

[NOTE: The deadline for submittal of comments has been extended from April 14 to May 5, 2008]

Factsheet on Proposed Rule to Control Mercury Emissions from Coal-Fired Power Plants

Wisconsin Department of Natural Resources

Bureau of Air Management

Revised April 2008

Why is controlling mercury emissions in Wisconsin important?

Health effects experts worldwide have identified the reduction of mercury exposures as a major public health goal. All of Wisconsin's inland waters are under a general fish consumption advisory that recommends that people, particularly pregnant women and young children, limit the number of some fish species they eat because of elevated mercury levels. The Wisconsin Department of Health and Family Services, federal governmental organizations and institutions have identified women of child-bearing age, infants and children as the populations at greatest risk from elevated mercury exposure. These risks include developmental effects such as lower performance on language, attention and memory tests and adverse effects in vision and motor functions. Recent research has identified mercury effects in the immune system and a potential role of mercury exposure in elevating the risks of heart attacks in adults.

Currently, mercury emissions from coal-fired power plants in Wisconsin account for over 60 percent of the annual mercury air emissions from state sources. However, the relative contribution from these power plants will increase to 86 percent of the annual mercury air emissions in Wisconsin when the ERCO chlor-alkali facility in Port Edwards eliminates its mercury cell technology by the end of 2009.

What sources does the proposed mercury emissions reduction rule regulate?

The Department of Natural Resources (DNR) proposed rule will regulate emissions from coal-fired power plants (electric generating units or EGUs) from eight utilities in Wisconsin. The rule covers forty-two units operated by Alliant Energy, Dairyland Power Cooperative, WE Energies and Wisconsin Public Service which are currently regulated under the existing rule and an additional six units operated by Madison Gas & Electric Company, Manitowoc Public Utilities, Mid-American Energy Company and Xcel Energy.

What does the proposed rule do?

Under the proposed rule, the state's large coal-fired power plants (those with a nameplate capacity of 150 Megawatts (MW) and greater) must achieve a 90% mercury emission reduction through one of two compliance paths. Small coal-fired power plants (> 25 MW and < 150 MW) must reduce their mercury emissions to a level defined as Best Available Control Technology (BACT). Mercury emissions expected from the application of this standard will prevent almost 4,400 pounds of mercury air emissions annually.

Large Power Plants

By January 1, 2015 existing large coal-fired power plants with must achieve a 90% mercury reduction or limit the concentration of mercury emissions to 0.0080 pounds of mercury per gigawatt-hour. Compliance must be demonstrated annually on a unit-by-unit basis. However, large units under common ownership or control can average to meet the mercury emission standard.

Large Power Plants Multipollutant Option

A multipollutant alternative for large power plants requires nitrogen oxides (NO_x) and sulfur dioxide (SO₂) reductions beyond those currently required by federal and state regulations, as well as attaining a delayed 90% mercury emission reduction standard. Owners and operators must designate which large units will follow the multipollutant option within 24 months after the effective date of the rule. Large units that are not designated for the multipollutant option will, by default, be required to achieve the large power plant mercury emission standard of a 90% reduction by 2015.

Under the multipollutant option, affected power plants must achieve a nitrogen oxides (NO_x) emission standard of 0.07 pounds of NO_x per million BTU and a sulfur dioxide (SO₂) emission standard of 0.10 pounds of SO₂ per million BTU by January 1, 2015. An additional six years to achieve a 90% mercury emission standard is provided to large power plants included in the multipollutant reduction approach. Compliance must be demonstrated annually on a unit-by-unit basis. However, large units under common ownership or control can average to meet the NO_x, SO₂, or mercury emission standard.

An interim mercury reduction goal is established that targets January 1, 2015 to achieve a 70% mercury reduction or limiting the concentration of mercury emissions to 0.0190 pounds of mercury per gigawatt-hour. Beginning January 1, 2018 an 80% mercury reduction or limiting the concentration of mercury emissions to 0.0130 pounds of mercury per gigawatt-hour must be achieved.

By January 1, 2021 a 90% mercury reduction or limiting the concentration of mercury emissions to 0.0080 pounds of mercury per gigawatt-hour is required. The percent reduction standard is measured from the mercury content in the coal combusted.

