

## Chapter NR 446

## CONTROL OF MERCURY EMISSIONS

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**Note:** Corrections made under s. 13.93 (2m) (b) 7., Stats., Register, January, 1997, No. 493.

**Subchapter I — General Provisions**

**NR 446.01 Applicability; purpose. (1) APPLICABILITY.** This chapter applies to all air contaminant sources which may emit mercury and to their owners and operators.

**(2) PURPOSE.** This chapter is adopted under ss. 285.11, 285.13, 285.17 and 285.27, Stats., to establish emission limitations, stack sampling procedures and emission monitoring requirements for mercury emissions from air contaminant sources in order to protect air quality and reduce atmospheric mercury deposition.

**Note:** Subchapter III of this chapter is based on the federal regulations contained in 40 CFR part 61, Subpart E, created October 14, 1975, as last revised September 23, 1988.

**History:** Cr. Register, September, 1986, No. 369, eff. 10-1-86; am. (1), Register, May, 1992, No. 437, eff. 6-1-92; CR 01-081: am. (2) Register September 2004 No. 585, eff. 10-1-04.

**NR 446.02 Definitions.** The definitions contained in ch. NR 400 apply to the terms used in this chapter. In addition, the following definitions apply to the terms used in this chapter:

**(1) "Allowable emissions"** means the annual mercury emissions of a stationary source, calculated using the maximum rated capacity of the source, and by accounting for enforceable limits which restrict the operating rate or hours of operation or both.

**(1c) "Baseline mercury emissions"** means the calculated level of annual mercury emissions from a major utility as determined under s. NR 446.04.

**(1g) "Cell room"** means a structure housing one or more mercury chlor-alkali cells.

**(1n) "Certified emission reduction"** means a reduction of mercury emissions that has been certified by the department and made enforceable through a construction permit, operation permit or other appropriate means.

**(1r) "Commission"** means the public service commission.

**(1w) "Controlled mercury emissions"** means the calculated level of annual mercury emissions from a major utility as determined under s. NR 446.06 (1) (b).

**(2) "Condenser stack gases"** mean the gaseous effluent evolved from the stack of processes utilizing heat to extract mercury metal from mercury ore.

**(3) "Denuder"** means a horizontal or vertical container which is part of a mercury chlor-alkali cell and in which water and alkali metal amalgam are converted to alkali metal hydroxide, mercury, and hydrogen gas in a short-circuited, electrolytic reaction.

**(4) "End box"** means one or more containers located on one or both ends of a mercury chlor-alkali electrolyzer which serves as a connection between the electrolyzer and denuder for rich and stripped amalgam.

**(5) "End box ventilation system"** means a ventilation system which collects mercury emissions from the end boxes, the mercury pump sumps, and their water collection systems.

**(6) "Hydrogen gas stream"** means a hydrogen stream formed in the chlor-alkali cell denuder.

**(6e) "Major stationary source"** means a stationary source whose mercury emissions are 10 pounds per year or greater.

**(6m) "Major utility"** means a Class A utility, as defined under s. 199.03 (4), Stats., that generates electricity or an electrical cooperative association organized under ch. 185, Stats., whose mercury emissions from all stationary sources under the common ownership and control of the utility or the association are 100 pounds per year or greater.

**(6s) "Mercury"** has the meaning given in s. NR 445.02 (9).

**(7) "Mercury chlor-alkali cell"** means a device which is basically composed of an electrolyzer section and a denuder or decomposer section and utilizes mercury to produce chlorine gas, hydrogen gas, and alkali metal hydroxide.

**(8) "Mercury chlor-alkali electrolyzer"** means an electrolytic device which is part of a mercury chlor-alkali cell and utilizes a flowing mercury cathode to produce chlorine gas and alkali metal amalgam.

**(9) "Mercury ore"** means a mineral mined specifically for its mercury content.

**(10) "Mercury ore processing facility"** means a facility processing mercury ore to obtain mercury.

**(10m) "Method X"**, where "X" is a number or a number followed by a letter, means the specified method contained in Appendix B of 40 CFR part 61, incorporated by reference in s. NR 484.04 (23).

**(11) "Sludge"** means sludge produced by a treatment plant that processes municipal or industrial wastewater.

**(12) "Sludge dryer"** means a device used to reduce the moisture content of sludge by heating to temperatures above 65°C (ca. 150°F) directly with combustion gases.

**History:** Renum. from NR 154.01, Register, September, 1986, No. 369, eff. 10-1-86; am. (intro.) and (2), cr. (10m), Register, May, 1994, No. 461, eff. 6-1-94; am. (10m), Register, December, 1995, No. 480, eff. 1-1-96; CR 02-097: am. (intro.) Register June 2004 No. 582, eff. 7-1-04; CR 01-081: renum. (1) to be (1g), cr. (1), (1c), (1n), (1r), (1w), (6e), (6m), (6s), (8m) and (10s) Register September 2004 No. 585, eff. 10-1-04.

**NR 446.025 Mercury ambient concentration limit.** No person may cause, allow or permit emissions of mercury in such quantity and duration as to cause the ambient air concentration to exceed 1 µg/m<sup>3</sup>, averaged over a 30-day period.

**History:** CR 01-081: renum. (intro.) and (1) from s. NR 446.03 and am. Register September 2004 No. 585, eff. 10-1-04.

**NR 446.027 Procedures for determining annual mercury emissions.** Except as provided in s. NR 446.09,

beginning on January 1, 2005, the owner or operator of a major stationary source shall calculate annual mercury emissions using the procedures and methods in this section.

