours per day for 75% of the days per month the affected facility is operated and combusting MSW.

9. The 1-hour arithmetic averages required under subd. 7. shall be expressed in parts per million dry basis and used to calculate the 24-hour daily geometric mean emission rates. The 1-hour arithmetic averages shall be calculated using the data points required under s. NR 440.13(5)(b). At least 2 data points shall be used to calculate each 1-hour arithmetic average.

10. All valid CEMS data shall be used in calculating emission rates and percent reductions even if the minimum CEMS data requirements of subd. 8. are not met.

11. The procedures under s. NR 440.13 shall be followed for installation, evaluation and operation of the CEMS.

12. The CEMS shall be operated according to performance specifications 1, 2 and 3 of Appendix B of 40 CFR part 60, incorporated by reference in s. NR 440.17.

13. Quarterly accuracy determinations and daily calibration drift tests shall be performed in accordance with procedure 1 of Appendix F of 40 CFR part 60, incorporated by reference in s. NR 440.17.

14. The span value of the CEMS at the inlet to the sulfur dioxide control device is 125% of the maximum estimated hourly potential sulfur dioxide emissions of the MWC unit and the span value of the CEMS at the outlet to the sulfur dioxide control device is 50% of the maximum estimated hourly potential sulfur dioxide emissions of the MWC unit.

15. When sulfur dioxide emissions data are not obtained because of CEMS breakdowns, repairs, calibration checks and zero and span adjustments, emissions data shall be obtained by using other monitoring systems as approved by the department or Method 19 to provide, as necessary, valid emission data for a minimum of 75% of the hours per day for 75% of the days per month the

unit is operated and combusting MSW.

16. Not operating a sorbent injection system for the sole purpose of testing in order to demonstrate compliance with the percent reduction standards for MWC acid gases is not considered a physical change in the method of operation under ch. NR 405, 406 or 408.

(f) The procedures and test methods in this paragraph shall be used for determining compliance with the hydrogen chloride limits under sub. (5). The cited procedures and test methods are contained in Appendix A of 40 CFR part 60, incorporated by reference in s. NR 440.17.

1. The percentage reduction in the potential hydrogen chloride emissions (%P_{HCl}) is computed using the following formula:

$$\%P_{HCl} = \frac{(E_i - E_o)}{E_i} \times 100$$

where:

E_i is the potential hydrogen chloride emission rate.

E_o is the hydrogen chloride emission rate measured at the outlet of the acid gas control device.

2. Method 26 shall be used for determining the hydrogen chloride emission rate. The minimum sampling time for Method 26 shall be one hour.

3. An owner or operator may request that compliance with the hydrogen chloride emissions limit be determined using carbon dioxide measurements corrected to an equivalent of 7% oxygen. The relationship between oxygen and carbon dioxide levels for the affected facility shall be established during the initial compliance test.

4. The owner or operator of an affected facility shall conduct an initial compliance test for hydrogen chloride as required under s. NR 440.08.

5. Following the date of the initial compliance test or the date on which the initial compliance test is required under s. NR 440.08, the owner or operator of an affected facility located within a large MWC plant shall conduct a performance test for hydrogen chloride on an annual basis and no more than 12 calendar months following the previous compliance test.

7. Not operating a sorbent injection system for the sole purpose of

testing in order to demonstrate compliance with the percent reduction standards for MWC acid gases is not considered a physical change in the method of operation under ch. NR 405, 406 or 408.

(g) The procedures and test methods in this paragraph shall be used to determine compliance with the nitrogen oxides limit under sub. (6). The cited procedures and test methods are contained in Appendix A of 40 CFR part 60, incorporated by reference in s. NR 440.17.

1. Method 19, section 4.1, shall be used for determining the daily arithmetic average nitrogen oxides emission rate.

2. An owner or operator may request that compliance with the nitrogen oxides emissions limit be determined using carbon dioxide measurements corrected to an equivalent of 7% oxygen. The relationship between oxygen and carbon dioxide levels for the affected facility shall be established during the initial compliance test.

3. The owner or operator of an affected facility subject to the nitrogen oxides limit under sub. (6) shall conduct an initial compliance test for nitrogen oxides as required under s. NR 440.08. Compliance with the nitrogen oxides emission standard shall be determined by using a CEMS for measuring nitrogen oxides and calculating a 24-hour daily arithmetic average emission rate using Method 19, section 4.1, except as specified under subd. 4.

4. For batch MWCs or MWCs that do not operate continuously, compliance shall be determined using a daily arithmetic average of all hourly average values for the hours during the day that the affected facility is combusting MSW.

5. The owner or operator of an affected facility subject to the nitrogen oxides emissions limit under sub. (6) shall install, calibrate, maintain and operate a CEMS for measuring nitrogen oxides discharged to the atmosphere and record the output of the system.

6. Following the initial compliance test or the date on which the initial compliance test is required to be completed under s. NR 440.08, compliance with the emission limit for nitrogen oxides required under sub. (6) shall be determined based on the arithmetic average of the arithmetic average hourly emission rates during each 24-hour daily period measured between 12:00

midnight and the following midnight using CEMS data.

7. At a minimum, valid CEMS data shall be obtained for 75% of the hours per day for 75% of the days per month the affected facility is operated and combusting MSW.

8. The 1-hour arithmetic averages required by subd. 6. shall be expressed in parts per million volume dry basis and used to calculate the 24-hour daily arithmetic average emission rates. The 1-hour arithmetic averages shall be calculated using the data points required under s. NR 440.13(2). At least 2 data points shall be used to calculate each 1-hour arithmetic average.

9. All valid CEMS data shall be used in calculating emission rates even if the minimum CEMS data requirements of subd. 7. are not met.

10. The procedures under s. NR 440.13 shall be followed for installation, evaluation and operation of the CEMS.

11. Quarterly accuracy determinations and daily calibration drift tests shall be performed in accordance with procedure 1 of Appendix F of 40 CFR part 60, incorporated by reference in s. NR 440.17.

12. When nitrogen oxides emissions data are not obtained because of CEMS breakdowns, repairs, calibration checks and zero and span adjustments, emission data calculations to determine compliance shall be made using other monitoring systems as approved by the department or Method 19 to provide, as necessary, valid emission data for a minimum of 75% of the hours per day for 75% of the days per month the unit is operated and combusting MSW.

(h) The following procedures shall be used for determining compliance with the operating standards under sub. (7):

1. Compliance with the carbon monoxide emission limits in sub. (7)(a) shall be determined using a 4-hour block arithmetic average for all types of affected facilities except mass burn rotary waterwall MWCs and RDF stokers.

2. For affected mass burn rotary waterwall MWCs and RDF stokers, compliance with the carbon monoxide emission limits in sub. (7)(a) shall be determined using a 24-hour daily arithmetic average.

3. The owner or operator of an affected facility shall install, calibrate, maintain and operate a CEMS for measuring carbon monoxide at the combustor outlet and record the output of the system.

4. The 4-hour and 24-hour daily arithmetic averages in subds. 1. and 2. shall be calculated from 1-hour arithmetic averages expressed in parts per million by volume dry basis. The 1-hour arithmetic averages shall be calculated using the data points generated by the CEMS. At least 2 data points shall be used to calculate each 1-hour arithmetic average.

5. An owner or operator may request that compliance with the carbon monoxide emission limit be determined using carbon dioxide measurements corrected to an equivalent of 7% oxygen. The relationship between oxygen and carbon dioxide levels for the affected facility shall be established during the initial compliance test.

6. The following procedures shall be used to determine compliance with load level requirements under sub. (7)(b):

a. The owner or operator of an affected facility with steam generation capability recovery shall install, calibrate, maintain and operate a steam flow meter and measure steam flow in kilograms per hour or pounds per hour steam on a continuous basis and record the output of the monitor. Steam flow shall be calculated in 4-hour block arithmetic averages.

b. The method contained in ASME Power Test Codes: Test Code for Steam Generating Units, PTC 4.1 (1964) section 4, incorporated by reference in s. NR 440.17, shall be used for calculating the steam flow required under subd. 6.

a. The recommendations of Instruments and Apparatus: Measurement of Quantity of Materials, ASME Interim Supplement 19.5 (1971) chapter 4, incorporated by reference in s. NR 440.17, shall be followed for design, construction, installation, calibration and use of nozzles and orifices.

7. To determine compliance with the maximum particulate matter control device temperature requirements under sub. (7)(c), the owner or operator of an affected facility shall install, calibrate, maintain and operate a device for measuring temperature of the flue gas stream at the inlet to the final particulate matter control device on a continuous basis and record the output of the device. Temperature shall be calculated in 4-hour block arithmetic averages.

8. Maximum demonstrated MWC unit load shall be determined during the initial compliance test for dioxins/furans and each subsequent performance

test during which compliance with the dioxin/furan emission limit under sub. (4) is achieved. Maximum demonstrated MWC unit load shall be the maximum 4-hour arithmetic average load achieved during the most recent test during which compliance with the dioxin/furan limit was achieved.

9. The maximum demonstrated particulate matter control device temperature shall be determined during the initial compliance test for dioxins/furans and each subsequent performance test during which compliance with the dioxin/furan emission limit under sub. (4) is achieved. Maximum demonstrated particulate matter control device temperature shall be the maximum 4-hour arithmetic average temperature achieved at the final particulate matter control device inlet during the most recent test during which compliance with the dioxin/furan limit was achieved.

10. At a minimum, valid CEMS data for carbon monoxide, steam flow and particulate matter control device inlet temperature shall be obtained 75% of the hours per day for 75% of the days per month the affected facility is operated and combusting MSW.

11. All valid data shall be used in calculating the parameters specified under this paragraph even if the minimum data requirements of subd. 10. are not met.

12. Quarterly accuracy determinations and daily calibration drift tests for carbon monoxide CEMS shall be performed in accordance with procedure 1 of Appendix F of 40 CFR part 60, incorporated by reference in s. NR 440.17.

(j) The following procedures shall be used for calculating MWC unit capacity as defined under sub. (2):

1. For MWC units capable of combusting MSW continuously for a 24-hour period, MWC unit capacity in megagrams per day or tons per day of MSW combusted shall be calculated based on 24 hours of operation at the maximum design charging rate. The design heating values under subd. 4. shall be used in calculating the design charging rate.

2. For batch MWC units, MWC unit capacity in megagrams per day or tons per day of MSW combusted shall be calculated as the maximum design amount of MSW that can be charged per batch multiplied by the maximum number of batches that could be processed in a 24-hour period. The maximum number of batches

that could be processed in a 24-hour period is calculated as 24 hours divided by the design number of hours required to process one batch of MSW, and may include fractional batches. The design heating values under subd. 4. shall be used in calculating the MWC unit capacity in megagrams per day or tons per day of MSW.

Note: For example, if one batch requires 16 hours then 24/16 or 1.5 batches could be combusted in a 24-hour period.

3. For cofired combustors as defined under sub. (2), MWC unit capacity is the maximum daily amount of MSW or RDF specified in a federally enforceable permit that can be combusted in the cofired combustor expressed in megagrams per day or tons per day of MSW.

4. MWC unit capacity shall be calculated using a design heating value of 10,500 kilojoules per kilogram (4,500 Btu per pound) for all MSW except medical waste and 19,800 kilojoules per kilogram (8,500 Btu per pound) for medical waste. If an affected MWC unit fires both medical waste and other MSW, either the procedure described in subd. 4. a. or b. shall be used to determine the design heating value.

a. The design heating value may be prorated using the following equation:

$$HV_d = 10,500 \frac{MSW}{MSW + Med} + 19,800 \frac{Med}{MSW + Med}$$

where:

HV_d is the design heating value in kilojoules per kilogram

MSW is the amount of nonmedical MSW fired on a daily basis

Med is the amount of medical waste fired on a daily basis

If this equation is used, records shall be kept of the daily amounts of medical waste and other MSW combusted.

b. The owner or operator of an affected MWC firing both medical waste and other MSW may elect to assume a design heating value of 10,500 kilojoules per kilogram (4,500 British thermal units per pound) for all MSW and medical waste fired. If this assumption is used, records of the daily amount of MSW and medical waste combusted are not required to be kept.

(10) REPORTING AND RECORDKEEPING REQUIREMENTS. (a) The owner or

operator of an affected facility located at an MWC plant with a capacity greater than 225 megagrams per day (250 tons per day) shall provide notification of intent to construct and of planned initial start up date and the type or types of fuels that they plan to combust in the affected facility. The MWC unit capacity and MWC plant capacity and supporting capacity calculations shall be provided at the time of the notification of construction. At the time of notification of construction, owners or operators of cofired combustors shall provide estimates of the types and amounts of each fuel they plan to combust and the date on which they plan to start combusting MSW or RDF and shall submit a copy of a federally enforceable permit limiting the maximum amount of MSW that may be combusted in the cofired combustor in any single day (midnight to midnight), expressed in percent of the aggregate fuel feed stream by weight.

(b) The owner or operator of an affected facility located within a small or large MWC plant and subject to the standards under sub. (3), (4), (5), (6), (7) or (8) shall maintain records of the following information for each affected facility for a period of at least 2 years:

1. Calendar date.
2. The emission rates and parameters measured using CEMS as follows:
 - a. The following measurements shall be recorded in computer readable format and on paper:
 - 1) All 6-minute average opacity levels required under sub. (9)(b).
 - 2) All 1-hour average sulfur dioxide emission rates at the inlet and outlet of the acid gas control device if compliance is based on a percent reduction or at the outlet only if compliance is based on the outlet emission limit as specified under sub. (9)(e).
 - 3) All 1-hour average nitrogen oxides emission rates as specified under sub. (9)(g).
 - 4) All 1-hour average carbon monoxide emission rates, MWC unit load measurements and particulate matter control device inlet temperatures as specified under sub. (9)(h).
 - b. The following average rates shall be computed and recorded:
 - 1) All 24-hour daily geometric average percent reductions in sulfur

dioxide emissions and all 24-hour daily geometric average sulfur dioxide emission rates as specified under sub. (9)(e).

2) All 24-hour daily arithmetic average nitrogen oxides emission rates as specified under sub. (9)(g).

3) All 4-hour block or 24-hour daily arithmetic average carbon monoxide emission rates, as applicable, as specified under sub. (9)(h).

4) All 4-hour block arithmetic average MWC unit load levels and particulate matter control device inlet temperatures as specified under sub. (9)(h).

3. Identification of the operating days when any of the average emission rates, percent reductions or operating parameters specified under subd. 2.b. or the opacity level exceeded the applicable limits with reasons for such exceedances as well as a description of corrective actions taken.

4. Identification of operating days for which the minimum number of hours of sulfur dioxide or nitrogen oxides emissions or operational data, including carbon monoxide emissions, unit load or particulate matter control device temperature, have not been obtained, including reasons for not obtaining sufficient data and a description of corrective actions taken.

5. Identification of the times when sulfur dioxide or nitrogen oxides emission or operational data, including carbon monoxide emissions, unit load or particulate matter control device temperature, have been excluded from the calculation of average emission rates or parameters and the reasons for excluding data.

6. The results of daily sulfur dioxide, nitrogen oxides and carbon monoxide CEMS drift tests and accuracy assessments as required under procedure 1 of Appendix F of 40 CFR part 60, incorporated by reference in s. NR 440.17.

7. The results of all annual performance tests conducted to determine compliance with the particulate matter, dioxin/furan and hydrogen chloride limits. For all annual dioxin/furan tests, the maximum demonstrated MWC unit load and maximum demonstrated particulate matter control device temperature shall be recorded along with supporting calculations.

14. For cofired combustors having an MWC unit capacity greater than 225 megagrams per day (250 tons per day) of MSW, the weight of MSW and each

other fuel combusted on a daily basis.

15. For combustors firing both medical waste and other MSW, the amount of nonmedical MSW and the amount of medical waste combusted on a daily basis unless it is assumed that the total heat input to the combustor is from MSW with a design heating value of 10,500 kilojoules per kilogram (4,500 British thermal units per pound).