Early Mercury Emission Reduction Credits

A large coal-fired power plant may request certification of early mercury emission reductions. Early emissions that qualify are: 1) reductions beyond 40% of the baseline requirement in 2010-2014; and 2) plants that select the multipollutant compliance pathway that achieve reductions beyond the 70% reduction requirement in 2015-2017 and the 80% reduction requirement in 2018-2020. These early emission reduction credits may be used to meet a portion of the annual allowable mercury emissions for the 70%, 80% and 90% emission limitations in the multipollutant compliance pathway.

Small Power Plants

By January 1, 2015 existing small coal-fired power plants (those with a nameplate capacity greater than 25 MW but less than 150 MW) must achieve a level of mercury emissions defined as BACT. Owners or operators would propose BACT for small units within 30 months of the effective date of the rule. Owners or operators have the option to decide if units in this size range are placed in the large unit compliance pathway.

New Power Plants

After the effective date of the rule, new coal-fired power plants must meet Lowest Achievable Emission Rate (LAER) for mercury emissions. In no case shall the permitted mercury reduction be less than 90% removal of mercury from coal combusted.

What if mercury control technology is slower to develop than anticipated?

A review of rule requirements will be conducted to evaluate mercury control technology and consider if the schedule to achieve 90% on power plants 150 MW and larger is appropriate. An element of this review will be a determination whether additional compliance flexibility is

warranted to achieve the January 1, 2021, 90% mercury emission reduction standard under the alternative multipollutant option.

What are the mercury emission reductions achieved under the proposed rule?

If all large power plants elected to achieve a 90% mercury reduction by 2015, total mercury emissions would be approximately 536 pounds per year. If all large power plants elected to follow the multipollutant option, mercury emissions would still be reduced to 536 pounds however, this is not achieved until 2021. Substantial reductions in sulfur dioxide and nitrogen oxide emissions would however be achieved by 2015 under the multipollutant option. These reductions of pollutants other than mercury have significant health and welfare benefits to Wisconsin and address other critical air quality concerns including fine particles, haze, and ground level ozone.

What will the proposed rule achieve that the current rule does not?

The proposed revisions will achieve more emission reductions, affect more coal-fired power plants in the state, and require that new coal-fired power plants meet a stringent mercury control technology standard.

How does the repeal of the federal Clean Air Mercury Rule (CAMR) affect this rule?

Now that federal CAMR is vacated, there is no federal mercury emission limit for existing coal-fired power plants.

What are the costs of the proposed rule?

The costs of mercury control technology applicable to coal-fired power plants found in Wisconsin are reasonable and cost-effective. Technologies are commercially available and are capable of achieving 90% reduction. For example, the cost of sorbent injection with existing particulate control equipment is expected to range from 0.04 to 0.15 cents/kilowatt hour for all power plant sizes and a Toxecon® system costs in the range of 0.12 to 0.24 cents/kilowatt hour for large power plants, with both approaches achieving 90% mercury removal. Similar control efficiencies can be achieved at lower cost when mercury control is integrated into a multipollutant control system. Multipollutant approaches are preferred because environmental and public health benefits can be achieved at lower costs. The mercury portion of multi-pollutant control costs could be as low as 0.04 to 0.1 cents/kilowatt hour, while achieving mercury removal efficiencies in the range of 80% to 95%.

The cost of the proposed rule is estimated by evaluating the type of control installations and costs that may be needed at individual plants to meet the proposed rule requirements. The resulting average cost across all of the affected power plants is expected to range from 0.06 to 0.14 cents/kilowatt hour. The costs of sorbent injection for small plants and the mercury portion of multipollutant control costs for large plants will be at the lower end of this range. For an average household (8,900 kilowatt hours per year), this range of electricity costs is \$ 5 to \$ 12 annually.

What is the timeline for the rule?

A public hearing is scheduled for April 7, 2008. The DNR will respond to comments and take the rule, with any revisions, to the Natural Resources Board in May 2008 to consider adoption of the rule. The rule then goes through a legislative review before final promulgation.

What are the options for public comment on the rule?

The Finding is part of the proposed mercury emission reduction rule package, and comments will be accepted as part of the public hearing and comment period ending May 5, 2008 for the proposed rule. The DNR will be accepting comments on both the mercury public health and

welfare finding and the proposed revisions to the control of mercury emissions from coal-fired power plants.

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