(1) **STATIONARY SOURCE COMBUSTION UNIT.** (a) The owner or operator of a combustion unit at the source which is not subject to s. NR 446.09 shall calculate annual mercury emissions using the procedures of this subsection for each emissions unit and shall provide all associated data to the department.

(b) The owner or operator shall determine the mass mercury content of each fuel by multiplying the mercury content of the fuel times the amount of the fuel consumed. The mercury content of the fuel shall be determined either through testing according to the procedures in ASTM D3684-01, incorporated by reference in s. NR 484.10 (47m), or an equivalent method approved by the department, or from published data which lists the mercury content of the specific fuel.

(c) The owner or operator shall calculate the removal efficiency of mercury by air pollution control equipment for each fuel used in one of the following ways:

1. Based on source performance tests on the equipment following the testing procedures in s. NR 446.09 (3).

2. Based on information derived from performance testing of other combustion units which are similar in terms of the type of combustion unit, particulate control equipment, fuel characteristics, and operating parameters.

(d) The owner or operator shall determine the annual mercury emissions by subtracting the mass mercury removed by air pollution control equipment from the mass mercury in the fuel.

(e) Nothing in this section shall prohibit the department from requiring other methods of determining annual mercury emissions.

(f) The owner or operator of a combustion source subject to this subsection may request that the department approve alternative methods for determining annual mercury emissions

(2) **STATIONARY SOURCE PROCESS UNIT.** The owner or operator of a process unit at the source shall calculate and report annual mercury emissions from the process unit using the procedures and methods of this subsection and shall provide all associated data to the department. The calculations shall apply a mass balance approach, emission test data, or both, as follows:

(a) A separate mass balance shall be used to calculate the mercury contained in each applicable process stream by accounting for:

1. All process streams including: process raw materials, products and by-products; and pollution control equipment and control by-products.

2. The mercury concentration and throughput rate for each process stream.

3. The annual mass mercury content input and output of each process stream.

(b) Mercury emission test data and emission factors obtained during source performance testing for any applicable process stream may also be used.

(c) The owner or operator of the process units subject to this subsection may request that the department approve alternative methods for determining annual mercury emissions.

**History:** CR 01-081: cr. Register September 2004 No. 585, eff. 10-1-04.

## Subchapter II — Control of the Atmospheric Deposition of Mercury

### NR 446.029 Adoption of federal mercury standard.

If a federal emission standard limiting mercury emissions from a major utility is promulgated under section 111 or 112 of the federal Clean Air Act (42 USC 7411 or 7412), the department shall adopt a similar standard, including administrative requirements that are consistent with the federal administrative requirements. The stan-

dard adopted by the department may not be more restrictive in terms of emission limitations than the federal standard. The administrative requirements of the standard adopted by the department relating to baseline calculations, monitoring, record-keeping and reporting shall be the same as the federal standard. No later than 18 months after the promulgation of a federal emission standard limiting mercury emissions from a major utility, the department shall revise this subchapter under the provisions of s. 227.10 or 227.24, Stats., as appropriate, to comply with the provisions of this section and s. NR 446.06 (4).

**History:** CR 01-081: cr. September 2004 No. 585, eff. 10-1-04.

**NR 446.03 Baseline mercury emissions for major utilities.** This section applies to the determination of baseline mercury emissions for major utilities.

(1) No later than October 1, 2005, the owner or operator of a major utility shall submit a report to the department that includes information to calculate the baseline mercury emissions of each combustion unit owned or operated by the major utility for calendar years 2002, 2003 and 2004, using the procedures in s. NR 446.04.

(2) After reviewing the report provided in sub. (1), the department shall determine the baseline mercury emissions for each combustion unit of the major utility. The baseline mercury emissions shall be the arithmetic average of the baseline emissions for 2002, 2003 and 2004, unless the department approves an alternative baseline requested by the major utility.

(3) In the report required under sub. (1), an owner or operator may request that the department determine an alternative baseline if the 3 years are not representative of the source's normal operations and maintenance schedule. This request shall include sufficient information to demonstrate that an alternative baseline is appropriate, a proposed alternative baseline, and information sufficient to document how the proposed alternative baseline was determined.

(4) No later than January 1, 2007, the department shall provide written notification to each owner or operator who submitted a report under sub. (1) of the department's determination of the baseline mercury emissions for each combustion unit of the major utility.

**History:** CR 01-081: cr. September 2004 No. 585, eff. 10-1-04.

**NR 446.04 Procedures for determining baseline mercury emissions for major utilities.** The owner or operator of a major utility shall calculate baseline mercury emissions of the combustion units of the major utility using the procedures of this section for each emissions unit and provide all associated data to the department in the report required under s. NR 446.03 (1).

(1) No later than the first day of the 2<sup>nd</sup> month beginning after October 1, 2004, and continuing for a calendar 12 month period, a representative sample shall be collected weekly for each solid fossil fuel used in the emissions unit in that week. Each weekly sample of a fuel collected under this subsection shall be composited into a monthly sample that shall be analyzed for mercury content using ASTM D3684-01, incorporated by reference in s. NR 484.10 (47m), or an equivalent method approved by the department.

(2) The mercury content of each non-solid fossil fuel shall be determined either through testing according to the procedures in ASTM D3684-01, incorporated by reference in s. NR 484.10 (47m), or an equivalent method approved by the department or from published data which lists the mercury content of the fuel.