(c) Following the initial compliance test as required under s. NR 440.08 and sub. (9), the owner or operator of an affected facility located within a large MWC plant shall submit the initial compliance test data, the performance evaluation of the CEMS using the applicable performance specifications in Appendix B of 40 CFR part 60, incorporated by reference in s. NR 440.17, and the maximum demonstrated MWC unit load and maximum demonstrated particulate matter control device temperature established during the dioxin/furan compliance test.

(e) The owner or operator of an affected facility located within a large MWC plant shall submit quarterly compliance reports for sulfur dioxide, nitrogen oxide if applicable, carbon monoxide, load level and particulate matter control device temperature to the department containing the information recorded under par. (b)1., 2.b., 3., 4., 5. and 6. for each pollutant or parameter. The hourly average values recorded under par. (b)2.a. are not required to be included in the quarterly reports. Combustors firing a mixture of medical waste and other MSW shall also provide the information under par. (b)15. in each quarterly report if applicable. Reports shall be postmarked no later than the 30th day following the end of each calendar quarter.

(f) The owner or operator of an affected facility located within a large MWC plant shall submit quarterly excess emission reports, as applicable, for opacity. The quarterly excess emission reports shall include all information recorded under par. (b)3. which pertains to opacity and a listing of the 6-minute average opacity levels recorded under par. (b)2.a.1) for all periods when the 6-minute average levels exceeded the opacity limit under sub. (3). The quarterly report shall also list the percent of the affected facility operating time for the calendar quarter that the opacity CEMS was operating and collecting valid data. Excess emission reports shall be postmarked no

later than the 30th day following the end of each calendar quarter.

(g) The owner or operator of an affected facility located within a large MWC plant shall submit reports to the department of all annual performance tests for particulate matter, dioxin/furan and hydrogen chloride as recorded under par. (b)7., as applicable, from the affected facility. For each annual dioxin/furan compliance test, the maximum demonstrated MWC unit load and maximum demonstrated particulate matter control device temperature shall be reported. Reports shall be submitted when available and in no case later than the date of required submittal of the quarterly report specified under par. (e) covering the calendar quarter following the quarter during which the test was conducted.

(i) Records of CEMS data for opacity, sulfur dioxide, nitrogen oxides, carbon monoxide, load level data and particulate matter control device temperature data shall be maintained for at least 2 years after date of recordation and be made available for inspection upon request.

(j) Records showing the names of persons who have completed review of the operating manual, including the date of the initial review and all subsequent annual reviews, shall be maintained for at least 2 years after date of review and be made available for inspection upon request.

(m) The owner or operator of a cofired combustor located within a plant having an MWC plant capacity, as determined under sub. (2) and sub. (9)(j)3., greater than 225 megagrams per day (250 tons per day) shall submit quarterly reports of the daily weights of MSW and each other fuel fired as recorded under par. (b)14. Reports shall be postmarked no later than the 30th day following the end of each calendar quarter.

SECTION 29. NR 440.24(5)(e) is created to read:

NR 440.24(5)(e) For the purpose of reports under s. NR 440.07(3), periods of excess emissions shall be all 3-hour periods (or the arithmetic average of 3 consecutive 1-hour periods) during which the integrated average sulfur dioxide emissions exceed the applicable standards under sub. (3).

SECTION 30. NR 440.26(3)(a)(intro.), (4)(a) and (5)(a)(intro.) are amended to

read:

NR 440.26(3)(a)(intro.) No owner or operator subject to the provisions of this section ~~shall~~ may discharge or cause the discharge into the atmosphere from any fluid catalytic cracking unit catalyst regenerator:

(4)(a) No owner or operator subject to the provisions of this section ~~shall~~ may discharge or cause the discharge into the atmosphere from any fluid catalytic cracking unit catalyst regenerator any gases that contain carbon monoxide (CO) in excess of 500 ppm by volume (dry basis).

(5)(a)(intro.) No owner or operator subject to the provisions of this section ~~shall~~ may:

SECTION 31. NR 440.285(2)(f)1. and (7)(e)2.a. are amended to read:

NR 440.285(2)(f)1. In accordance with the method described in American Petroleum Institute ~~Bulletin~~ Publication 2517, Evaporation Loss From External Floating Roof Tanks, incorporated by reference in s. NR 440.17; or

(7)(e)2.a. Available data on the Reid vapor pressure and the maximum expected storage temperature based on the highest expected calendar-month average temperature of the stored product may be used to determine the maximum true vapor pressure from nomographs contained in API ~~Bulletin~~ Publication 2517, incorporated by reference in s. NR 440.17, unless the department specifically requests that the liquid be sampled, the actual storage temperature determined, and the Reid vapor pressure determined from the sample or samples.

SECTION 32. NR 440.31(4)(b)1. and 4. are amended to read:

NR 440.31(4)(b)1. A monitoring device for the continuous measurement of the pressure loss through the venturi constriction of the control equipment. The monitoring device shall be certified by the manufacturer to be accurate within ~~plus or~~ ± 250 Pa (± 1 inch water).

4. All monitoring devices shall use chart recorders which are operated at a minimum chart speed of 3.8 cm/hr (1.5 in/hr). ~~calibrated annually, and at other times as the department may require, in accordance with the procedures under s. NR 440.13(2).~~

SECTION 33. NR 440.31(4)(b)5. is created to read:

NR 440.31(4)(b)5. All monitoring devices shall be recalibrated annually, and at other times as the department may require, in accordance with the procedures under s. NR 440.13(2).

SECTION 34. NR 440.315(5)(c)1. and 2. are amended to read:

NR 440.315(5)(c)1. For devices that monitor and record the exhaust ventilation rate, compare velocity readings recorded by the monitoring device against the velocity readings obtained by Method 2. Take Method 2 readings at a point or points that would properly characterize the monitoring device's performance and that would adequately reflect the various rates of exhaust ventilation. Obtain readings at sufficient intervals to obtain 12 pairs of readings for each duct of the secondary emission capture system. Compare the averages of the 2 sets to determine whether the monitoring device velocity is within $\pm 10\%$ of the Method 2 average.

2. For devices that monitor the level of exhaust ventilation and record only step changes when a set point rate is reached, compare step changes recorded by the monitoring device against the velocity readings obtained by Method 2. Take Method 2 readings at a point or points that would properly characterize the performance of the monitoring device and that would adequately reflect the various rates of exhaust ventilation. Obtain readings at sufficient intervals to obtain 12 pairs of readings for each duct of the secondary emission capture system. Compare the averages of the 2 sets to determine whether the monitoring device step change is within $\pm 10\%$ of the setpoint rate.

SECTION 35. NR 440.32(5)(d)2. is amended to read:

NR 440.32(5)(d)2. For incinerators that commence ~~instruction~~ construction or modification after April 18, 1986, the date of the performance test shall be determined by the requirements in s. NR 440.08.

SECTION 36.. NR 440.32(5)(d)3. to 5. are repealed.

SECTION 37. NR 440.34(6)(a)2.b. is amended to read:

NR 440.34(6)(a)2.b. For the purpose of the continuous monitoring system performance evaluation required under s. NR 440.13(3), the reference method referred to under the Relative Accuracy Test Procedure in Performance Specification 2 of 40 CFR ~~pt.~~ part 60, Appendix B, incorporated by reference in s. NR 440.17, shall be Method 6 of 40 CFR part 60, Appendix A, incorporated by reference in s. NR 440.17. For the performance evaluation, each concentration measurement shall be of one hour duration. The pollutant gas used to prepare the calibration gas mixtures required under Performance Specification 2 of Appendix B and for calibration checks under s. NR 440.13(4) shall be sulfur dioxide.

SECTION 38. NR 440.35(6)(a)2.b. is amended to read:

NR 440.35(6)(a)2.b. For the purpose of the continuous monitoring system performance evaluation required under s. NR 440.13(3), the reference method referred to under the Relative Accuracy Test Procedure in Performance Specification 2 of 40 CFR part 60, Appendix B, incorporated by reference in s. NR 440.17, shall be Method 6 of 40 CFR ~~pt.~~ part 60, Appendix A, incorporated by reference in s. NR 440.17. For the performance evaluation, each concentration measurement shall be of one hour duration. The pollutant gas used to prepare the calibration gas mixtures required under Performance Specification 2 of Appendix B and for calibration checks under s. NR 440.13(4) shall be sulfur dioxide.

SECTION 39. NR 440.50(3)(a)3. and Note and (j) and (5)(c)3. are amended to read:

NR 440.50(3)(a)3. F shall be defined according to the nitrogen content of the fuel as follows:

Fuel-Bound Nitrogen (percent by weight)	F (NO _x percent by volume)
$N \leq 0.015$	0
$0.015 < N \leq 0.1$	$0.04(N)$
0.01 $0.1 < N \leq 0.25$	$0.004 + 0.0067(N - 0.1)$
$N > 0.25$	0.005

where N is the nitrogen content of the fuel (percent by weight), or manufacturers may develop custom fuel-bound nitrogen allowances for each gas turbine model they manufacture. These fuel-bound nitrogen allowances shall be substantiated with data and must be approved for use by the administrator before the initial performance test required by s. NR 440.08.

Note: The administrator will publish notices of approval of custom ~~ambient condition correction factors~~ fuel-bound nitrogen allowances in the federal register.

(j) Stationary gas turbines with a heat input at peak load greater than 107.2 gigajoules per hour that commenced construction, modification or reconstruction between the dates of October 3, 1977, and January 27, 1982, and were required in the September 10, 1979 federal register (44 Fed. Reg. FR 52792) (Sep. 10, 1979) to comply with 40 CFR 60.332(a)(1), except electric utility stationary gas turbines, are exempt from par. (a).

(5)(c)3. 'Ice fog'. Each period during which an exemption provided in sub. (3)~~(g)~~(f) is in effect shall be reported in writing to the department quarterly. For each period, the ambient conditions existing during the period, the date and time the air pollution control system was deactivated and the date and time the air pollution control system was reactivated shall be reported. All quarterly reports shall be postmarked by the 30th day following the end of each calendar quarter.

SECTION 40. NR 440.53(2)(a)10., (4)(c)1.a.3)(intro.) and (6)(c)(intro.) are amended to read:

NR 440.53(2)(a)10. "~~Solvent-borne~~ Solventborne" means a coating which contains 5% or less water by weight in its volatile fraction.

(4)(c)1.a.3)(intro.) Select the appropriate transfer efficiency (T) from the following tables for each surface coating operation:

Application method	Transfer efficiency
Air Atomized Spray (waterborne coating)	0.39
Air Atomized Spray (solvent-borne <u>solventborne</u> coating)	0.50
Manual Electrostatic Spray	0.75
Automatic Electrostatic Spray	0.95
Electrodeposition	1.00

The values in the table above represent an overall system efficiency which includes a total capture of purge. If a spray system uses line purging after each vehicle and does not collect any of the purge material, the following table shall be used:

Application method	Transfer efficiency
Air Atomized Spray (waterborne coating)	0.30
Air Atomized Spray (solvent-borne <u>solventborne</u> coating)	0.40
Manual Electrostatic Spray	0.62
Automatic Electrostatic Spray	0.75

(6)(c)(intro.) Where compliance with sub. (3) is achieved through the use of incineration, the owner or operator shall continuously record the incinerator combustion temperature during coating operations for ~~the~~ thermal incineration or the gas temperature upstream and downstream of the incinerator catalyst bed during coating operations for catalytic incineration. The owner or operator shall submit a written report at the frequency specified in s. NR

440.07(3) and as defined as follows:

SECTION 41. NR 440.59(5)(f) Note is amended to read:

NR 440.59(5)(f) Note: Under 40 CFR 60.474(g), if fuel oil is to be used to fire an afterburner used to control emissions from a blowing still, the owner or operator may petition the administrator in accordance with 40 CFR 60.11(e), ~~incorporated by reference in s. NR 440.17,~~ to establish an opacity standard for the blowing still that will be the opacity standard when fuel oil is used to fire the afterburner. To obtain this opacity standard, the owner or operator must request the administrator to determine opacity during an initial or subsequent, performance test when fuel oil is used to fire the afterburner. Upon receipt of the results of the performance test, the administrator finds that the facility was in compliance with the mass standard during the performance test but failed to meet the zero opacity standard, the administrator will establish and promulgate in the Federal Register an opacity standard for the blowing still that will be the opacity standard when fuel oil is used to fire the afterburner. When the afterburner is fired with natural gas, the zero percent opacity remains the applicable opacity standard.

SECTION 42. NR 440.62(3)(a)3., (5)(b)2.f. Note and (10) are amended to read:

NR 440.62(3)(a)3. An owner or operator may apply to the administrator for a determination of equivalence of a means of emission limitation to the requirements of par. (b), (c), (e), (f), (g), (h) or (j) under 40 CFR 60.484, ~~incorporated by reference in s. NR 440.17~~ as in effect on July 1, 1994. If the administrator makes a determination that a means of emission limitation is at least equivalent, the owner or operator shall notify the department of that determination and comply with its requirements rather than the requirements of par. (b), (c), (e), (f), (g), (h) or (j).

(5)(b)2.f. Note: Under ~~s. 40 CFR 60.484 of 40 CFR part 60,~~ each owner or operator subject to the provisions of this section may apply to the administrator 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. Manufacturers of equipment used to control equipment leaks of VOC may apply to the administrator 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. The administrator will make an equivalence determination according to the provisions of ~~para 40 CFR 60.484 (b), (c), (d) and (e) of s. 60.484, 40 CFR part 60.~~

(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	CAS No. ^a	Chemical
105-57-7	Acetal	35913-09-8	Chlorobenzaldehyde
75-07-0	Acetaldehyde	108-90-7	Chlorobenzene
107-89-1	Acetaldol	118-91-2,	Chlorobenzoic acid
60-35-5	Acetamide	535-80-8,	
103-84-4	Acetanilide	74-11-3 ^c	
64-19-7	Acetic acid	2136-81-4,	Chlorobenzotrichloride
108-24-7	Acetic anhydride	2136-89-2,	
67-64-1	Acetone	5216-25-1 ^c	
75-86-5	Acetone cyanohydrin	1321-03-5	Chlorobenzoyl chloride
75-05-8	Acetonitrile	25497-29-4	Chlorodifluoromethane
98-86-2	Acetophenone	75-45-6	Chlorodifluoroethane
75-36-5	Acetyl chloride	67-66-3	Chloroform
74-86-2	Acetylene	25586-43-0	Chloronaphthalene
107-02-8	Acrolein	88-73-3	o-Chloronitrobenzene
79-06-1	Acrylamide	100-00-5	p-Chloronitrobenzene
79-10-7	Acrylic acid	25167-80-0	Chlorophenols
107-13-1	Acrylonitrile	126-99-8	Chloroprene
124-04-9	Adipic acid	7790-94-5	Chlorosulfonic acid
111-69-3	Adiponitrile	108-41-8	m-Chlorotoluene
(^b)	Alkyl naphthalenes	95-49-8	o-Chlorotoluene
107-18-6	Allyl alcohol	106-43-4	p-Chlorotoluene
107-05-1	Allyl chloride	75-72-9	Chlorotrifluoromethane
1321-11-5	Aminobenzoic acid	108-39-4	m-Cresol
111-41-1	Aminoethylethanotamine	95-48-7	o-Cresol
123-30-8	p-Aminophenol	106-44-5	p-Cresol
628-63-7,	Amyl acetates	1319-77-3	Cresols (mixed)
123-92-2		1319-77-3	Cresylic acid
71-41-0 ^c	Amyl alcohols	4170-30-0 4170-30-3	Crotonaldehyde
110-58-7	Amyl amine	3724-65-0	Crotonic acid
543-59-9	Amyl chloride	98-82-8	Cumene
110-66-7 ^c	Amyl mercaptans	80-15-9	Cumene hydroperoxide
1322-06-1	Amyl phenol	372-09-8	Cyanoacetic acid
62-53-3	Aniline	506-77-4	Cyanogen chloride
142-04-1	Aniline hydrochloride	108-80-5	Cyanuric acid
29191-52-4	Anisidine	108-77-0	Cyanuric chloride
100-66-3	Anisole	110-82-7	Cyclohexane
118-92-3	Anthranilic acid	108-93-0	Cyclohexanol
84-65-1	Antraquinone	108-94-1	Cyclohexanone
100-52-7	Benzaldehyde	110-83-8	Cyclohexene
55-21-0	Benzamide	108-91-8	Cyclohexylamine
71-43-2	Benzene	111-78-4	Cyclooctadiene
98-48-6	Benzenedisulfonic acid	112-30-1	Decanol
98-11-3	Benzenesulfonic acid	123-42-2	Diacetone alcohol
134-81-6	Benzil	27576-04-1	Diaminobenzoic acid
76-93-7	Benzilic acid	95-76-1,	Dichloroaniline
65-85-0	Benzoic acid	95-82-9,	
119-53-9	Benzoin	554-00-7,	
100-47-0	Benzonitrile	608-27-5,	
119-61-9	Benzophenone	608-31-1,	
98-07-7	Benzotrichloride	626-43-7,	
98-88-4	Benzoyl chloride	27134-27-6,	
100-51-6	Benzyl alcohol	57311-92-9 ^c	
100-46-9	Benzylamine	541-73-1	m-Dichlorobenzene
120-51-4	Benzyl benzoate	95-50-1	o-Dichlorobenzene
100-44-7	Benzyl chloride	106-46-7	p-Dichlorobenzene
98-87-3	Benzyl dichloride	75-71-8	Dichlorodifluoromethane
92-52-4	Biphenyl	111-44-4	Dichloroethyl ether
80-05-7	Bisphenol A	107-06-2	1,2-Dichloroethane (EDC)
10-86-1	Bromobenzene	96-23-1	Dichlorohydrin
27497-51-4	Bromonaphthalene	26952-23-8	Dichloropropene
106-99-0	Butadiene	101-83-7	Dicyclohexylamine
106-98-9	1-Butene	109-89-7	Diethylamine
123-86-4	n-Butyl acetate	111-46-6	Diethylene glycol
141-32-2	n-Butyl acrylate	112-36-7	Diethylene glycol diethyl ether
71-36-3	n-Butyl alcohol	111-96-6	Diethylene glycol dimethyl ether
78-92-2	s-Butyl alcohol	112-34-5	Diethylene glycol monobutyl ether
75-65-0	t-Butyl alcohol	124-17-7	Diethylene glycol
109-73-9	n-Butylamine		monobutyl ether acetate
13952-84-6	s-Butylamine	111-90-0	Diethylene glycol monoethyl ether
75-64-9	t-Butylamine	112-15-2	Diethylene glycol
98-73-7	p-tert-Butyl benzoic acid		monoethyl ether acetate
107-88-0	1,3-Butylene glycol	111-77-3	Diethylene glycol monomethyl ether
123-72-8	n-Butyraldehyde	64-67-5	Diethyl sulfate
107-92-6	Butyric acid	75-37-6	Difluoroethane
106-31-0	Butyric anhydride	25167-70-8	Diisobutylene
109-74-0	Butyronitrile	26761-40-0	Diisodecyl phthalate
105-60-2	Caprolactam	27554-26-3	Diisooctyl phthalate
75-1-50	Carbon disulfide	674-82-8	Diketene
558-13-4	Carbon tetrabromide	124-40-3	Dimethylamine
56-23-5	Carbon tetrachloride	121-69-7	N,N-Dimethylaniline
9004-35-7	Cellulose acetate	115-10-6	N,N-Dimethyl ether
79-11-8	Chloroacetic acid	68-12-2	N,N-Dimethylformamide
108-42-9	m-Chloroaniline	57-14-7	Dimethylhydrazine
95-51-2	o-Chloroaniline	77-78-1	Dimethyl sulfide
106-47-8	p-Chloroaniline	75-18-3	

CAS No.	Chemical	CAS No.	Chemical
67-68-5	Dimethyl sulfoxide	463-51-4	Ketene
120-61-6	Dimethyl terephthalate	(b)	Linear alkyl sulfonate
99-34-3	3,5-Dinitrobenzoic acid	123-01-3	Linear alkylbenzene
51-28-5	Dinitrophenol		(Linear dodecylbenzene)
25321-14-6	Dinitrotoluene	110-16-7	Maleic acid
123-91-1	Dioxane	108-31-6	Maleic anhydride
646-06-0	Dioxilane	6915-15-7	Malic acid
122-39-4	Diphenylamine	141-79-7	Mesityl oxide
101-84-8	Diphenyl oxide	121-47-1	Metanilic acid
102-08-9	Diphenyl thiourea	79-41-4	Methacrylic acid
25265-71-8	Dipropylene glycol	563-47-3	Methallyl chloride
25378-22-7	Dodecene	67-56-1	Methanol
28675-17-4	Diodecylaniline	79-20-9	Methyl acetate
27193-86-8	Dodecylphenol	105-45-3	Methyl acetoacetate
106-89-8	Epichlorohydrin	74-89-5	Methylamine
64-17-5	Ethanol	100-61-8	n-Methylaniline
141-43-5	Ethanolamines	74-83-9	Methyl bromide
141-78-6	Ethyl acetate	37365-71-2	Methyl butynol
141-97-9	Ethyl acetoacetate	74-87-3	Methyl chloride
140-88-5	Ethyl acrylate	108-87-2	Methylcyclohexane
75-04-7	Ethylamine	1331-22-2	Methylcyclohexanone
100-41-4	Ethylbenzene	75-09-2	Methylene chloride
74-96-4	Ethyl bromide	101-77-9	Methylene dianiline
9004-57-3	Ethylcellulose	101-68-8	Methylene diphenyl diisocyanate
75-00-3	Ethyl chloride	78-93-3	Methyl ethyl ketone
105-39-5	Ethyl chloroacetate	107-31-3	Methyl formate
105-56-6	Ethylcyanoacetate	108-11-2	Methyl isobutyl carbinol
74-85-1	Ethylene	108-10-1	Methyl isobutyl ketone
96-49-1	Ethylene carbonate	80-62-6	Methyl methacrylate
107-07-3	Ethylene chlorohydrin	77-75-8	Methylpentynol
107-15-3	Ethylenediamine	98-83-9	α-Methyl styrene
106-93-4	Ethylene dibromide	110-91-8	Morpholine
107-21-1	Ethylene glycol	85-47-2	α-Naphthalene sulfonic acid
111-55-7	Ethylene glycol diacetate	120-18-3	β-Naphthalene sulfonic acid
110-71-4	Ethylene glycol dimethyl ether	90-15-3	α-Naphthol
111-76-2	Ethylene glycol monobutyl ether	135-19-3	β-Naphthol
112-07-2	Ethylene glycol monobutyl ether acetate	75-98-9	Neopentanoic acid
110-80-5	Ethylene glycol monoethyl ether	88-74-4	o-Nitroaniline
111-15-9	Ethylene glycol monoethyl ether acetate	100-01-6	p-Nitroaniline
109-86-4	Ethylene glycol monomethyl ether	91-23-6	o-Nitroanisole
110-49-6	Ethylene glycol monomethyl ether acetate	100-17-4	p-Nitroanisole
122-99-6	Ethylene glycol monophenyl ether	98-95-3	Nitrobenzene
2807-30-9	Ethylene glycol monopropyl ether	27178-83-2	Nitrobenzoic acid (o, m, and p)
75-21-8	Ethylene oxide	79-24-3	Nitroethane
60-29-7	Ethyl ether	75-52-5	Nitromethane
104-76-7	2-Ethylhexanol	88-75-5	2-Nitrophenol
122-51-0	Ethyl orthoformate	25322-01-4	Nitropropane
95-92-1	Ethyl oxalate	1321-12-6	Nitrotoluene
41892-71-1	Ethyl sodium oxalacetate	27215-95-8	Nonene
50-00-0	Formaldehyde	25154-52-3	Nonylphenol
75-12-7	Formamide	27193-28-8	Octylphenol
64-18-6	Formic acid	123-63-7	Paraldehyde
110-17-8	Fumaric acid	115-77-5	Pentaerythritol
98-01-1	Furfural	109-66-0	n-Pentane
56-81-5	Glycerol	109-67-1	1-Pentene
26545-73-7	Glycerol dichlorohydrin	127-18-4	Perchloroethylene
25791-96-2	Glycerol triether	594-42-3	Perchloromethyl mercaptan
56-40-6	Glycine	94-70-2	o-Phenetidine
107-22-2	Glyoxal	156-43-4	p-Phenetidine
118-74-1	Hexachlorobenzene	108-95-2	Phenol
67-72-1	Hexachloroethane	98-67-9,	Phenolsulfonic acids
36653-82-4	Hexadecyl alcohol	585-38-6,	
124-09-4	Hexamethylenediamine	609-46-1,	
629-11-8	Hexamethylene glycol	1333-39-7	
100-97-0	Hexamethylenetetramine	91-40-7	Phenyl anthranilic acid
74-90-8	Hydrogen cyanide	(b)	Phenylenediamine
123-31-9	Hydroquinone	75-44-5	Phosgene
99-96-7	p-Hydroxybenzoic acid	85-44-9	Phthalic anhydride
26760-64-5	Isoamylene	85-41-6	Phthalimide
76-83-1	Isobutanol	108-99-6	b-Picoline
110-19-0	Isobutyl acetate	110-85-0	Piperazine
115-11-7	Isobutylene	9003-29-6,	Polybutenes
78-84-2	Isobutyraldehyde	25036-29-7	
79-31-2	Isobutyric acid	25322-68-3	Polyethylene glycol
25339-17-7	Isodecanol	25322-69-4	Polypropylene glycol
26952-21-6	Isooctyl alcohol	123-38-6	Propionaldehyde
78-78-4	Isopentane	79-09-4	Propionic acid
78-59-1	Isophorone	71-23-8	n-Propyl alcohol
121-91-5	Isophthalic acid	107-10-8	Propylamine
78-79-5	Isoprene	540-54-5	Propyl chloride
67-63-0	Isopropanol	115-07-1	Propylene
108-21-4	Isopropyl acetate	127-00-4	Propylene chlorohydrin
75-31-0	Isopropylamine	78-87-5	Propylene dichloride
75-29-6	Isopropyl chloride	57-55-6	Propylene glycol
25168-06-3	Isopropylphenol	75-56-9	Propylene oxide
		110-86-1	Pyridine
		106-51-4	Quinone
		108-46-3	Resorcinol

CAS No.*	Chemical	CAS No.*	Chemical
27138-57-4	Resorcylic acid	104-15-4*	Toluenesulfonic acids
69-72-7	Salicylic acid	98-59-9	Toluenesulfonyl chloride
127-09-3	Sodium acetate	26915-12-8	Toluidines
532-32-1	Sodium benzoate	.87-61-6,	Trichlorobenzenes
9004-32-4	Sodium carboxymethyl cellulose	108-70-3,	
3926-62-3	Sodium chloroacetate	120-82-1*	
141-53-7	Sodium formate	71-55-6	1,1,1-Trichloroethane
139-02-6	Sodium phenate	79-00-5	1,1,2-Trichloroethane
110-44-1	Sorbic acid	79-01-6	Trichloroethylene
100-42-5	Styrene	75-69-4	Trichlorofluoromethane
110-15-6	Succinic acid	96-18-4	1,2,3-Trichloropropane
110-61-2	Succinonitrile	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane
121-57-3	Sulfanilic acid	121-44-8	Triethylamine
126-33-0	Sulfolane	112-27-6	Triethylene glycol
1401-55-4	Tannic acid	112-49-2	Triethylene glycol dimethyl ether
100-21-0	Terephthalic acid	7756-94-7	Triisobutylene
79-34-5*	Tetrachloroethanes	75-50-3	Trimethylamine
117-08-8	Tetrachlorophthalic anhydride	57-13-6	Urea
78-00-2	Tetraethyl lead	108-05-4	Vinyl acetate
119-64-2	Tetrahydronaphthalene	75-01-4	Vinyl chloride
85-43-8	Tetrahydrophthalic anhydride	75-35-4	Vinylidene chloride
75-74-1	Tetramethyl lead	25013-15-4	Vinyl toluene
110-60-1	Tetramethylenediamine	1330-20-7	Xylenes (mixed)
110-18-9	Tetramethylethylenediamine	95-47-6	o-Xylene
108-88-3	Toluene	106-42-3	p-Xylene
95-80-7	Toluene-2,3-diamine	1300-71-6	Xylenol
584-84-9	Toluene-2,4-diisocyanate	1300-73-8	Xylidine
26471-62-5	Toluene diisocyanates (mixture)		
1333-07-9	Toluenesulfonamide		

*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.

^bNo CAS number(s) have been assigned to this chemical, its isomers, or mixtures containing these chemicals.

*CAS numbers for some of the isomers are listed; the standards apply to all of the isomers and mixtures, even if CAS numbers have not been assigned.

SECTION 43. NR 440.642(4)(c)3.a. and (5)(c) are amended to read:

NR 440.642(4)(c)3.a. Except as provided in ~~subpar. e~~ subd. 3. c. or subd. 5., the manufacturer or authorized representative shall conduct an emission test on a randomly selected affected facility produced within a model line certified under par. (e) or (h) on the following schedule:

If weighted average certification test results were—	If yearly production per model is—	
	<2500	≥2500
70% or less of std <u>standard</u>	directed by EPA, not to exceed once every 10,000 stoves.	WhenEvery 10,000 stoves or triennially (which ever <u>whichever</u> is more frequent).
Within 30% of std <u>standard</u>	5,000 stoves.	EveryEvery 5,000 stoves or annually (which ever is more frequent).

(5)(c) Method 28A shall be used to determine that a wood combustion unit qualifies under the definition of wood heater in sub. (2)~~(a)~~(m). If such a determination is necessary, this test shall be conducted by an accredited laboratory.

SECTION 44. NR 440.647(4)(c) is amended to read:

NR 440.647(4)(c) An owner or operator may apply to the administrator 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 specified in 40 CFR 60.484, ~~incorporated by reference in s. NR 440.17~~ as in effect on July 1, 1994.

SECTION 45. NR 440.66(3)(c) is amended to read:

NR 440.66(3)(c) An owner or operator may apply to the administrator 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 ~~under 40 CFR 60.592(c)~~, ~~incorporated by reference in s. NR 440.17~~. In doing so the owner or operator shall comply with requirements of 40 CFR 60.484,

~~incorporated by reference in s. NR 440.17~~ as in effect on July 1, 1994, and provide notice to the department of any determination of equivalency approved by the administrator.

SECTION 46. NR 440.675(4)(a)1.(intro.) and (d)1.a. and 3.a. and (5)(e)1.a. are amended to read:

NR 440.675(4)(a)1.(intro.) A temperature monitoring device equipped with a continuous recorder and having an accuracy of $\pm 1\%$ of the temperature being monitored expressed in degrees Celsius or $\pm 0.5^{\circ}\text{C}$, whichever is greater.

(d)1.a. A scrubbing liquid temperature monitoring device having an accuracy of $\pm 1\%$ of the temperature being monitored expressed in degrees Celsius or $\pm 0.5^{\circ}\text{C}$, whichever is greater, and a specific gravity monitoring device having an accuracy of ± 0.02 specific gravity units, each equipped with a continuous recorder;

3.a. An integrating steam flow monitoring device having an accuracy of $\pm 10\%$ and a carbon bed temperature monitoring device having an accuracy of $\pm 1\%$ of the temperature being monitored expressed in degrees Celsius or $\pm 0.5^{\circ}\text{C}$, whichever is greater, both equipped with a continuous recorder;

(5)(e)1.a. Where for a vent stream flow rate (scm/min) at a standard temperature of 20°C that is greater than or equal to 14.2 scm/min:

TRE is the TRE index value

Q_v is the vent stream flow rate (scm/min), at a standard temperature of 20°C

H_v is the vent stream net heating value (MJ/scm), where the net enthalpy of combustion per mole of vent stream 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°C , as in the definition of Q_v .