(3) The major utility shall determine the monthly consumption of each fuel in million British thermal units (mmBtu), using methods and procedures specified in Appendices A, B, C and F of 40 CFR part 75, incorporated by reference in s. NR 484.04 (26m) (a) to (d). The major utility may apportion the fuel mmBtu to individual fuels for which the mercury content is determined under

sub. (1) or (2), using consumption and delivery records for the fuels.

(4) The information gathered in subs. (1) and (2) shall be multiplied by the corresponding fuel consumption rates determined under sub. (3) to determine the total annual mercury contained in each fuel.

(5) The mercury content for each fuel, on a mmBtu–basis, shall be computed by dividing the results of sub. (4) by the amount of each fuel burned, in mmBtus, during the 12 month sampling period.

(6) The mercury emissions for 2002, 2003 and the 12 months identified in sub. (1) shall be calculated by multiplying the results of sub. (5) times the annual fuel consumption for each of those years.

(7) The baseline mercury emissions shall be the 3–year arithmetic average of the mercury emissions determined under subs. (4) and (6) for 2002, 2003 and the 12 months identified in sub. (1).

(8) The major utility shall record and report the baseline determination data and calculations for each combustion unit, including the type or types of fuel, the monthly consumption of each fuel in mmBtus, and the mercury concentration in each fuel.

(9) The owner or operator of a major utility may request that alternative procedures for determining baseline mercury emissions be approved by the department.

**History:** CR 01–081: cr. September 2004 No. 585, eff. 10–1–04.

**NR 446.05 Mercury emission limits for new or modified sources.** (1) No person may commence construction or modification of a stationary source that results in an increase in annual allowable emissions of mercury of 10 pounds or more from the new or modified source unless the person has obtained a permit under ch. NR 406. The department may not issue a permit under ch. NR 406 for the source unless the department finds that emissions of mercury will be controlled to a level which is best available control technology.

(2) New or modified stationary sources that are subject to an emission limit for mercury required under section 112 of the Act are exempt from the requirements of this section.

(3) Except as provided in sub. (2), this section applies to all new or modified sources for which an air permit application was submitted or should have been submitted to the department under sub. (1) on or after the first day of the calendar month following October 1, 2004.

**History:** CR 01–081: cr. September 2004 No. 585, eff. 10–1–04.

**NR 446.055 Mercury emission reduction goal.** It is the goal of the department to encourage the major utilities to achieve the maximum amount of mercury emission reductions reasonably achievable from all stationary sources of the major utilities in the state. Specifically, the department's objective is to work with the major utilities to achieve an 80% reduction in mercury emissions by 2018, as measured from the baseline mercury emissions for the major utilities' stationary sources, as determined by the department under s. NR 446.03.

**History:** CR 01–081: cr. September 2004 No. 585, eff. 10–1–04.

**NR 446.06 Mercury emission limits for major utilities.** (1) (a) Except as provided in sub. (4), beginning January 1, 2008, no owner or operator of a major utility may cause, allow or permit mercury emissions from stationary sources of 25 megawatts or greater of the major utility on an annual basis in an amount which exceeds the controlled mercury emissions for those units, determined by the department under par. (b).

(b) No later than October 1, 2005, the owner or operator of a major utility shall conduct a source performance test on each combustion unit to determine the control efficiency of any control equipment or emission reduction activity on the mercury emissions from the combustion unit. This control efficiency shall be applied to the baseline mercury emissions calculated under s. NR

446.03 for the unit, using the procedures in s. NR 446.09, to determine the controlled mercury emissions of the combustion unit.

(2) Except as provided in sub. (4) or (5), beginning January 1, 2010, no owner or operator of a major utility may cause, allow or permit mercury emissions from stationary sources of 25 megawatts or greater of the major utility on an annual basis in an amount which exceeds 60% of the baseline mercury emissions for those units, determined by the department under s. NR 446.03.

(3) Except as provided in sub. (4) or (5), beginning January 1, 2015, no owner or operator of a major utility may cause, allow or permit mercury emissions from stationary sources of 25 megawatts or greater of the major utility on an annual basis in an amount which exceeds 25% of the baseline mercury emissions for those units, determined by the department under s. NR 446.03.

(4) Stationary sources of less than 25 megawatts owned or operated by a major utility for which baseline emissions have been determined by the department under s. NR 446.03 and for which controlled emissions are determined by the department under sub. (1) (b), may be included by the major utility in meeting the emission limit requirements of subs. (1), (2), and (3). Mercury emissions for units included under this subsection shall be computed in the determination of controlled mercury emissions under sub. (1) and the baseline emissions subject to the emissions limits under subs. (2) and (3) and shall be subject to the compliance and reporting requirements of s. NR 446.08.

(5) The mercury emissions from a facility owned or operated by a major utility may be exempt from the emission reduction requirements of sub. (2) or (3) if the total annual mercury emissions from all stationary sources of 25 megawatts or greater at the facility are 25 pounds or less.

(6) Pursuant to s. 285.27 (1) (a) and (2) (a), Stats., if an emission standard regulating mercury emissions from a major utility is promulgated under section 111 or 112 of the federal Clean Air Act (42 USC 7411 or 7412), the department shall promulgate a similar standard, including administrative requirements that are consistent with the federal administrative requirements. The department's standard shall have the same mercury emission reductions as the federal standard.

**History:** CR 01–081: cr. September 2004 No. 585, eff. 10–1–04.

**NR 446.07 Multi–pollutant reduction alternative.**

(1) The owner or operator of a major utility may request the department to approve a multi–pollutant alternative that provides relief from meeting the mercury reduction requirement specified in s. NR 446.06 (2).