Y_v is the Q_v for all vent stream categories listed in Table 1 except for Category E vent streams where $Y_v = (Q_v)(H_v)/3.6$

E_{TOC} is the hourly emissions of TOC reported in kg/hr

a, b, c, d, e and f are coefficients

The set of coefficients which apply to a vent stream shall be obtained from Table 1.

TABLE 1. AIR OXIDATION NSPS TRE COEFFICIENTS FOR VENT STREAMS CONTROLLED BY AN INCINERATOR

DESIGN CATEGORY A1. FOR HALOGENATED PROCESS VENT STREAMS, IF $0 \leq$ NET HEATING VALUE (MJ/scm) \leq 3.5:

Q_v - Vent Stream Flow Rate (scm/min)	a	b	c	d	e	f
$14.2 \leq Q_v \leq 18.8$	19.18370	0.27580	0.75762	-0.13064	0	0.01025
$18.8 < Q_v \leq 699$	20.00563	0.27580	0.30387	-0.13064	0	0.01025
$699 < Q_v \leq 1400$	39.87022	0.29973	0.30387	-0.13064	0	0.01449
$1400 < Q_v \leq 2100$	59.73481	0.31467	0.30387	-0.13064	0	0.01775
$2100 < Q_v \leq 2800$	79.59941	0.32572	0.30387	-0.13064	0	0.02049
$2800 < Q_v \leq 3500$	99.46400	0.33456	0.30387	-0.13064	0	0.02291

DESIGN CATEGORY A2. FOR HALOGENATED PROCESS VENT STREAMS, IF NET HEATING VALUE $>$ 3.5 MJ/SCM:

Q_v - Vent Stream Flow Rate (scm/min)	a	b	c	d	e	f
$14.2 \leq Q_v \leq 18.8$	18.84466	0.26742	-0.20044	0	0	0.01025
$18.8 < Q_v \leq 699$	19.66658	0.26742	-0.25332	0	0	0.01025
$699 < Q_v \leq 1400$	39.19213	0.29062	-0.25332	0	0	0.01449
$1400 < Q_v \leq 2100$	58.71768	0.30511	-0.25332	0	0	0.01775
$2800 < Q_v \leq 3500$						
$2100 < Q_v \leq 2800$	78.24323	0.31582	-0.25332	0	0	0.02049
$2800 < Q_v \leq 3500$	97.76879	0.32439	-0.25332	0	0	0.02291

DESIGN CATEGORY B. FOR NONHALOGENATED PROCESS VENT STREAMS, IF $0 \leq$ NET HEATING VALUE (MJ/SCM) \leq 0.48:

Q_v - Vent Stream Flow Rate (scm/min)	a	b	c	d	e	f
$14.2 \leq Q_v \leq 1340$	8.54245	0.10555	0.09030	-0.17109	0	0.01025
$1340 < Q_v \leq 2690$	16.94386	0.11470	0.09030	-0.17109	0	0.01449
$2690 < Q_v \leq 4040$	25.34528	0.12042	0.09030	-0.17109	0	0.01775

DESIGN CATEGORY C. FOR NONHALOGENATED PROCESS VENT STREAMS, IF $0.48 <$ NET HEATING VALUE (MJ/SCM) \leq 1.9:

Q_v - Vent Stream Flow Rate (scm/min)	a	b	c	d	e	f
$14.2 \leq Q_v \leq 1340$	9.25233	0.06105	0.31937	-0.16181	0	0.01025
$1340 < Q_v \leq 2690$	18.36363	0.06635	0.31937	-0.16181	0	0.01449
$2690 < Q_v \leq 4040$	27.47492	0.06965	0.31937	-0.16181	0	0.01775

DESIGN CATEGORY D. FOR NONHALOGENATED PROCESS VENT STREAMS, IF $1.9 <$ NET HEATING VALUE (MJ/SCM) \leq 3.6:

Q_v - Vent Stream Flow Rate (scm/min)	a	b	c	d	e	f
$14.2 \leq Q_v \leq 1180$	6.67868	0.06943	0.02582	0	0	0.01025
$1180 < Q_v \leq 2370$	13.21633	0.07546	0.02582	0	0	0.01449
$2370 < Q_v \leq 3550$	19.75398	0.07922	0.02582	0	0	0.01775

DESIGN CATEGORY E. FOR NONHALOGENATED PROCESS VENT STREAMS, IF NET HEATING VALUE $>$ 3.6 MJ/SCM:

Y_v - Dilution Flow Rate (scm/min) = $(Q_v) (H_v) / 3.6$	a	b	c	d	e	f
$14.2 \leq Y_v \leq 1180$	6.67868	0	0	-0.00707	0.02220	0.01025
$1180 < Y_v \leq 2370$	13.21633	0	0	-0.00707	0.02412	0.01449
$2370 < Y_v \leq 3550$	19.75398	0	0	-0.00707	0.02533	0.01775

SECTION 47. NR 440.684(5)(c)3. is amended to read:

NR 440.684(5)(c)3. The emission rate (E) of sulfur shall be computed for each run as follows:

$$E = C_v \cdot Q_{vd} / K$$

where:

C_v is the concentration of sulfur equivalent ($SO_2 \pm TRS$), g/dscm

Q_{ed} is the volumetric flow rate of effluent gas, dscm/hr

K is the conversion factor, 1000 g/kg

SECTION 48. NR 440.686(5)(e)1.a. and b. and (8) are amended to read:

NR 440.686(5)(e)1.a. Where for a vent stream flow rate (scm/min) at a standard temperature of 20°C that is greater than or equal to 14.2 scm/min:

TRE is the TRE index value

Q_v is the vent stream flow rate (scm/min) at a standard temperature of 20°C

H_T is the vent stream net heating value (MJ/scm), where the net enthalpy per mole of vent stream 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°C as in the definition of Q_v .

$Y_v = Q_v$ for all vent stream categories listed in Table 1 except for Category E vent streams where $Y_v = (Q_v)(H_T)/3.6$

E_{TOC} is the hourly emissions of TOC reported in kg/hr

a,b,c,d,e and f are coefficients

The set of coefficients that apply to a vent stream shall be obtained from Table 1.

TABLE 1. DISTILLATION NSPS TRE COEFFICIENTS FOR VENT STREAMS CONTROLLED BY AN INCINERATOR

DESIGN CATEGORY A1. FOR HALOGENATED PROCESS VENT STREAMS, IF $0 \leq$ NET HEATING VALUE (MJ/scm) \leq 3.5:							
Q_v - Vent Stream Flow rate (scm/min)		a	b	c	d	e	f
14.2	$\leq Q_v \leq$ 18.8	19.18370	0.27580	0.75762	-0.13064	0	0.01025
18.8	$< Q_v \leq$ 699	20.00563	0.27580	0.30387	-0.13064	0	0.01025
699	$< Q_v \leq$ 1400	39.87022	0.29973	0.30387	-0.13064	0	0.01449
1400	$< Q_v \leq$ 2100	59.73481	0.31467	0.30387	-0.13064	0	0.01775
2100	$< Q_v \leq$ 2800	79.59941	0.32572	0.30387	-0.13064	0	0.02049
2800	$< Q_v \leq$ 3500	99.46400	0.33456	0.30387	-0.13064	0	0.02291
DESIGN CATEGORY A2. FOR HALOGENATED PROCESS VENT STREAMS, IF NET HEATING VALUE $>$ 3.5 MJ/scm:							
Q_v - Vent Stream Flow Rate (scm/min)		a	b	c	d	e	f
14.2	$\leq Q_v \leq$ 18.8	18.84466	0.26742	-0.20044	0	0	0.01025
18.8	$< Q_v \leq$ 699	19.66658	0.26742	-0.25332	0	0	0.01025
699	$< Q_v \leq$ 1400	39.19213	0.29062	-0.25332	0	0	0.01449
1400	$< Q_v \leq$ 2100	58.71768	0.30511	-0.25332	0	0	0.01775
2800	$< Q_v \leq$ 3500						
2100	$< Q_v \leq$ 2800	78.24323	0.31582	-0.25332	0	0	0.02049
2800	$< Q_v \leq$ 3500	97.76879	0.32439	-0.25332	0	0	0.02291

DESIGN CATEGORY B. FOR NONHALOGENATED PROCESS VENT STREAMS, IF $0 \leq \text{NET HEATING VALUE (MJ/scm)} \leq 0.48$:						
Q_v - Vent Stream Flow rate (scm/min)	a	b	c	d	e	f
$14.2 \leq Q_v \leq 1340$	8.54245	0.10555	0.09030	-0.17109	0	0.01025
$1340 < Q_v \leq 2690$	16.94386	0.11470	0.09030	-0.17109	0	0.01449
$2690 < Q_v \leq 4040$	25.34528	0.12042	0.09030	-0.17109	0	0.01775

DESIGN CATEGORY C. FOR NONHALOGENATED PROCESS VENT STREAMS, IF $0.48 < \text{NET HEATING VALUE (MJ/scm)} \leq 1.9$:						
Q_v - Vent Stream Flow rate (scm/min)	a	b	c	d	e	f
$14.2 \leq Q_v \leq 1340$	9.25233	0.06105	0.31937	-0.16181	0	0.01025
$1340 < Q_v \leq 2690$	18.36353	0.06635	0.31937	-0.16181	0	0.01449
$2690 < Q_v \leq 4040$	27.47492	0.06965	0.31937	-0.16181	0	0.01775

DESIGN CATEGORY D. FOR NONHALOGENATED PROCESS VENT STREAMS, IF $1.9 < \text{NET HEATING VALUE (MJ/scm)} \leq 3.6$:						
Q_v - Vent Stream Flow rate (scm/min)	a	b	c	d	e	f
$14.2 \leq Q_v \leq 1180$	6.67868	0.06943	0.02582	0	0	0.01025
$1180 < Q_v \leq 2370$	13.21633	0.07546	0.02582	0	0	0.01449
$2370 < Q_v \leq 3550$	19.75398	0.07922	0.02582	0	0	0.01775

DESIGN CATEGORY E. FOR NONHALOGENATED PROCESS VENT STREAMS, IF $\text{NET HEATING VALUE} > 3.6 \text{ MJ/scm}$:						
Y_v - Dilution Flow rate (scm/min) = $(Q_v)(H_T)/3.6$	a	b	c	d	e	f
$14.2 \leq Y_v \leq 1180$	6.67868	0	0	-0.00707	0.02220	0.01025
$1180 < Y_v \leq 2370$	13.21633	0	0	-0.00707	0.02412	0.01449
$2370 < Y_v \leq 3550$	19.75398	0	0	-0.00707	0.02533	0.01775

b. Where for a vent stream flow rate (scm/min) at a standard temperature of 20°C that is less than 14.2 scm/min:

TRE is the TRE index value-

$Q_v = 14.2 \text{ scm/min}$ -

$H_T = (\text{FLOW})(\text{HVAL})/14.2$

where by the following inputs are used:

FLOW is the vent stream flow rate (scm/min), at a standard temperature of 20°C-

HVAL is the vent stream net heating value (MJ/scm), where the net enthalpy per mole of vent stream 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°C as in definition of Q_v -

Y_v is 14.2 scm/min for all vent stream categories listed in Table 1 except for Category E vent streams, where Y_v is $(14.2)(H_T)/3.6$ -

E_{TOC} is the hourly emissions of TOC reported in kg/hr-

a, b, c, d, e and f are coefficients-

The set of coefficients that apply to a vent stream shall be obtained from Table 1.

(8) CHEMICALS AFFECTED BY THIS SECTION.

Chemical name	CAS No.*
Acetaldehyde	75-07-0
Acetaldol	107-89-1
Acetic acid	64-19-7
Acetic anhydride	108-24-7
Acetone	67-64-1
Acetone cyanohydrin	75-86-5
Acetylene	74-86-2
Acrylic acid	79-10-7
Acrylonitrile	107-13-1
Adipic acid	124-04-9
Adiponitrile	111-69-3
Alcohols, C-11 or lower, mixtures	.....
Alcohols, C-12 or higher, mixtures	.....
Allyl chloride	107-05-1
Amylene	513-35-9
Amylenes, mixed	.....
Aniline	62-53-3
Benzene	71-43-2
Benzenesulfonic acid	98-11-3
Benzenesulfonic acid C ₁₀₋₁₆ -alkyl derivatives, sodium salts	68081-81-2
Benzoic acid, tech	65-85-0
Benzyl chloride	100-44-7
Biphenyl	92-52-4
Bisphenol A	80-05-7
Brometone	76-08-4
1,3-Butadiene	106-99-0
Butadiene and butene fractions	.....
n-Butane	106-97-8
1,4-Butanediol	110-63-4
Butanes, mixed	.....
1-Butene	106-98-9
2-Butene	25167-67-3
Butenes, mixed	.....
n-Butyl acetate	123-86-4
Butyl acrylate	141-32-2
n-Butyl alcohol	71-36-3
sec-Butyl alcohol	78-92-2
tert-Butyl alcohol	75-65-0
Butylbenzyl phthalate	85-68-7
Butylene glycol	107-88-0
tert-Butyl hydroperoxide	75-91-2
2-Butyne-1,4-diol	110-65-6
Butyraldehyde	123-72-8
Butyric anhydride	106-31-0
Caprolactam	105-60-2
Carbon disulfide	75-15-0
Carbon tetrabromide	558-13-4
Carbon tetrachloride	56-23-5
Chlorobenzene	108-90-7

Chemical name	CAS No.*
2-Chloro-4-(ethylamino)-6-(isopropylamino)-s-triazine	1912-24-9
Chloroform	67-66-3
p-Chloronitrobenzene	100-00-5
Chloroprene	126-99-8
Citric acid	77-92-9
Crotonaldehyde	4170-30-0
Crotonic acid	3724-65-0
Cumene	98-82-8
Cumene hydroperoxide	80-15-9
Cyanuric chloride	108-77-0
Cyclohexane	110-82-7
Cyclohexane, oxidized	68512-15-2
Cyclohexanol	108-93-0
Cyclohexanone	108-94-1
Cyclohexanone oxime	100-64-1
Cyclohexene	110-83-8
1,3-Cyclopentadiene	542-92-7
Cyclopropane	75-19-4
Diacetone alcohol	123-42-2
Dibutanized aromatic concentrate . . . . .	.....
1,4-Dichlorobutene	110-57-8
3,4-Dichlor-1-butene	64037-54-3
Dichlorodifluoromethane	75-71-8
Dichlorodimethylsilane	75-78-5
Dichlorofluoromethane	75-43-4
1,3-Dichlorohydrin	96-23-1
Diethanolamine	111-42-2
Diethylbenzene	25340-17-4
Diethylene glycol	111-46-6
Di-n-heptyl-n-nonyl undecyl phthalate	85-68-7
Di-isodecyl phthalate	26761-40-0
Diisononyl phthalate	28553-12-0
Dimethylamine	124-40-3
Demethyl terephthalate	120-61-6
2,4-Dinitrotoluene	121-14-2
2,6-Dinitrotoluene	606-20-2
Diocetyl phthalate	117-81-7
Dodecene	25378-22-7
Dodecylbenzene, non linear . . . . .	.....
Dodecylbenzenesulfonic acid	27176-87-0
Dodecylbenzenesulfonic acid, sodium salt	25155-30-0
Epichlorohydrin	106-89-8
Ethanol	64-17-5
Ethanolamine	141-43-5
Ethyl acetate	141-78-6
Ethyl acrylate	140-88-5
Ethylbenzene	100-41-4