(2) Requests for consideration of a multi–pollutant reduction alternative shall be submitted to the department by the date compliance plans to meet the mercury reduction requirement specified in s. NR 446.06 (2) are required. Requests shall be in writing and include the following:

(a) The annual mercury emission reductions that will be achieved in each year from the compliance date in s. NR 446.06 (2) to the compliance date in s. NR 446.06 (3).

(b) The schedule and reductions levels for other air contaminants that will be achieved in the multi–pollutant alternative and explanation of how the reduction levels proposed will be greater than applicable requirements as listed in s. NR 400.02 (26).

(3) In order to qualify for department approval, a multi–pollutant reduction alternative shall include:

(a) A commitment by the major utility to achieve and maintain mercury reductions from the baseline set in s. NR 446.06 (1) during the period identified in sub. (2) (a).

(b) A commitment by the major utility to reduce system–wide emissions beyond applicable requirements for at least 2 of the following air contaminants: fine particulate matter, nitrogen oxides, sulfur dioxide or carbon dioxide.

(4) Within 60 days of the filing of a completed request, the department shall publish a public notice on each multi–pollutant



reduction alternative and the department's preliminary determination to grant or deny the request. The public notice shall provide the opportunity for public comments including, where requested, a public hearing on the request. Following the public comment period, the department shall notify the applicant in writing of the reasons for denying, granting or for granting in a modified form any request for a multi-pollutant reduction alternative.

(5) Owners and operators of major utilities receiving approval for a multi-pollutant reduction alternative shall still be required to meet the mercury reduction requirements in s. NR 446.06 (3).

(6) Owners and operators of major utilities that receive approval for a multi-pollutant reduction alternative are not allowed to provide emission reduction credits to another major utility to meet the mercury reduction requirement in s. NR 446.06 (2) or to trade the excess reduction increment of the pollutants identified in sub. (3) (b).

(7) Owners and operators may be required to meet any future applicable requirement for the pollutants identified in sub. (3) (b).

**Note:** Any environmental cooperative agreement that the department has signed with a major utility prior to October 1, 2004, and that includes multi-pollutant emission reductions may be used by the major utility as the basis of a request for a multi-pollutant reduction alternative under s. NR 446.07.

**History:** CR 01-081: cr. September 2004 No. 585, eff. 10-1-04.

**NR 446.075 Early emission reduction credits.** The owner or operator of a major utility that reduces mercury emissions from a stationary source of the major utility on or after October 1, 2004, and prior to January 1, 2015, may request that the department certify the emission reductions as early emission reduction credits. The department shall certify the emission reductions, in terms of pounds of mercury emissions reduced, as early emission reduction credits if the owner or operator demonstrates to the department that the reductions are actual, permanent mercury emission reductions that are not required under any state or federal law or air permit condition. Any mercury emission reduction credits may be used by the owner or operator of the major utility to meet the annual emission limitations in s. NR 446.06 (2) and (3) during calendar years 2010 through 2017.

**History:** CR 01-081: cr. September 2004 No. 585, eff. 10-1-04.

**NR 446.08 Compliance and reporting requirements for major utilities.** (1) The owner or operator of a major utility shall include mercury emissions from all combustion units under the ownership or control of the major utility in the calculation of compliance with the emission limits of s. NR 446.06.

(2) Nothing in this section precludes the owner or operator of a major utility from achieving compliance with the emission limits of s. NR 446.06 (2) and (3) by obtaining excess mercury emission reduction credits generated by another major utility.

(3) By October 1, 2007, the owner or operator of a major utility shall submit a compliance plan to the department demonstrating how the combustion units of the major utility are going to meet the mercury reduction requirements of s. NR 446.06 (2). The plan shall include, at a minimum, the following information:

(a) A detailed listing of the combustion units on which mercury pollution control equipment will be installed.

(b) A detailed listing of the combustion units which will switch to a lower mercury content fuel.

(c) A detailed description of any plans to improve the combustion efficiency of individual emissions units to meet the requirements of s. NR 446.06 (2).

(4) By October 1, 2011, the owner or operator of a major utility shall submit an update to the compliance plan submitted under sub. (3) to demonstrate how the combustion units of the major utility are going to meet the emission reduction requirement of s. NR 446.06 (3).

(5) By March 1, 2009 and no later than March 1<sup>st</sup> of each following year, the owner or operator of a major utility shall submit a compliance certification report to the department certifying that

the mercury emissions from the major utility during the preceding calendar year were in compliance with the emission limit requirements of s. NR 446.06, based on the determination made under s. NR 446.09. If the mercury emissions from the major utility from the previous year exceeded the emission limit requirements of s. NR 446.06, the compliance certification report shall include all of the following information:

(a) An identification of the amount and cause of the excess mercury emissions.

(b) A demonstration of how the major utility will achieve additional emission reductions in the current year equivalent to the excess mercury emissions.

(c) A demonstration of how the major utility will comply with the emission limit requirements in subsequent years.

**History:** CR 01-081: cr. September 2004 No. 585, eff. 10-1-04.

**NR 446.09 Annual mercury emissions determination and reporting.** (1) The owner or operator of an emissions unit subject to the requirements of s. NR 446.06 shall determine and report to the department by March 1, annual mercury emissions for each emissions unit, beginning with calendar year 2008 emissions, using the following formula:

Annual Mercury Emissions = Fuel Use X Mercury Content of Fuel X Reduction of Mercury Prior to its Release to the Atmosphere

where:

(a) Fuel use is the amount of fuel combusted in the combustion unit, as measured by the procedures specified in Appendices A, B, C and F of 40 CFR part 75, incorporated by reference in s. NR 484.04 (26m) (a) to (d). The total amount of the fuel combusted in mmBtus may be apportioned to individual fuels, using consumption and delivery records for the fuels.