Chemical name	CAS No.*
Ethyl chloride	75-00-3
Ethyl cyanide	107-12-0
Ethylene	74-85-1
Ethylene dibromide	106-93-4
Ethylene dichloride	107-06-2
Ethylene glycol	107-21-1
Ethylene glycol monobutyl	111-76-2
Ethylene glycol monoethyl ether	110-80-5
Ethylene glycol monoethyl ether acetate	111-15-9
Ethylene glycol monomethyl ether	108-86-4 109-86-4
Ethylene oxide	75-21-8
2-Ethylhexanal	26266-68-2
2-Ethylhexyl alcohol	104-76-7
(2-Ethylhexyl) amine	104-75-6
Ethylmethylbenzene	25550-14-5
6-Ethyl-1,2,3,4-tetrahydro-9,10-anthracenedione	15547-17-8
Formaldehyde	50-00-0
Glycerol	56-81-5
n-Heptane	142-82-5
Heptenes, mixed	.....
Hexadecyl chloride	.....
Hexamethylene diamine	124-09-4
Hexamethylene diamine adipate	3323-53-3
Hexamethylenetetramine	100-97-0
Hexane	110-54-3
2-Hexenedinitrile	13042-02-9
3-Hexenedinitrile	1119-85-3
Hydrogen cyanide	74-90-8
Isobutane	75-28-5
Isobutanol	78-83-1
Isobutylene	115-11-7
Isobutyraldehyde	78-84-2
Isodecyl alcohol	25339-17-7
Isooctyl alcohol	26952-21-6
Isopentane	78-78-4
Isophthalic acid	121-91-5
Isoprene	78-79-5
Isopropanol	67-63-0
Ketene	463-51-4
Linear alcohols, ethoxylated, mixed	.....
Linear alcohols, ethoxylated and sulfated, sodium salt, mixed	.....
Linear alcohols, sulfated, sodium salt, mixed	.....
Linear alkylbenzene	123-01-3
Magnesium acetate	142-72-3
Maleic anhydride	108-31-6
Melamine	108-78-1
Mesityl oxide	141-79-7
Methacrylonitrile	126-98-7

Chemical name	CAS No.*
Methanol	67-56-1
Methylamine	74-89-5
ar-Methylbenzenediamine	25376-45-8
Methyl chloride	74-87-3
Methylene chloride	75-09-2
Methyl ethyl ketone	78-93-3
Methyl iodide	74-88-4
Methyl isobutyl ketone	108-10-1
Methyl methacrylate	80-62-6
2-Methylpentane	107-83-5
1-Methyl-2-pyrrolidone	872-50-4
Methyl tert-butyl ether	.....
Naphthalene	91-20-3
Nitrobenzene	98-95-3
1-Nonene	27215-95-8
Nonyl alcohol	143-08-08
Nonylphenol	25154-52-3
Nonylphenol, ethoxylated	9016-45-9
Octene	25377-83-7
Oil-soluble petroleum sulfonate, calcium salt	.....
Oil-soluble petroleum sulfonate, sodium salt	.....
Pentaerythritol	115-77-5
n-Pentane	109-66-0
3-Pentenenitrile	4635-87-4
Pentenes, mixed	109-67-1
Perchloroethylene	127-18-4
Phenol	108-95-2
1-Phenylethyl hydroperoxide	3071-32-7
Phenylpropane	103-65-1
Phosgene	75-44-5
Phthalic anhydride	85-44-9
Propane	74-98-6
Propionaldehyde	123-38-6
Propionic acid	79-09-4
Propyl alcohol	71-23-8
Propylene	115-07-1
Propylene chlorohydrin	78-89-7
Propylene glycol	57-55-6
Propylene oxide	75-56-9
Propyl alcohol	71-23-8
Propylene	115-07-1
Sodium cyanide	143-33-9
Sorbitol	50-70-4
Styrene	100-42-5
Terephthalic acid	100-21-0
1,1,2,2-Tetrachloroethane	79-34-5

Chemical name	CAS No.*
Tetraethyl lead	78-00-2
Tetrahydrofuran	109-99-9
Tetra (methyl-ethyl) lead . . . . .	.....
Tetramethyl lead	75-74-1
Toluene	108-88-3
Toluene-2,4-diamine	95-80-7
Toluene-2,4 (and 2,6)-diisocyanate (80/20 mixture)	26471-62-5
Tribromomethane	75-25-2
1,1,1-Trichloroethane	71-55-6
1,1,2-Trichloroethane	79-00-5
Trichloroethylene	79-01-6
Trichlorofluoromethane	75-89-4
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1
Triethanolamine	102-71-6
Triethylene glycol	112-27-67
Vinyl acetate	108-05-4
Vinyl chloride	75-01-4
Vinylidene chloride	75-35-4
m-Xylene	108-38-3
o-Xylene	95-47-6
p-Xylene	106-42-3
Xylenes, mixed	1330-20-7
m-Xylenol	576-26-1

*CAS numbers refer to the Chemical Abstracts Service 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.

SECTION 49. NR 440.70(1)(b) and (15)(j)1. are amended to read:

NR 440.70(1)(b) Notwithstanding the provisions of s. NR 440.14(5)(b), the construction or installation of a new individual drain system shall constitute a modification to an affected facility described in par. (a)4. For purposes of this ~~subdivision~~ paragraph, a new individual drain system shall be limited to all process drains and the first common junction box.

(15)(j)1. Documentation demonstrating that the control device will achieve the required control efficiency during maximum loading conditions shall be kept for the life of the facility. This documentation is to include a general description of the gas streams that enter the control device, including flow and VOC content under varying liquid level conditions, dynamic and static, and manufacturer's design specifications for the control device. If an enclosed combustion device with a minimum residence time of 0.75 seconds and a minimum temperature of 816°C (1,500°F) is used to meet the ~~95-percent~~ 95% requirement, documentation that those conditions exist is sufficient to meet the requirements of this paragraph.

SECTION 50. NR 440.705 is created to read:

NR 440.705 VOLATILE ORGANIC COMPOUND EMISSIONS FROM SYNTHETIC ORGANIC CHEMICAL MANUFACTURING INDUSTRY (SOCMI) REACTOR PROCESSES (1) APPLICABILITY AND DESIGNATION OF AFFECTED FACILITY.

(a) This section applies to each affected facility designated in par. (b) that is part of a process unit that produces any of the chemicals listed in sub. (8) as a product, co-product, by-product or intermediate except as provided in par. (c).

(b) The affected facility is any of the following for which construction, modification or reconstruction commenced after June 29, 1990:

1. Each reactor process not discharging its vent stream into a recovery system.

2. Each combination of a reactor process and the recovery system into which its vent stream is discharged.

3. Each combination of 2 or more reactor processes and the common recovery system into which their vent streams are discharged.

(c) Exemptions from the provisions of par. (a) are as follows:

1. Any reactor process that is designed and operated as a batch operation is not an affected facility.

2. Each affected facility that has a total resource effectiveness (TRE) index value greater than 8.0 is exempt from all provisions of this section except for subs. (3)(c), (5)(d), (e) and (f) and (6)(g), (l) and (t).

3. Each affected facility in a process unit with a total design capacity for all chemicals produced within that unit of less than one gigagram per year (1,100 tons per year) is exempt from all provisions of this section except for the recordkeeping and reporting requirements in sub. (6)(i), (l)6. and (n).

4. Each affected facility operated with a vent stream flow rate less than 0.011 scm/min is exempt from all provisions of this section except for the test method and procedure and the recordkeeping and reporting requirements in subs. (5)(g) and (6)(h), (l)5. and (o).

5. If the vent stream from an affected facility is routed to a distillation unit subject to s. NR 440.686 and has no other releases to the air except for a pressure relief valve, the facility is exempt from all provisions of this section except for sub. (6)(r).

6. Any reactor process operating as part of a process unit which produces beverage alcohols or which uses, contains and produces no VOC is not an affected facility.

7. Any reactor process that is subject to the provisions of s. NR 440.647 is not an affected facility.

8. Each affected facility operated with a concentration of total organic compounds (TOC), less methane and ethane, in the vent stream less than 300 ppmv, as measured by Method 18 in Appendix A of 40 CFR part 60, incorporated by reference in s. NR 440.17, or a concentration of TOC in the vent stream less than 150 ppmv, as measured by Method 25A in Appendix A of 40 CFR part 60, incorporated by reference in s. NR 440.17, is exempt from all provisions of this section except for the test method and procedure and the reporting and recordkeeping requirements in subs. (5)(h) and (6)(j), (l) 8. and (p).

Note: The intent of these standards is to minimize emissions of VOC through the application of best demonstrated technology (BDT). The numerical emission limits in these standards are expressed in terms of TOC, measured as TOC less methane and ethane. This emission limit reflects the performance of BDT.

(2) DEFINITIONS. All terms not defined in this section have the meanings given in s. NR 440.02. In this section:

(a) "Batch operation" means any noncontinuous reactor process that is not characterized by steady state conditions and in which reactants are not added and products are not removed simultaneously.

(b) "Boiler" means any enclosed combustion device that extracts useful energy in the form of steam and is not an incinerator.

(c) "By compound" means by individual stream components, not carbon equivalents.

(d) "Car-seal" means a seal that is placed on a device that is used to change the position of a valve, for example, from opened to closed, in such a way that the position of the valve cannot be changed without breaking the seal.

(e) "Combustion device" means an individual unit of equipment, such as an incinerator, flare, boiler or process heater, used for combustion of a vent stream discharged from the process vent.

(f) "Continuous recorder" means a data recording device recording an

instantaneous data value at least once every 15 minutes.

(g) "Flame zone" means the portion of the combustion chamber in a boiler occupied by the flame envelope.

(h) "Flow indicator" means a device which indicates whether gas flow is present in a line.

(i) "Halogenated vent stream" means any vent stream determined to have a total concentration by volume of compounds containing halogens of 20 ppmv by compound or greater.

(j) "Incinerator" means an enclosed combustion device that is used for destroying organic compounds. If there is energy recovery, the energy recovery section and the combustion chambers are not of integral design. That is, the energy recovery section and the combustion section are not physically formed into one manufactured or assembled unit but are joined by ducts or connections carrying flue gas.

(k) "Primary fuel" means the fuel fired through a burner or a number of similar burners. The primary fuel provides the principal heat input to the device and the amount of fuel is sufficient to sustain operation without the addition of other fuels.

(l) "Process heater" means a device that transfers heat liberated by burning fuel directly to process streams or to heat transfer liquids other than water.

(m) "Process unit" means equipment assembled and connected by pipes or ducts to produce as intermediates or final products one or more of the chemicals in sub. (8). A process unit can operate independently if supplied with sufficient feed or raw materials and sufficient product storage facilities.

(n) "Product" means any compound or chemical listed in sub. (8) which is produced for sale as a final product as that chemical or for use in the production of other chemicals or compounds. By-products, co-products and intermediates are considered to be products.

(o) "Reactor processes" means unit operations in which one or more chemicals or reactants, other than air, are combined or decomposed in such a way that their molecular structures are altered and one or more new organic

compounds are formed.

(p) "Recovery device" means an individual unit of equipment, such as an absorber, carbon adsorber or condenser, capable of and used for the purpose of recovering chemicals for use, reuse or sale.

(q) "Recovery system" means an individual recovery device or series of recovery devices applied to the same vent stream.

(r) "Relief valve" means a valve used only to release an unplanned, nonroutine discharge. A relief valve discharge results from an operator error, a malfunction such as a power failure or equipment failure or other unexpected cause that requires immediate venting of gas from process equipment in order to avoid safety hazards or equipment damage.

(s) "Secondary fuel" means a fuel fired through a burner other than a primary fuel burner. The secondary fuel may provide supplementary heat in addition to the heat provided by the primary fuel.

(t) "Total organic compounds" or "TOC" means those compounds measured according to the procedures in sub. (5)(b)4. For the purposes of measuring molar composition as required in sub. (5)(d)2. a. and b., hourly emission rate as required in sub. (5)(d)5. and (e) and TOC concentration as required in sub. (6)(b)4. and (f)4., those compounds which the department has determined do not contribute appreciably to the formation of ozone are to be excluded.

(u) "Total resource effectiveness" or "TRE index value" means a measure of the supplemental total resource requirement per unit reduction of TOC associated with a vent stream from an affected reactor process facility based on vent stream flow rate, emission rate of TOC, net heating value and corrosion properties, whether or not the vent stream contains halogenated compounds as quantified by the equation given under sub. (5)(e).

(v) "Vent stream" means any gas stream discharged directly from a reactor process to the atmosphere or indirectly to the atmosphere after diversion through other process equipment. The vent stream excludes relief valve discharges and equipment leaks.

(3) STANDARDS. Each owner or operator of any affected facility shall comply with par. (a), (b) or (c) for each vent stream on and after the date on which the initial performance test required by s. NR 440.08 and sub. (5) is

completed but not later than 60 days after achieving the maximum production rate at which the affected facility will be operated or 180 days after the initial start up, whichever date comes first. Each owner or operator shall either:

(a) Reduce emissions of TOC, less methane and ethane, by 98 weight percent or to a TOC, less methane and ethane, concentration of 20 ppmv on a dry basis corrected to 3% oxygen, whichever is less stringent. If a boiler or process heater is used to comply with this paragraph, then the vent stream shall be introduced into the flame zone of the boiler or process heater; or

(b) Combust the emissions in a flare that meets the requirements of s. NR 440.18; or

(c) Maintain a TRE index value greater than 1.0 without use of a VOC emission control device.

(4) MONITORING OF EMISSIONS AND OPERATIONS. (a) The owner or operator of an affected facility that uses an incinerator to seek to comply with the TOC emission limit specified under sub. (3)(a) shall install, calibrate, maintain and operate according to manufacturer's specifications the following equipment:

1. A temperature monitoring device equipped with a continuous recorder and having an accuracy of $\pm 1\%$ of the temperature being monitored expressed in degrees Celsius or $\pm 0.5^{\circ}\text{C}$, whichever is greater.

a. Where an incinerator other than a catalytic incinerator is used, a temperature monitoring device shall be installed in the firebox or in the ductwork immediately downstream of the firebox in a position before any substantial heat exchange is encountered.

b. Where a catalytic incinerator is used, temperature monitoring devices shall be installed in the gas stream immediately before and after the catalyst bed.

2. A flow indicator that provides a record of vent stream flow diverted from being routed to the incinerator at least once every 15 minutes for each affected facility, except as provided in subd. 2. b.

a. The flow indicator shall be installed at the entrance to any bypass line that could divert the vent stream from being routed to the incinerator,

resulting in its emission to the atmosphere.

b. Where the bypass line valve is secured in the closed position with a car-seal or a lock-and-key type configuration, a flow indicator is not required. A visual inspection of the seal or closure mechanism shall be performed at least once every month to ensure that the valve is maintained in the closed position and the vent stream is not diverted through the bypass line.

(b) The owner or operator of an affected facility that uses a flare to seek to comply with sub. (3)(b) shall install, calibrate, maintain and operate according to manufacturer's specifications the following equipment:

1. A heat sensing device, such as an ultraviolet beam sensor or thermocouple at the pilot light to indicate the continuous presence of a flame.

2. A flow indicator that provides a record of vent stream flow diverted from being routed to the flare at least once every 15 minutes for each affected facility, except as provided in subd. 2. b.

a. The flow indicator shall be installed at the entrance to any bypass line that could divert the vent stream from being routed to the flare resulting in its emission to the atmosphere.

b. Where the bypass line valve is secured in the closed position with a car-seal or a lock-and-key type configuration, a flow indicator is not required. A visual inspection of the seal or closure mechanism shall be performed at least once every month to ensure that the valve is maintained in the closed position and the vent stream is not diverted through the bypass line.

(c) The owner or operator of an affected facility that uses a boiler or process heater to seek to comply with sub. (3)(a) shall install, calibrate, maintain and operate according to the manufacturer's specifications the following equipment:

1. A flow indicator that provides a record of vent stream flow diverted from being routed to the boiler or process heater at least once every 15 minutes for each affected facility, except as provided in subd. 1. b.

a. The flow indicator shall be installed at the entrance to any bypass

line that could divert the vent stream from being routed to the boiler or process heater resulting in its emission to the atmosphere.

b. Where the bypass line valve is secured in the closed position with a car-seal or a lock-and-key type configuration, a flow indicator is not required. A visual inspection of the seal or closure mechanism shall be performed at least once every month to ensure that the valve is maintained in the closed position and the vent stream is not diverted through the bypass line.