(b) Mercury content of the fuel is determined according to ASTM D3684-01, incorporated by reference in s. NR 484.10 (47m), or an equivalent method approved by the department, following the procedures in s. NR 446.04 (1), (2) and (3).

(c) Reduction of mercury is calculated through source performance tests which follow the procedures in this paragraph. A value of one is assumed for natural gas fired combustion units that are exempt from performance testing under sub. (6).

1. The source performance test shall be conducted according to EPA Method 101A in Appendix B of 40 CFR part 61, incorporated by reference in s. NR 484.04 (23), or EPA Method 29 in Appendix A of 40 CFR part 60, incorporated by reference in s. NR 484.04 (20m).

2. A sample of the fuel burned during the test shall be analyzed for mercury content, using ASTM D3684-01, incorporated by reference in s. NR 484.10 (47m), or an equivalent method approved by the department. During each of the 3 runs of the performance test, a separate sample of the fuel being burned during the run shall be collected and analyzed.

3. During the source performance testing, the consumption of fuel shall be monitored and recorded.

4. The major utility shall submit to the department the information obtained in subs. 1. to 3. and the calculations for the percent removal efficiency of mercury.

(d) The department may require that more than one source performance test be conducted if a single test is determined to be non-representative of conditions at the combustion unit.

(2) Nothing in this section shall prohibit the department from requiring major utilities to use other methods of determining annual mercury emissions.

(3) The owner or operator of a major utility may request that alternative methods for determining annual mercury emissions be approved by the department.

(4) In addition to the performance test required under s. NR 446.06 (1) (b), the owner or operator of a major utility shall con-

duct source performance tests of the utility's combustion units according to the following schedules:

(a) All units subject to s. NR 446.06, with an electrical generating capacity equal to or greater than 200 MW, and all units that undergo process changes or change control equipment after January 1, 2006, shall have source performance tests conducted during calendar years 2010, 2013, 2015 and biennially thereafter.

(b) All units subject to s. NR 446.06, with an electrical generating capacity of less than 200 MW, and which do not undergo process changes or changes to control equipment after January 1, 2006, shall have source performance tests conducted during calendar year 2015 and every 4 years thereafter.

(5) The owner or operator of a major utility shall use the results of the most recently conducted source performance test for calculating the reduction efficiency under sub. (1) (c).

(6) Combustion units subject to s. NR 446.06 that exclusively combust natural gas are not subject to the source performance testing requirements of this section.

**History:** CR 01-081: cr. September 2004 No. 585, eff. 10-1-04.

**NR 446.10 Variance for major utilities.** (1) The owner or operator of a major utility may request a variance from the emission reduction requirements of s. NR 446.06 (2) or (3) by submitting a written request to the department and the commission. The request shall provide sufficient information concerning the conditions or special circumstances on which the variance request is based to demonstrate to the department's satisfaction that a variance from the applicable requirements is necessary. In addition, the request shall include the following:

(a) Where an alternative compliance schedule is sought, the owner or operator shall submit a proposed schedule which demonstrates reasonable further progress and contains a date for final compliance as soon as practicable.

(b) Where an alternative reduction requirement is sought, the owner or operator shall submit a proposed reduction requirement.

(c) Requests for variances shall contain relevant information on the costs and technological feasibility of meeting the reduction requirements as required by the department.

(2) Requests for a variance from the reduction requirements in s. NR 446.06 (2) shall be received by October 1, 2007.

(3) Requests for a variance from the reduction requirements in s. NR 446.06 (3) shall be received by October 1, 2011.

(4) The department may grant a variance that sets an alternative reduction requirement or schedule, or both.

(5) The department may grant a variance if the owner or operator demonstrates to the department's satisfaction that the reduction requirements in s. NR 446.06 are technologically or economically infeasible.

(6) The department may grant a variance that sets an alternative schedule if the owner or operator demonstrates to the department's satisfaction that the delay is needed to complete installation and place into operation control technology to achieve compliance with a reduction requirement in s. NR 446.06.

(7) Within 90 days of the receipt of a completed request, the department shall publish a public notice on each variance request and the department's preliminary determination to grant or deny the request, to provide the opportunity for public comments including, where requested, a public hearing on the variance request. Following the public comment period, the department shall notify the variance applicant in writing of the reasons for denying, granting or for granting in a modified form any request for a variance.

(8) The department may, after notice and opportunity for hearing, revoke or modify any variance when any term or condition of the variance has been violated.

**History:** CR 01-081: cr. September 2004 No. 585, eff. 10-1-04.

**NR 446.11 Electrical supply reliability waiver.**

(1) The owner or operator of a major utility may request that the department grant a waiver from meeting the mercury emission cap in s. NR 446.06 (1) or an emission reduction requirement in s. NR 446.06 (2) or (3) if the major utility demonstrates that the failure was due to one of the following:

(a) A major electrical supply emergency within or outside this state that affected the major utility.

(b) A major fuel supply disruption that affected the major utility.

(c) An unanticipated and unavoidable disruption in the operation of a fossil fuel fired unit at the major utility.

(2) The owner or operator of a major utility shall submit a written request for waiver within 60 days after the date that the annual compliance report required in s. NR 446.09 is due.

(3) The request shall provide sufficient information concerning the conditions on which the waiver request is based to demonstrate to the department's satisfaction that a waiver from the applicable requirements is warranted. In addition, the request shall include the following:

(a) The duration of the conditions during the calendar year.

(b) The specific measures taken to mitigate mercury emissions during the duration of the conditions or to limit annual mercury emissions after the condition has ended.

(c) The reasons why the major utility was unable to achieve compliance with a baseline mercury emission requirement or an emission reduction requirement.

(4) The department may grant a waiver under this section if, in consultation with the commission, the department determines that the major utility's failure to meet a requirement under s. NR 446.06 was due to a condition listed in sub. (1).

(5) Within 60 days after the receipt of a completed request, the department shall publish a public notice on each waiver request and the department's preliminary determination to grant or deny the request, to provide the opportunity for public comments including, where requested, a public hearing on the waiver request. Following the public comment period, the department shall notify the applicant in writing of the reasons for denying, granting or granting in a modified form any request for a waiver.

**History:** CR 01-081: cr. September 2004 No. 585, eff. 10-1-04.

**NR 446.12 Periodic evaluation and reconciliation reports.** (1) The department staff shall submit reports to the natural resources board and the presiding officer of each house of the legislature for referral to the appropriate legislative standing committees by January 1, 2006, by January 1, 2009 and by January 1, 2013. Each report shall include:

(a) An evaluation of the scientific and technology developments in relation to the control or reduction of mercury emissions.

(b) An evaluation of whether the requirements of s. NR 446.06 are achievable, given the scientific and technological developments.

(c) Recommendations for revisions to this subchapter or other actions based on the scientific and technological developments.

(d) An assessment of the impact of the compliance alternatives on mercury concentrations in locally affected water bodies.

(2) In addition to the reports required under sub. (1), the department staff shall report to the natural resources board and the presiding officer of each house of the legislature for referral to the appropriate legislative standing committees within 6 months of the date of the promulgation of a federal regulation under section 111 or section 112 of the Act (42 USC 7411 or 7412) or the enactment of a federal law that has mercury reduction requirements for mercury emission sources affected by this subchapter. The report shall include:

(a) A comparison of the requirements.

(b) Recommendations for revisions to this subchapter or other actions to reconcile the requirements.

(3) The natural resources board shall review these reports and, if they include recommendations for rule revisions or other actions, determine whether the department should proceed with actions based on the recommendations.

**History:** CR 01-081: cr. September 2004 No. 585, eff. 10-1-04.

### Subchapter III — Emission Standards for Mercury

**NR 446.14 Mercury emission limits.** No person may cause, allow or permit emissions of mercury:

(1) In quantities greater than 2,300 grams per 24-hour period from mercury cell chlor-alkali plants, or mercury ore processing facilities.

(2) In quantities greater than 3,200 grams of mercury per 24-hour period from sludge incineration plants, sludge drying plants, or a combination of these that process wastewater treatment plant sludges.

**History:** Renum. from NR 154.19 (3) (a), Register, September, 1986, No. 369, eff. 10-1-86; am. (intro.), Register, May, 1992, No. 437, eff. 6-1-92; am. (2), Register, May, 1994, No. 461, eff. 6-1-94; CR 01-081: (1) and (2) renum. from NR 446.03 (2) and (3) Register September 2004 No. 585, eff. 10-1-04.

**NR 446.15 Stack sampling.** (1) MERCURY ORE PROCESSING FACILITIES. (a) Unless a waiver of emission testing is requested and obtained from the department, each owner or operator of a facility processing mercury ore on which construction or modification commenced after February 1, 1984 shall test emissions from the source in accordance with Method 101 within 90 days after startup.

(b) The department shall be notified at least 30 days prior to a stack or performance test to afford it the opportunity to have a representative present to witness the testing procedures. The notice shall include a test plan in accordance with s. NR 439.07.

(c) Samples shall be taken over such a period as is necessary to accurately determine the maximum emissions which will occur in a 24-hour period. No changes in the operation may be made which would potentially increase emissions above that determined by the most recent source test until the new emission level has been estimated by calculation and the results reported to the department.

(d) All samples shall be analyzed, and mercury emissions shall be determined within 30 days after the source test. Each determination shall be reported to the department by registered letter dispatched before the close of the next business day following the determination.

(e) Records of emission test results and other data needed to determine total emissions shall be retained at the source and made available for inspection by a department representative for a minimum of 2 years.

(2) MERCURY CHLOR-ALKALI PLANTS—HYDROGEN AND END BOX VENTILATION GAS STREAMS. (a) Unless a waiver of emission testing is requested and obtained from the department, each owner or operator of a mercury chlor-alkali cell on which construction or modification commenced after February 1, 1984 shall test emissions from hydrogen streams in accordance with Method 102 and from end-box gas streams in accordance with Method 101 within 90 days after startup.

(b) The department shall be notified at least 30 days in advance of stack or performance tests to afford it the opportunity to have a representative present to witness the testing procedures. The notice shall include a test plan in accordance with s. NR 439.07.

(c) Samples shall be taken over such a period as is necessary to accurately determine the maximum emissions which will occur in a 24-hour period. No changes in the operation may be made which would potentially increase emissions above that determined by the most recent source test until the new emission level

has been estimated by calculation and the results reported to the department.

(d) All samples shall be analyzed, and mercury emissions shall be determined within 30 days after the source test. All determinations shall be reported to the department by registered letter dispatched before the close of the next business day following the determination.

(e) Records of emissions test results and other data needed to determine total emissions shall be retained at the source and made available for inspection by a department representative for a minimum of 2 years.

(3) MERCURY CHLOR-ALKALI PLANTS—CELL ROOM VENTILATION SYSTEM. (a) Stationary sources using mercury chlor-alkali cells may test cell room emissions in accordance with par. (b), or demonstrate compliance with par. (d) and assume ventilation emissions of 1,300 grams per day of mercury.