2. A temperature monitoring device in the firebox equipped with a continuous recorder and having an accuracy of $\pm 1\%$ of the temperature being monitored expressed in degrees Celsius or $\pm 0.5^\circ\text{C}$, whichever is greater, for boilers or process heaters of less than 44 MW (150 million Btu/hr) design heat input capacity. Any vent stream introduced with primary fuel into a boiler or process heater is exempt from this requirement.

(d) The owner or operator of an affected facility that seeks to demonstrate compliance with the TRE index value limit specified under sub. (3)(c) shall install, calibrate, maintain and operate according to manufacturer's specifications the following equipment unless alternative monitoring procedures or requirements are approved for that facility by the department:

1. Where an absorber is the final recovery device in the recovery system:

a. A scrubbing liquid temperature monitoring device having an accuracy of $\pm 1\%$ of the temperature being monitored expressed in degrees Celsius or $\pm 0.5^\circ\text{C}$, whichever is greater, and a specific gravity monitoring device having an accuracy of ± 0.02 specific gravity units, each equipped with a continuous recorder; or

b. An organic monitoring device used to indicate the concentration level of organic compounds exiting the recovery device based on a detection principle such as infrared, photoionization or thermal conductivity, each equipped with a continuous recorder.

2. Where a condenser is the final recovery device in the recovery system:

a. A product side condenser exit temperature monitoring device equipped with a continuous recorder and having an accuracy of $\pm 1\%$ of the temperature

being monitored, expressed in degrees Celsius or $\pm 0.5^{\circ}\text{C}$, whichever is greater;
or

b. An organic monitoring device used to indicate the concentration level of organic compounds exiting the recovery device based on a detection principle such as infrared, photoionization or thermal conductivity, each equipped with a continuous recorder.

3. Where a carbon adsorber is the final recovery device unit in the recovery system:

a. An integrating steam flow monitoring device having an accuracy of $\pm 10\%$ and a carbon bed temperature monitoring device having an accuracy of $\pm 1\%$ of the temperature being monitored expressed in degrees Celsius or $\pm 0.5^{\circ}\text{C}$, whichever is greater, both equipped with a continuous recorder; or

b. An organic monitoring device used to indicate the concentration level of organic compounds exiting the recovery device based on a detection principle such as infrared, photoionization or thermal conductivity, each equipped with a continuous recorder.

(e) An owner or operator of an affected facility seeking to demonstrate compliance with the standards specified under sub. (3) with a control device other than an incinerator, boiler, process heater or flare, or a recovery device other than an absorber, condenser or carbon adsorber, shall provide to the administrator information describing the operation of the control device or recovery device and the process parameters which would indicate proper operation and maintenance of the device. The administrator may request further information and will specify appropriate monitoring procedures or requirements.

(5) TEST METHODS AND PROCEDURES. (a) For the purpose of demonstrating compliance with sub. (3), all affected facilities shall be run at full operating conditions and flow rates during any performance test.

(b) The following methods in Appendix A of 40 CFR part 60, incorporated by reference in s. NR 440.17, except as provided under s. NR 440.08(2), shall be used as reference methods to determine compliance with the emission limit or percent reduction efficiency specified under sub. (3)(a).

1. Method 1 or 1A, as appropriate, for selection of the sampling sites.

The control device inlet sampling site for determination of vent stream molar composition or TOC, less methane and ethane, reduction efficiency shall be prior to the inlet of the control device and after the recovery system.

2. Method 2, 2A, 2C or 2D, as appropriate, for determination of the gas volumetric flow rates.

3. The emission rate correction factor, integrated sampling and analysis procedure of Method 3B shall be used to determine the oxygen concentration (%O_{2d}) for the purposes of determining compliance with the 20 ppmv limit. The sampling site shall be the same as that of the TOC samples, and the samples shall be taken during the same time that the TOC samples are taken. The TOC concentration corrected to 3% O₂ (C_c) shall be computed using the following equation:

$$C_c = C_{\text{TOC}} \frac{17.9}{20.9 - \%O_{2d}}$$

where:

C_c is the concentration of TOC corrected to 3% O₂, dry basis ppm by volume

C_{TOC} is the concentration of TOC minus methane and ethane, dry basis ppm by volume

%O_{2d} is the concentration of O₂, dry basis percent by volume

4. Method 18 to determine the concentration of TOC in the control device outlet and the concentration of TOC in the inlet when the reduction efficiency of the control device is to be determined.

a. The minimum sampling time for each run shall be one hour in which either an integrated sample or 4 grab samples shall be taken. If grab sampling is used, then the samples shall be taken at approximately 15-minute intervals.

b. The emission reduction (R) of TOC, minus methane and ethane, shall be determined using the following equation:

$$R = \frac{E_i - E_o}{E_i} \times 100$$

where:

R is the emission reduction, percent by weight

E_i is the mass rate of TOC entering the control device, kg TOC/hr

E_o is the mass rate of TOC discharged to the atmosphere, kg TOC/hr

c. The mass rates of TOC (E_i , E_o) shall be computed using the following equations:

$$E_i = K_2 \sum_{j=1}^n C_{ij} M_{ij} Q_i$$

$$E_o = K_2 \sum_{j=1}^n C_{oj} M_{oj} Q_o$$

where:

C_{ij} , C_{oj} is the concentration of sample component "j" of the gas stream at the inlet and outlet of the control device, respectively, dry basis ppm by volume

M_{ij} , M_{oj} is the molecular weight of sample component "j" of the gas stream at the inlet and outlet of the control device, respectively, g/g-mole (lb/lb-mole)

Q_i , Q_o is the flow rate of gas stream at the inlet and outlet of the control device respectively, dscm/min (dscf/hr)

K_2 is a constant, 2.494×10^{-6} (1/ppm) (g-mole/scm) (kg/g) (min/hr), where standard temperature for g-mole/scm is 20°C

d. The TOC concentration (C_{TOC}) is the sum of the individual components and shall be computed for each run using the following equation:

$$C_{TOC} = \sum_{j=1}^n C_j$$

where:

C_{TOC} is the concentration of TOC, minus methane and ethane, dry basis ppm by volume

where:

R is the emission reduction, percent by weight

E_i is the mass rate of TOC entering the control device, kg TOC/hr

E_o is the mass rate of TOC discharged to the atmosphere, kg TOC/hr

c. The mass rates of TOC (E_i , E_o) shall be computed using the following equations:

$$E_i = K_2 \sum_{j=1}^n C_{ij} M_{ij} Q_i$$

$$E_o = K_2 \sum_{j=1}^n C_{oj} M_{oj} Q_o$$

where:

C_{ij} , C_{oj} is the concentration of sample component "j" of the gas stream at the inlet and outlet of the control device, respectively, dry basis ppm by volume

M_{ij} , M_{oj} is the molecular weight of sample component "j" of the gas stream at the inlet and outlet of the control device, respectively, g/g-mole (lb/lb-mole)

Q_i , Q_o is the flow rate of gas stream at the inlet and outlet of the control device respectively, dscm/min (dscf/hr)

K_2 is a constant, 2.494×10^{-6} (l/ppm) (g-mole/scm) (kg/g) (min/hr), where standard temperature for g-mole/scm is 20°C

d. The TOC concentration (C_{TOC}) is the sum of the individual components and shall be computed for each run using the following equation:

$$C_{TOC} = \sum_{j=1}^n C_j$$

where:

C_{TOC} is the concentration of TOC, minus methane and ethane, dry basis ppm by volume

postreactor introduction of halogenated compounds into the process vent stream. No traverse site selection method is needed for vents smaller than 4 inches in diameter.

b. If any gas stream other than the reactor vent stream is normally conducted through the final recovery device:

1) The sampling site for vent stream flow rate and molar composition shall be prior to the final recovery device and prior to the point at which any nonreactor stream or stream from a nonaffected reactor process is introduced.

2) The efficiency of the final recovery device is determined by measuring the TOC concentration using Method 18 at the inlet to the final recovery device after the introduction of any vent stream and at the outlet of the final recovery device.

3) This efficiency of the final recovery device shall be applied to the TOC concentration measured prior to the final recovery device and prior to the introduction of any nonreactor stream or stream from a nonaffected reactor process to determine the concentration of TOC in the reactor process vent stream from the final recovery device. This concentration of TOC is then used to perform the calculations outlined in subd. 4. and 5.

2. The molar composition of the process vent stream shall be determined as follows:

a. Method 18 to measure the concentration of TOC including those containing halogens.

b. ASTM D1946-77, incorporated by reference in s. NR 440.17, to measure the concentration of carbon monoxide and hydrogen.

c. Method 4 to measure the content of water vapor.

3. The volumetric flow rate shall be determined using Method 2, 2A, 2C or 2D as appropriate.

4. The net heating value of the vent stream shall be calculated using the following equation:

$$H_T = K_1 \sum_{j=1}^n C_j H_j (1 - B_{vs})$$

where:

H_r is the net heating value of the sample, MJ/scm, where the net enthalpy per mole of vent stream 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°C as in the definition of Q_v (vent stream flow rate)

K_1 is a constant, 1.740×10^{-7} (l/ppm) (g-mole/scm) (MJ/kcal), where standard temperature for (g-mole/scm) is 20°C

C_j is the concentration on a dry basis of compound "j" in ppm as measured for organics by Method 18 and measured for hydrogen and carbon monoxide by ASTM D1946-77, incorporated by reference in s. NR 440.17, as indicated in subd. 2.

H_j is the net heat of combustion of compound "j", kcal/g-mole, based on combustion at 25°C and 760 mm Hg. The heats of combustion of vent stream components would be required to be determined using ASTM D2382-76, incorporated by reference in s. NR 440.17, if published values are not available or cannot be calculated

B_{wv} is the water vapor content of the vent stream, proportion by volume

5. The emission rate of TOC in the vent stream shall be calculated using the following equation:

$$E_{\text{TOC}} = K_2 \sum_{j=1}^n C_j M_j Q_v$$

where:

E_{TOC} is the emission rate of TOC in the sample, kg/hr

K_2 is a constant, 2.494×10^{-6} (l/ppm) (g-mole/scm) (kg/g) (min/hr), where standard temperature for (g-mole/scm) is 20°C

C_j is the concentration on a dry basis of compound "j" in ppm as measured by Method 18 as indicated in subd. 2.

M_j is the molecular weight of sample "j", g/g-mole

Q_v is the vent stream flow rate (dscm/min) at a temperature of 20°C

6. The total vent stream concentration, by volume, of compounds containing halogens (ppmv, by compound) shall be summed from the individual concentrations of compounds containing halogens which were measured by Method 18.

(e) For purposes of complying with subs. (1)(c)2. and (3)(c), the owner or operator of a facility affected by this section shall calculate the TRE index value of the vent stream using the equation for incineration in subd. 1 for halogenated vent streams. The owner or operator of an affected facility with a nonhalogenated vent stream shall determine the TRE index value by calculating values using both the incinerator equation in subd. 1. and the flare equation in subd. 2. and selecting the lower of the 2 values.

1. The equation for calculating the TRE index value of a vent stream controlled by an incinerator is as follows:

$$TRE = \frac{1}{E_{TOC}} \left[a + b(Q_s)0.88 + c(Q_s) + d(Q_s)(H_T) + e(Q_s)^{0.88}(H_T)^{0.88} + f(Y_s)^{0.5} \right]$$

a. Where for a vent stream flow rate (scm/min) at a standard temperature of 20°C that is greater than or equal to 14.2 scm/min:

TRE is the TRE index value

Q_s is the vent stream flow rate (scm/min) at a standard temperature of 20°C

H_T is the vent stream net heating value (MJ/scm), where the net enthalpy per mole of vent stream 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°C as in the definition of Q_s .

Y_s is Q_s for all vent stream categories listed in Table 1 except for Category E vent streams where $Y_s = (Q_s)(H_T)/3.6$

E_{TOC} is the hourly emissions of TOC reported in kg/hr

a, b, c, d, e and f are coefficients. The set of coefficients that apply to a vent stream can be obtained from Table 1.

6. The total vent stream concentration, by volume, of compounds containing halogens (ppmv, by compound) shall be summed from the individual concentrations of compounds containing halogens which were measured by Method 18.

(e) For purposes of complying with subs. (1)(c)2. and (3)(c), the owner or operator of a facility affected by this section shall calculate the TRE index value of the vent stream using the equation for incineration in subd. 1 for halogenated vent streams. The owner or operator of an affected facility with a nonhalogenated vent stream shall determine the TRE index value by calculating values using both the incinerator equation in subd. 1. and the flare equation in subd. 2. and selecting the lower of the 2 values.

1. The equation for calculating the TRE index value of a vent stream controlled by an incinerator is as follows:

$$TRE = \frac{1}{E_{TOC}} \left[a + b(Q_s)^{0.88} + c(Q_s) + d(Q_s)(H_T) + e(Q_s)^{0.88}(H_T)^{0.88} + f(Y_s)^{0.5} \right]$$

a. Where for a vent stream flow rate (scm/min) at a standard temperature of 20°C that is greater than or equal to 14.2 scm/min:

TRE is the TRE index value

Q_s is the vent stream flow rate (scm/min) at a standard temperature of 20°C

H_T is the vent stream net heating value (MJ/scm), where the net enthalpy per mole of vent stream 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°C as in the definition of Q_s .

Y_s is Q_s for all vent stream categories listed in Table 1 except for Category E vent streams where $Y_s = (Q_s)(H_T)/3.6$

E_{TOC} is the hourly emissions of TOC reported in kg/hr

a, b, c, d, e and f are coefficients. The set of coefficients that apply to a vent stream can be obtained from Table 1.

Q_s is 14.2 scm/min

$$H_T = (\text{FLOW})(\text{HVAL})/14.2$$

where the following inputs are used:

FLOW is the vent stream flow rate (scm/min) at a standard temperature of 20°C

HVAL is the vent stream net heating value (MJ/scm) where the net enthalpy per mole of vent stream 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°C as in the definition of Q_s

Y_s is 14.2 scm/min for all vent streams except for Category E vent streams where $Y_s = (14.2)(H_T)/3.6$

E_{TOC} is the hourly emissions of TOC reported in kg/hr

a, b, c, d, e and f are coefficients. The set of coefficients that apply to a vent stream can be obtained from Table 1.

2. The equation for calculating the TRE index value of a vent stream controlled by a flare is as follows:

$$\text{TRE} = \frac{1}{E_{\text{TOC}}} \left[a(Q_s) + b(Q_s)^{0.8} + c(Q_s)(H_T) + d(E_{\text{TOC}}) + e \right]$$

where:

TRE is the TRE index value

E_{TOC} is the hourly emission rate of TOC reported in kg/hr

Q_s is the vent stream flow rate (scm/min) at a standard temperature of 20°C

H_T is the vent stream net heating value (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°C as in the definition of Q_s

a, b, c, d and e are coefficients. The set of coefficients that apply to a vent stream can be obtained from Table 2.

Table 2. Total Resource Effectiveness Coefficients for Vent Streams Controlled by a Flare Subject to the New Source Performance Standards for Reactor Processes

	a	b	c	d	e
$H_r < 11.2$ MJ/scm	2.25	0.288	-0.193	-0.0051	2.08
$H_r \geq 11.2$ MJ/scm	0.309	0.0619	-0.0043	-0.0034	2.08

(f) Each owner or operator of an affected facility seeking to comply with sub. (1)(c)2. or (3)(c) shall recalculate the TRE index value for that affected facility whenever process changes are made. Examples of process changes include changes in production capacity, feedstock type or catalyst type or whenever there is replacement, removal or addition of recovery equipment. The TRE index value shall be recalculated based on test data or on best engineering estimates of the effects of the change on the recovery system.

1. Where the recalculated TRE index value is less than or equal to 1.0, the owner or operator shall notify the department within one week of the recalculation and shall conduct a performance test according to the methods and procedures required by this subsection in order to determine compliance with sub. (3)(a). Performance tests shall be conducted as soon as possible after the process change but no later than 180 days from the time of the process change.

2. Where the recalculated TRE index value is less than or equal to 8.0 but greater than 1.0, the owner or operator shall conduct a performance test in accordance with s. NR 440.08 and this subsection and shall comply with subs. (4) and (6) and this subsection. Performance tests shall be conducted as soon as possible after the process change but no later than 180 days from the time of the process change.