(b) Unless a waiver of emission testing is requested and obtained from the department, each owner or operator of a new or modified chlor-alkali plant shall pass all cell room air in forced gas streams through stacks suitable for testing and shall test emissions from the cell room in accordance with Method 101 within 90 days after startup.

(c) The department shall be notified at least 30 days in advance of stack or performance tests to afford it the opportunity to have a representative present to witness the testing procedures. The notice shall provide a test plan in accordance with s. NR 439.07.

(d) An owner or operator may carry out U.S. environmental protection agency approved design, maintenance and housekeeping practices.

**Note:** A list of approved practices is provided in appendix A of "Review of National Emission Standards for Mercury," EPA-450/3-84-014, December 1984, incorporated by reference in s. NR 484.05 (9).

(4) SLUDGE INCINERATION AND DRYING PLANTS. (a) Unless a waiver of emission testing is requested and obtained from the department, each owner or operator of sludge incineration plants and drying plants on which construction or modification commenced after February 1, 1984 shall test emissions from the source within 90 days of startup. The tests shall be conducted in accordance with Method 101A, using the procedures in par. (f).

(b) The department shall be notified at least 30 days in advance of stack or performance tests to afford it the opportunity to have a representative present to witness the testing procedures. The notice shall include a test plan in accordance with s. NR 439.07.

(c) Samples shall be taken over such a period as is necessary to determine accurately the maximum emissions which will occur in a 24-hour period. No changes may be made in the operation which would potentially increase emissions above the level determined by the most recent stack tests until the new emission level has been estimated by calculation and the results reported to the department.

(d) All samples shall be analyzed, and mercury emissions shall be determined within 30 days after the stack test. All determinations shall be reported to the department by registered letter dispatched before the close of the next business day following the determination.

(e) Records of emission test results and other data needed to determine total emissions shall be retained at the source and shall be made available for inspection by a department representative for a minimum of 2 years.

(f) If an owner or operator uses Method 105, the following procedures shall be adhered to:

1. The sludge shall be sampled after dewatering and before incineration or drying, at a location that provides a representative sample of the sludge that is charged to the incinerator or dryer. Eight consecutive grab samples shall be obtained at intervals of between 45 and 60 minutes and thoroughly mixed into one sample. Each of the 8 grab samples shall have a volume of at least 200 milliliters but not more than 400 milliliters. A total of 3 composite



samples shall be obtained within an operating period of 24 hours. When the 24-hour operating period is not continuous, the total sampling period may not exceed 72 hours after the first grab sample is obtained. Samples may not be exposed to any condition that may result in mercury contamination or loss.

2. The maximum 24-hour period sludge incineration or drying rate shall be determined by use of a flow rate measurement device that can measure the mass rate of sludge charged to the incinerator or dryer with an accuracy of plus or minus 5% over its operating range. Other methods of measuring sludge mass charging rates may be used if they have received prior approval by the department.

3. The handling, preparation and analysis of sludge samples shall be accomplished in accordance with Method 105.

4. The mercury emissions shall be determined by use of the following equation:

$$E_{\text{Hg}} = \frac{MQF_{\text{sm(avg)}}}{1000}$$

where:

$E_{\text{Hg}}$  is the mercury emissions, g/day

$M$  is the mercury concentration of sludge on a dry solids basis,  $\mu\text{g/g}$

$Q$  is the sludge charging rate, kg/day

$F_{\text{sm(avg)}}$  is the average weight fraction of solids in the collected sludge after mixing

1000 is the conversion factor,  $\text{kg } \mu\text{g/g}^2$

5. No changes in the operation of a plant may be made after a sludge test has been conducted which would potentially increase emissions above the level determined by the most recent sludge test, until the new emissions level has been estimated by calculation and the results reported to the department.

6. All sludge samples shall be analyzed for mercury content within 30 days after the sludge sample is collected. Each determination shall be reported to the department by registered letter dispatched before the close of the next business day following the determination.

7. Records of sludge sampling, charging rate determination and other data needed to determine mercury content of wastewater treatment plant sludges shall be retained at the source and made available for inspection by a department representative for a minimum of 2 years.

**History:** Renum. from NR 154.19 (3) (b), and am., Register, September, 1986, No. 369, eff. 10-1-86; am. (1) (b), (2) (b), (3) (c) and (4) (b), Register, May, 1992, No. 437, eff. 6-1-92; am. (1) (a), (2) (a), (3) (b) and (d) and (4) (a), (f) (intro.), 3, and 4., Register, May, 1994, No. 461, eff. 6-1-94; **CR 01-081: renum. from NR 446.04 Register September 2004 No. 585, eff. 10-1-04.**

#### **NR 446.16 Monitoring of emissions and operations.**

(1) All wastewater treatment plant sludge incineration and drying plants for which mercury emissions exceed 1600 grams/day, demonstrated either by stack sampling or sludge sampling according to s. NR 446.04 (4), shall monitor mercury emissions at intervals of at least once per year in accordance with Method 105 or the procedures specified in s. NR 446.15 (4) (f). The results of monitoring shall be reported to the department by registered letter dispatched before the close of the next business day following the monitoring. The results shall be retained at the source and shall be made available for inspection by a department representative for a minimum of 2 years.

(2) The owner or operator of each mercury cell chlor-alkali plant—hydrogen and end-box ventilation gas streams shall:

(a) Perform a mercury emission test that demonstrates compliance with the emission limits in s. NR 446.03 (2) on the hydrogen stream by Method 102 and on the end-box stream by Method 101 for the purpose of establishing limits for parameters to be monitored, within one year after June 1, 1994 or within one year of startup for a plant with initial startup after February 1, 1984.