(g) Any owner or operator subject to the provisions of this section seeking to demonstrate compliance with sub. (1)(c)4. shall use Method 2, 2A, 2C or 2D of Appendix A to 40 CFR part 60, incorporated by reference in s. NR 440.17, for determination of volumetric flow rate.

(h) Each owner or operator seeking to demonstrate that a reactor process vent stream has a TOC concentration for compliance with the low concentration

exemption in sub. (1)(c)8. shall conduct an initial test to measure TOC concentration.

1. The sampling site shall be selected as specified in par. (d)1.a.
2. Method 18 or Method 25A of Appendix A of 40 CFR part 60, incorporated by reference in s. NR 440.17, shall be used to measure concentration.
3. Where Method 18 is used to qualify for the low concentration exclusion in sub. (1)(c)8., the procedures in par. (b)4. a. and g. shall be used to measure TOC concentration and the procedures of par. (b)3. shall be used to correct the TOC concentration to 3% oxygen. To qualify for the exclusion, the results shall demonstrate that the concentration of TOC corrected to 3% oxygen is below 300 ppm by volume.

4. Where Method 25A is used, the following procedures shall be used to calculate ppm by volume TOC concentration corrected to 3% oxygen:

a. Method 25A shall be used only if a single organic compound is greater than 50% of total TOC, by volume, in the reactor process vent stream. This compound shall be the principal organic compound.

b. The principal organic compound may be determined by either process knowledge or test data collected using an appropriate reference method. Examples of information that could constitute process knowledge include calculations based on material balances, process stoichiometry or previous test results provided the results are still relevant to the current reactor process vent stream conditions.

c. The principal organic compound shall be used as the calibration gas for Method 25A.

d. The span value for Method 25A shall be 300 ppmv.

e. Use of Method 25A is acceptable if the response from the high level calibration gas is at least 20 times the standard deviation of the response from the zero calibration gas when the instrument is zeroed on the most sensitive scale.

f. The owner or operator shall demonstrate that the concentration of TOC, including methane and ethane, measured by Method 25A, corrected to 3% oxygen, is below 150 ppm by volume to qualify for the low concentration exclusion in sub. (1)(c)8.

g. The concentration of TOC shall be corrected to 3% oxygen using the procedures and equation in par. (b)3.

(6) REPORTING AND RECORDKEEPING REQUIREMENTS. (a) Each owner or operator subject to sub. (3) shall notify the department of the specific provisions of sub. (3)(a), (b) or (c) with which the owner or operator has elected to comply. Notification shall be submitted with the notification of initial start-up required by s. NR 440.07(1)(c). If an owner or operator elects at a later date to use an alternative provision of sub. (3) with which he or she will comply, then the department shall be notified by the owner or operator 90 days before implementing a change and, upon implementing the change, a performance test shall be performed as specified by sub. (5) no later than 180 days from initial start up.

(b) Each owner or operator subject to the provisions of this section shall keep an up to date, readily accessible record of the following data measured during each performance test and also include the following data in the report of the initial performance test required under s. NR 440.08. Where a boiler or process heater with a design heat input capacity of 44 MW (150 million Btu/hour) or greater is used or where the reactor process vent stream is introduced as the primary fuel to any size boiler or process heater to comply with sub. (3)(a), a report containing performance test data need not be submitted, but a report containing the information in par. (b)2. a. is required. The same data specified in this subsection shall be submitted in the reports of all subsequently required performance tests where either the emission control efficiency of a combustion device, outlet concentration of TOC or the TRE index value of a vent stream from a recovery system is determined.

1. Where an owner or operator subject to the provisions of this section seeks to demonstrate compliance with sub. (3)(a) through use of either a thermal or catalytic incinerator:

a. The average firebox temperature of the incinerator or the average temperature upstream and downstream of the catalyst bed for a catalytic incinerator measured at least every 15 minutes and averaged over the same time period of the performance testing, and

b. The percent reduction of TOC determined as specified in sub. (5)(b) achieved by the incinerator or the concentration of TOC (ppmv, by compound) determined as specified in sub. (5)(b) at the outlet of the control device on a dry basis corrected to 3% oxygen.

2. Where an owner or operator subject to the provisions of this section seeks to demonstrate compliance with sub. (3)(a) through use of a boiler or process heater:

a. A description of the location at which the vent stream is introduced into the boiler or process heater, and

b. The average combustion temperature of the boiler or process heater with a design heat input capacity of less than 44 MW (150 million Btu/hr) measured at least every 15 minutes and averaged over the same time period of the performance testing.

3. Where an owner or operator subject to the provisions of this section seeks to demonstrate compliance with sub. (3)(b) through use of a smokeless flare, flare design, for example, steam-assisted, air-assisted or nonassisted, all visible emission readings, heat content determinations, flow rate measurements and exit velocity determinations made during the performance test, continuous records of the flare pilot flame monitoring, and records of all periods of operations during which the pilot flame is absent.

4. Where an owner or operator subject to the provisions of this section seeks to demonstrate compliance with sub. (3)(c):

a. Where an absorber is the final recovery device in the recovery system, the exit specific gravity, or alternative parameter which is a measure of the degree of absorbing liquid saturation, if approved by the department, and average exit temperature of the absorbing liquid measured at least every 15 minutes and averaged over the same time period of the performance testing, with both measured while the vent stream is normally routed and constituted; or

b. Where a condenser is the final recovery device in the recovery system, the average product side exit temperature measured at least every 15 minutes and averaged over the same time period of the performance testing while the vent stream is routed and constituted normally; or

c. Where a carbon adsorber is the final recovery device in the recovery system, the total steam mass flow measured at least every 15 minutes and averaged over the same time period of the performance test or full carbon bed cycle, temperature of the carbon bed after regeneration and within 15 minutes of completion of any cooling cycle and duration of the carbon bed steaming cycle with all measured while the vent stream is routed and constituted normally; or

d. As an alternative to subd. 4. a., b. or c., the concentration level or reading indicated by the organics monitoring device at the outlet of the absorber, condenser or carbon adsorber measured at least every 15 minutes and averaged over the same time period of the performance testing while the vent stream is normally routed and constituted.

e. All measurements and calculations performed to determine the TRE index value of the vent stream.

(c) Each owner or operator subject to the provisions of this section shall keep up to date, readily accessible continuous records of the equipment operating parameters specified to be monitored under sub. (4)(a) and (c) as well as up to date, readily accessible records of periods of operation during which the parameter boundaries established during the most recent performance test are exceeded. The department may at any time require a report of these data. Where a combustion device is used to comply with sub. (3)(a), periods of operation during which the parameter boundaries established during the most recent performance tests are exceeded are defined as follows:

1. For thermal incinerators, all 3-hour periods of operation during which the average combustion temperature was more than 28°C (50°F) below the average combustion temperature during the most recent performance test at which compliance with sub. (3)(a) was determined.

2. For catalytic incinerators, all 3-hour periods of operation during which the average temperature of the vent stream immediately before the catalyst bed is more than 28°C (50°F) below the average temperature of the vent stream during the most recent performance test at which compliance with sub. (3)(a) was determined. The owner or operator also shall record all 3-hour periods of operation during which the average temperature difference

across the catalyst bed is less than 80% of the average temperature difference of the bed during the most recent performance test at which compliance with sub. (3)(a) was determined.

3. All 3-hour periods of operation during which the average combustion temperature was more than 28°C (50°F) below the average combustion temperature during the most recent performance test at which compliance with sub. (3)(a) was determined for boilers or process heaters with a design heat input capacity of less than 44 MW (150 million Btu/hr) where the vent stream is introduced with the combustion air or as a secondary fuel.

4. For boilers or process heaters, whenever there is a change in the location at which the vent stream is introduced into the flame zone as required under sub. (3)(a).

(d) Each owner or operator subject to the provisions of this section shall keep records of the following:

1. Up to date, readily accessible continuous records of the flow indication specified under sub. (4)(a)2. a., (b)2. a. and (c)1. a. as well as up to date, readily accessible records of all periods and the duration when the vent stream is diverted from the control device.

2. Where a seal mechanism is used to comply with sub. (4)(a)2. b., (b)2. b., and (c)1. b., a record of continuous flow is not required. In such cases the owner or operator shall keep up to date, readily accessible records of all monthly visual inspections of the seals as well as readily accessible records of all periods and the duration when the seal mechanism is broken, the bypass line valve position has changed, the serial number of the broken car-seal has changed or when the key for a lock-and-key type configuration has been checked out.

(e) Each owner or operator subject to the provisions of this section shall keep up to date, readily accessible continuous records of the flare pilot flame monitoring specified under sub. (4)(b) as well as up to date, readily accessible records of all periods of operations in which the pilot flame is absent.

(f) Each owner or operator subject to the provisions of this section shall keep up to date, readily accessible continuous records of the equipment

operating parameters specified to be monitored under sub. (4)(d) as well as up to date, readily accessible records of periods of operation during which the parameter boundaries established during the most recent performance test are exceeded. The department may at any time require a report of these data. Where an owner or operator seeks to comply with sub. (3)(c), periods of operation during which the parameter boundaries established during the most recent performance tests are exceeded are defined as follows:

1. Where an absorber is the final recovery device in a recovery system, and where an organic compound monitoring device is not used:

a. All 3-hour periods of operation during which the average absorbing liquid temperature was more than 11°C (20°F) above the average absorbing liquid temperature during the most recent performance test; or

b. All 3-hour periods of operation during which the average absorbing liquid specific gravity was more than 0.1 unit above or more than 0.1 unit below the average absorbing liquid specific gravity during the most recent performance test unless monitoring of an alternative parameter, which is a measure of the degree of absorbing liquid saturation, is approved by the department in which case the department will define appropriate parameter boundaries and periods of operation during which they are exceeded.

2. Where a condenser is the final recovery device in a system and where an organic compound monitoring device is not used, all 3-hour periods of operation during which the average product side exit condenser operating temperature was more than 6°C (11°F) above the average product side exit operating temperature during the most recent performance test.

3. Where a carbon adsorber is the final recovery device in a system and where an organic compound monitoring device is not used:

a. All carbon bed regeneration cycles during which the total mass steam flow was more than 10% below the total mass steam flow during the most recent performance test; or

b. All carbon bed regeneration cycles during which the temperature of the carbon bed after regeneration and after completion of any cooling cycle was more than 10% or 5°C greater, whichever is less stringent, than the carbon bed temperature in degrees Celsius during the most recent performance test.

4. Where an absorber, condenser or carbon adsorber is the final recovery device in the recovery system and where an organic compound monitoring device is used, all 3-hour periods of operation during which the average organic compound concentration level or reading of organic compounds in the exhaust gases is more than 20% greater than the exhaust gas organic compound concentration level or reading measured by the monitoring device during the most recent performance test.

(g) Each owner or operator of an affected facility subject to the provisions of this section and seeking to demonstrate compliance with sub. (3)(c) shall keep up to date, readily accessible records of:

1. Any changes in production capacity, feedstock type or catalyst type or of any replacement, removal or addition of recovery equipment or reactors;

2. Any recalculation of the TRE index value performed pursuant to sub. (5)(f); and

3. The results of any performance test performed pursuant to the methods and procedures required by sub. (5)(d).

(h) Each owner or operator of an affected facility that seeks to comply with the requirements of this section by complying with the flow rate cutoff in sub. (1)(c)4. shall keep up to date, readily accessible records to indicate that the vent stream flow rate is less than 0.011 scm/min and of any change in equipment or process operation that increases the operating vent stream flow rate, including a measurement of the new vent stream flow rate.

(i) Each owner or operator of an affected facility that seeks to comply with the requirements of this section by complying with the design production capacity provision in sub. (1)(c)3. shall keep up to date, readily accessible records of any change in equipment or process operation that increases the design production capacity of the process unit in which the affected facility is located.

(j) Each owner or operator of an affected facility that seeks to comply with the requirements of this section by complying with the low concentration exemption in sub. (1)(c)8. shall keep up to date, readily accessible records of any change in equipment or process operation that increases the concentration of the vent stream of the affected facility.

(k) Each owner or operator subject to the provisions of this section is exempt from the quarterly reporting requirements contained in s. NR 440.07(3).

(1) Each owner or operator that seeks to comply with the requirements of this section by complying with the requirements of sub. (1)(c)2., 3. or 4. or (3) shall submit to the department semiannual reports of the following recorded information. The initial report shall be submitted within 6 months after the initial start up date.

1. Exceedances of monitored parameters recorded under pars. (c) and (g).

2. All periods and duration recorded under par. (d) when the vent stream is diverted from the control device to the atmosphere.

3. All periods recorded under par. (f) in which the pilot flame of the flare was absent.

4. Any change in equipment or process operation that increases the operating vent stream flow rate above the low flow exemption level in sub. (1)(c)4., including a measurement of the new vent stream flow rate, as recorded under par. (i). These shall be reported as soon as possible after the change and no later than 180 days after the change. A performance test shall be completed within the same time period to verify the recalculated flow value and to obtain the vent stream characteristics of heating value and E_{Toc} . The performance test is subject to the requirements of s. NR 440.08. Unless the facility qualifies for an exemption under any of the exemption provisions listed in sub. (1)(c), except for the total resource effectiveness index greater than 8.0 exemption in sub. (1)(c)2., the facility shall begin compliance with the requirements in sub. (3).

5. Any change in equipment or process operation as recorded under par. (i) that increases the design production capacity above the low capacity exemption level in sub. (1)(c)3. and the new capacity resulting from the change for the reactor process unit containing the affected facility. These shall be reported as soon as possible after the change and no later than 180 days after the change. A performance test shall be completed within the same time period to obtain the vent stream flow rate, heating value and E_{Toc} . The performance test is subject to the requirements of s. NR 440.08. Unless the facility qualifies for an exemption under any of the exemption provisions

listed in sub. (1)(c), the facility shall begin compliance with the requirements in sub. (3).

6. Any recalculation of the TRE index value as recorded under par. (g).

7. All periods recorded under par. (d) in which the seal mechanism is broken or the by-pass line valve position has changed. A record of the serial number of the car-seal or a record to show that the key to unlock the bypass line valve was checked out shall be maintained to demonstrate the period, the duration and frequency in which the bypass line was operated.

8. Any change in equipment or process operation that increases the vent stream concentration above the low concentration exemption level in sub. (1)(c)8., including a measurement of the new vent stream concentration as recorded under par. (j). These shall be reported as soon as possible after the change and no later than 180 days after the change. If the vent stream concentration is above 300 ppmv as measured using Method 18 of Appendix A of 40 CFR part 60, incorporated by reference in s. NR 440.17, or above 150 ppmv as measured using Method 25A of Appendix A of 40 CFR part 60, incorporated by reference in s. NR 440.17, a performance test shall be completed within the same time period to obtain the vent stream flow rate, heating value and ETOC. The performance test is subject to the requirements of s. NR 440.08. Unless the facility qualifies for an exemption under any of the exemption provisions listed in sub. (1)(c), except for the TRE index greater than 8.0 exemption in sub. (1)(c)2., the facility shall begin compliance with the requirements in sub. (3).

(n) Each owner or operator that seeks to demonstrate compliance with sub. (1)(c)3. shall submit to the department an initial report detailing the design production capacity of the process unit.

(o) Each owner or operator that seeks to demonstrate compliance with sub. (1)(c)4. shall submit to the department an initial report including a flow rate measurement using the test methods specified in sub. (5).

(p) Each owner or operator that seeks to demonstrate compliance with sub. (1)(c)8. shall submit to the department an initial report including a concentration measurement using the test method specified in sub. (5).

(q) The department shall specify appropriate reporting and recordkeeping

requirements where the owner or operator of an affected facility complies with the standards specified under sub. (3) other than as provided under sub.

(4)(a), (b), (c) and (d).

(r) Each owner or operator whose reactor process vent stream is routed to a distillation unit subject to s. NR 440.686 and who seeks to demonstrate compliance with sub. (1)(c)5. shall submit to the department a process design description as part of the initial report. This process design description shall be retained for the life of the process. No other records or reports are required unless process changes are made.

(s) Each owner or operator who seeks to demonstrate compliance with sub. (3)(a) or (b) using a control device shall maintain on file a schematic diagram of the affected vent streams, collection system, fuel systems, control devices and bypass systems as part of the initial report. This schematic diagram shall be retained for the life of the system.

(t) Each owner or operator that seeks to demonstrate compliance with sub. (1)(c)2. shall maintain a record of the initial test for determining the total resource effectiveness index and the results of the initial total resource effectiveness index calculation.

(7) RECONSTRUCTION. (a) For purposes of this section "fixed capital cost of the new components," as used in s. NR 440.15, includes the fixed capital cost of all depreciable components which are or will be replaced pursuant to all continuous programs of component replacement which are commenced within any 2 year period following June 29, 1990. 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.

(8) CHEMICALS AFFECTED BY S. NR 440.705.

Chemical	CAS No. (1)
Acetaldehyde	75-07-0
Acetic acid	64-19-7
Acetic anhydride	108-24-7
Acetone	67-64-1
Acetone cyanohydrin	75-86-5
Acetylene	74-86-2
Acrylic acid	79-10-7
Acrylonitrile	107-13-1

Adipic acid	124-04-9
Adiponitrile	111-69-3
Alcohols, C-11 or lower, mixtures.....	
Alcohols, C-12 or higher, mixtures.....	
Alcohols, C-12 or higher, unmixed.....	
Allyl chloride	107-05-1
Amylene	513-35-9
Amylenes, mixed.....	
Aniline	62-53-3
Benzene	71-43-2
Benzenesulfonic acid	98-11-3
Benzenesulfonic acid C10-16-alkyl derivatives, sodium salts	68081-81-2
Benzyl chloride	100-44-7
Bisphenol A	80-05-7
Brometone	76-08-4
1,3-Butadiene	106-99-0
Butadiene and butene fractions.....	
n-Butane	106-97-8
1,4-Butanediol	110-63-4
Butanes, mixed.....	
1-Butene	106-98-9
2-Butene	25167-67-3
Butenes, mixed.....	
n-Butyl acetate	123-86-4
Butyl acrylate	141-32-2
n-Butyl alcohol	71-36-3
sec-Butyl alcohol	78-92-2
tert-Butyl alcohol	75-65-0
Butylbenzyl phthalate	85-86-7
tert-Butyl hydroperoxide	75-91-2
2-Butyne-1,4-diol	110-65-6
Butyraldehyde	123-72-8
Butyric anhydride	106-31-0
Caprolactam	105-60-2
Carbon disulfide	75-15-0
Carbon tetrachloride	56-23-5
Chloroacetic acid	79-11-8
Chlorobenzene	108-90-7
Chlorodifluoromethane	75-45-6
Chloroform	67-66-3
p-Chloronitrobenzene	100-00-5
Citric acid	77-92-9
Cumene	98-82-8
Cumene hydroperoxide	80-15-9
Cyanuric chloride	108-77-0
Cyclohexane	110-82-7
Cyclohexane, oxidized	68512-15-2
Cyclohexanol	108-93-0
Cyclohexanone	108-94-1
Cyclohexanone oxime	100-64-1
Cyclohexene	110-83-8
Cyclopropane	75-19-4
Diacetone alcohol	123-42-2
1,4-Dichlorobutene	110-57-6
3,4-Dichloro-1-butene	64037-54-3
Dichlorodifluoromethane	75-71-8
Dichlorodimethylsilane	75-78-5
Dichlorofluoromethane	75-43-4
Diethanolamine	111-42-2
Diethylbenzene	25340-17-4
Diethylene glycol	111-46-6
Di-isodecyl phthalate	26761-40-0
Dimethyl terephthalate	120-61-6
2,4-(and 2,6)-dinitrotoluene	121-14-2
	606-20-2
Di-octyl phthalate	117-81-7
Dodecene	25378-22-7
Dodecylbenzene, nonlinear.....	
Dodecylbenzenesulfonic acid	27176-87-0
Dodecylbenzenesulfonic acid, sodium salt	25155-30-0
Epichlorohydrin	106-89-8
Ethanol	64-17-5
Ethanolamine	141-43-5
Ethyl acetate	141-78-6
Ethyl acrylate	140-88-5
Ethylbenzene	100-41-4
Ethyl chloride	75-00-3
Ethylene	74-85-1
Ethylene dibromide	106-93-4
Ethylene dichloride	107-06-2
Ethylene glycol	107-21-1
Ethylene glycol monobutyl ether	111-76-2

$$F = \frac{\sum_{i=1}^n Q_{di} C_{di}}{\sum_{i=1}^n Q_{di} C_{di} + \sum_{k=1}^p Q_{fk} C_{fk}} \quad \text{(Equation 3)}$$

3.d. Determine the efficiency (H_v) of each individual adsorber vessel (v) using the following equation:

$$H_v = \frac{Q_{gv} C_{gv} - Q_{hv} C_{hv}}{Q_{gv} C_{gv}} \quad \text{(Equation 4)}$$

e. Determine the efficiency of the carbon adsorption system (H_{sys}) by computing the average efficiency of the adsorber vessels as weighted by the volumetric flow rate (Q_{hv}) of each individual adsorber vessel (v) using the following equation:

$$H_{sys} = \frac{\sum_{v=1}^q H_v Q_{hv}}{\sum_{v=1}^q Q_{hv}} \quad \text{(Equation 5)}$$

5.a.3)b) Determine FV by the following equation:

$$FV = \frac{\sum_{j=1}^n Q_{out j} - \sum_{i=1}^p Q_{in i}}{\sum_{k=1}^q A_k} \quad \text{(Equation 6)}$$

9.c. Compute the weighted average by the following equation:

$$G = \frac{\sum_{i=1}^n W_{oi} M_{ci}}{\sum_{i=1}^n L_{ei} V_{ci}} \quad \text{(Equation 7)}$$

SECTION 52. NR 440.73 is created to read:

NR 440.73 CALCINERS AND DRYERS IN MINERAL INDUSTRIES. (1) APPLICABILITY AND DESIGNATION OF AFFECTED FACILITY. (a) The affected facility to which this section applies is each calciner and dryer at a mineral processing plant. Feed and product conveyors are not considered part of the affected facility. For the brick and related clay products industry, only the calcining and drying of raw materials prior to firing of the brick are covered.

(b) An affected facility that is subject to s. NR 440.525, Metallic Mineral Processing Plants, is not subject to this section. Also, the following processes and process units used at mineral processing plants are not subject to this section: vertical shaft kilns in the magnesium compounds industry; the chlorination oxidation process in the titanium dioxide industry; coating kilns, mixers and aerators in the roofing granules industry; and tunnel kilns, tunnel dryers, apron dryers, and grinding equipment that also dries the process material used in any of the 17 mineral industries as defined in sub. (2)(e).

(c) The owner or operator of any facility under par. (a) that commences construction, modification or reconstruction after April 23, 1986, is subject to this section.

(2) DEFINITIONS. All terms not defined in this section have the meanings given in s. NR 440.02. In this section:

(a) "Calciner" means the equipment used to remove combined (chemically bound) water and/or gases from mineral material through direct or indirect heating. This definition includes expansion furnaces and multiple hearth furnaces.

(b) "Control device" means the air pollution control equipment used to reduce particulate matter emissions released to the atmosphere from one or more affected facilities.

(c) "Dryer," means the equipment used to remove uncombined (free) water from mineral material through direct or indirect heating.

(d) "Installed in series" means a calciner and dryer installed such that the exhaust gases from one flow through the other and then the combined exhaust gases are discharged to the atmosphere.

(e) "Mineral processing plant" means any facility that processes or produces any of the following minerals, their concentrates or any mixture of which the majority (> 50%) is any of the following minerals or a combination of these minerals: alumina, ball clay, bentonite, diatomite, feldspar, fire clay, fuller's earth, gypsum, industrial sand, kaolin, lightweight aggregate, magnesium compounds, perlite, roofing granules, talc, titanium dioxide, and vermiculite.

(3) STANDARDS FOR PARTICULATE MATTER. Each owner or operator of any affected facility that is subject to this section shall comply with the emission limitations in this subsection on and after the date on which the initial performance test required by s. NR 440.08 is completed, but not later than 180 days after the initial startup, whichever date comes first. No emissions may be discharged into the atmosphere from any affected facility that:

(a) Contains particulate matter in excess of 0.092 gram per dry standard cubic meter (g/dscm) (0.040 grain per dry standard cubic foot (gr/dscf)) for calciners and for calciners and dryers installed in series and in excess of 0.057 g/dscm for dryers; and

(b) Exhibits greater than 10% opacity, unless the emissions are discharged from an affected facility using a wet scrubbing control device.

(4) RECONSTRUCTION. The cost of replacement of equipment subject to high temperatures and abrasion on processing equipment may 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. Calciner and dryer equipment subject to high temperatures and abrasion are: end seals, flights and refractory lining.

(5) MONITORING OF EMISSIONS AND OPERATIONS. (a) With the exception of the process units described in pars. (b), (c) and (d), the owner or operator

of an affected facility subject to this section who uses a dry control device to comply with the mass emission standard shall install, calibrate, maintain and operate a continuous monitoring system to measure and record the opacity of emissions discharged into the atmosphere from the control device.

(b) In lieu of a continuous opacity monitoring system, the owner or operator of a ball clay vibrating grate dryer, a bentonite rotary dryer, a diatomite flash dryer, a diatomite rotary calciner, a feldspar rotary dryer, a fire clay rotary dryer, an industrial sand fluid bed dryer, a kaolin rotary calciner, a perlite rotary dryer, a roofing granules fluid bed dryer, a roofing granules rotary dryer, a talc rotary calciner, a titanium dioxide spray dryer, a titanium dioxide fluid bed dryer, a vermiculite fluid bed dryer or a vermiculite rotary dryer who uses a dry control device may have a certified visible emissions observer measure and record 3 6-minute averages of the opacity of visible emissions to the atmosphere each day of operation in accordance with Method 9 of Appendix A of 40 CFR part 60, incorporated by reference in s. NR 440.17.

(c) The owner or operator of a ball clay rotary dryer, a diatomite rotary dryer, a feldspar fluid bed dryer, a fuller's earth rotary dryer, a gypsum rotary dryer, a gypsum flash calciner, a gypsum kettle calciner, an industrial sand rotary dryer, a kaolin rotary dryer, a kaolin multiple hearth furnace, a perlite expansion furnace, a talc flash dryer, a talc rotary dryer, a titanium dioxide direct or indirect rotary dryer or a vermiculite expansion furnace who uses a dry control device is exempt from the monitoring requirements of this subsection.

(d) The owner or operator of an affected facility subject to this section who uses a wet scrubber to comply with the mass emission standard for any affected facility shall install, calibrate, maintain and operate monitoring devices that continuously measure and record the pressure loss of the gas stream through the scrubber and the scrubbing liquid flow rate to the scrubber. The pressure loss monitoring device shall be certified by the manufacturer to be accurate within 5% of water column gauge pressure at the level of operation. The liquid flow rate monitoring device shall be certified by the manufacturer to be accurate within 5% of design scrubbing liquid flow

rate.

(6) RECORDKEEPING AND REPORTING REQUIREMENTS. (a) Records of the measurements required in sub. (5) shall be retained for at least 2 years.

(b) Each owner or operator who uses a wet scrubber to comply with sub. (3) shall determine and record once each day, from the recordings of the monitoring devices in sub. (5)(d), an arithmetic average over a 2-hour period of both the change in pressure of the gas stream across the scrubber and the flowrate of the scrubbing liquid.

(c) Each owner or operator shall submit written reports semiannually of exceedances of control device operating parameters required to be monitored by sub. (5). For the purpose of these reports, exceedances are defined as follows:

1. All 6-minute periods during which the average opacity from dry control devices is greater than 10%; or

2. Any daily 2-hour average of the wet scrubber pressure drop determined as described in par. (b) that is less than 90% of the average value recorded according to sub. (7)(c) during the most recent performance test that demonstrated compliance with the particulate matter standard; or

3. Each daily wet scrubber liquid flow rate recorded as described in par. (b) that is less than 80% or greater than 120% of the average value recorded according to sub. (7)(c) during the most recent performance test that demonstrated compliance with the particulate matter standard.

(7) TEST METHODS AND PROCEDURES. (a) In conducting the performance tests required in s. NR 440.08, the owner or operator shall use the following test methods from Appendix A of 40 CFR part 60, incorporated by reference in s. NR 440.17 or other methods and procedures as specified in this subsection, except as provided in s. NR 440.08(2).

(b) The owner or operator shall determine compliance with the particulate matter standards in sub. (3) as follows:

1. Method 5 shall be used to determine the particulate matter concentration. The sampling time and volume for each test run shall be at least 2 hours and 1.70 dscm.

2. Method 9 and the procedures in s. NR 440.11 shall be used to determine

opacity from stack emissions.

(c) During the initial performance test of a wet scrubber, the owner or operator shall use the monitoring devices of sub. (5)(d) to determine the average change in pressure of the gas stream across the scrubber and the average flowrate of the scrubber liquid during each of the particulate matter runs. The arithmetic averages of the 3 runs shall be used as the baseline average values for the purposes of sub. (6)(c).

SECTION 53. NR 440.74(4)(a)1.d. and e., 2.d. and e., 3.e.(intro.) and (b)1.d.2) and (8)(h) are amended to read:

NR 440.74(4)(a)1.d. Determine the efficiency (E) of the control device by Equation 1:

$$E = \frac{\sum_{i=1}^n Q_{bi}C_{bi} - \sum_{j=1}^n Q_{aj}C_{aj}}{\sum_{i=1}^n Q_{bi}C_{bi}} \quad \text{(Equation 1)}$$

e. Determine the efficiency (F) of the vapor capture system by Equation 2:

$$F = \frac{\sum_{i=1}^n Q_{di}C_{di}}{\sum_{i=1}^n Q_{di}C_{di} + \sum_{k=1}^p Q_{fk}C_{fk}} \quad \text{(Equation 2)}$$

2.d. Determine the efficiency (H_v) of each individual adsorber vessel (v) using Equation 3:

$$H_v = \frac{Q_{gv}C_{gv} - Q_{hv}C_{hv}}{Q_{gv}C_{gv}} \quad \text{(Equation 3)}$$

e. Determine the efficiency of the carbon adsorption system (H_{sys}) by

computing the average efficiency of the adsorber vessels as weighted by the volumetric flow rate (Q_{hv}) of each individual adsorber vessel (v) using Equation 4:

$$H_{sys} = \frac{\sum_{v=1}^q H_v Q_{hv}}{\sum_{v=1}^q Q_{hv}} \quad \text{(Equation 4)}$$

3.e.(intro.) Calculate the overall VOC emission reduction (R) for each and every nominal 1-month period using Equation 5. Emissions during startups and shutdowns are to be included when determining R because startups and shutdowns are part of normal operation for this source category.

$$R = \frac{M_r}{\sum_{i=1}^n (W_{oi} M_{ci} - RS_i)} \quad \text{(Equation 5)}$$

If the value of R is equal to or greater than 0.90, compliance with sub. (3)(b)1. is demonstrated.

(b)1.d.2) Determine FV by Equation 6:

$$FV = \frac{\sum_{j=1}^n Q_{out j} - \sum_{i=1}^p Q_{in i}}{\sum_{k=1}^q A_k} \quad \text{(Equation 6)}$$

(8)(h) Records required in ~~sub. (8)~~ this subsection shall be retained for at least 2 years.

The foregoing rule was approved and adopted by the State of Wisconsin Natural Resources Board on June 29, 1995.

The rule shall take effect the first day of the month following publication in the Wisconsin administrative register as provided in s. 227.22(2)(intro.), Stats.

Dated at Madison, Wisconsin September 1, 1995.

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

By George E. Meyer
George E. Meyer, Secretary

(SEAL)