(b) Monitor and record manually or automatically at least once every 15 minutes during the tests specified in par. (a) all of the following control device parameters, except as provided in par. (c):

1. The exit gas temperature from uncontrolled streams.

2. The outlet temperature of the gas stream for the final cooling system when no control devices other than coolers and demisters are used.

3. The outlet temperature of the gas stream from the final cooling system when the cooling system is followed by a molecular sieve or carbon adsorber.

4. Outlet concentration of available chlorine, pH, liquid flow rate and inlet gas temperature of chlorinated brine scrubbers and hypochlorite scrubbers.

5. The liquid flow rate and exit gas temperature for water scrubber.

6. The inlet gas temperature of carbon adsorption systems.

7. The temperature during the heating phase of the regeneration cycle for carbon adsorbers or molecular sieves.

(c) Average the parameters recorded in par. (b) over a minimum 6 hour test period. The highest temperature reading that is measured in par. (b) 7. is to be identified as the reference temperature for use in par. (f) 2.

(d) Monitor and record manually or automatically immediately after the completion of the emission tests specified in par. (a) the following:

1. The parameters specified in par. (b) 1. to 6. at least once per hour.

2. The temperature specified in par. (b) 7. during each heating phase of the regeneration cycle.

(e) Operate, maintain and calibrate monitoring devices according to the manufacturer's instructions. Monitoring devices used in accordance with pars. (b) and (d) shall be certified by their manufacturer to be accurate to within 10%. Records of the certifications and calibrations shall be retained at the chlor-alkali plant and made available for inspection by the department as follows: certification, for as long as the device is used for this purpose; and calibration, for a minimum of 2 years.

(f) Notify the department within 10 days when:

1. The hourly value of a parameter monitored in accordance with par. (d) 1. exceeds, or, in the case of liquid flow rate and available chlorine, falls below, the value of that same parameter determined in par. (b) for 24 consecutive hours, and

2. The maximum hourly value of the temperature measured in accordance with par. (d) 2. is below the reference temperature recorded according to par. (c) for 3 consecutive regeneration cycles.

(g) Submit semiannual reports to the department indicating the time and date on which the hourly value of each parameter monitored according to par. (d) 1. and 2. fell outside the value of that same parameter determined under par. (c) and corrective action taken, and the time and date of the corrective action. Parameter excursions shall be considered unacceptable operation and maintenance of the emission control system. In addition, while compliance with the emission limits is determined primarily by conducting a performance test according to the procedures in s. NR 446.04 (2), reports of parameter excursions may be used as evidence in judging the duration of a violation that is determined by a performance test.

(h) Submit semiannual reports required in par. (g) to the department on September 15 and March 15 of each year. The first semiannual report is to be submitted following the first full 6 month reporting period. The semiannual reports due on September 15 and March 15 shall include all excursions monitored during the 6 calendar months previous to the report date.

(3) The owner or operator of a facility subject to sub. (2) may develop and submit for the department's approval a plant-specific

monitoring plan as an alternative to the monitoring, recordkeeping and reporting requirements of sub. (2) (a) to (g). Approval of an alternative plan shall ensure compliance with the emission limits of s. NR 446.03 (2), and proper operation and maintenance of emissions control systems. Any site-specific monitoring plan shall, at a minimum, include all of the following:

(a) Identification of the critical parameter or parameters for the hydrogen stream and for the end-box ventilation stream that are to be monitored and an explanation of why the critical parameters selected are the best indicators of proper control system performance and of mercury emission rates.

(b) Identification of the maximum or minimum value of each parameter that is not to be exceeded. The levels shall be directly correlated to the results of a performance test, conducted no more than 180 days prior to submittal of the plan, when the facility was in compliance with the emission limits of s. NR 446.03 (2).

(c) Designation of the frequency for recording the parameter measurements, with justification if the frequency is less than hourly. A longer recording frequency shall be justified on the basis of the amount of time that could elapse during periods of process or control system upsets before the emission limits would be

exceeded, and consideration is to be given to the time that would be necessary to repair the failure.

(d) Designation of the immediate actions to be taken in the event of an excursion beyond the value of the parameter established in par. (b).

(e) Provisions for reporting, semiannually, parameter excursions and the corrective actions taken, and provisions for reporting within 10 days any significant excursion.

(f) Identification of the accuracy of the monitoring devices or of the readings obtained.

(g) Recordkeeping requirements for certifications and calibrations.

**Note:** The owner or operator of a mercury cell chlor-alkali plant, cell room ventilation system determining cell room emissions, shall maintain records of any leak or spill of mercury. The records shall indicate the amount, location, time and date when the leak or spill occurred, identify the cause of the leak or spill, state the immediate steps taken to minimize mercury emissions and steps taken to prevent future occurrences and provide the time and date on which corrective steps were taken. The results of monitoring shall be recorded, retained at the source and made available for inspection by the administrator for a minimum of 2 years.

**History:** Renum. from NR 154.19 (3) (c), and am., Register, September, 1986, No. 369, eff. 10-1-86; renum. 446.05 to be (1), cr. (2) and (3), Register, May, 1994, No. 461, eff. 6-1-94; am. (2) (a), (3) (intro.) and (b), Register, November, 1999, No. 527, eff. 12-1-99; **CR 01-081: renum. from NR 446.05 Register September 2004 No. 585, eff. 10-1-04.**