



Background Information

EPA Proposal to Regulate Mercury Emissions from Power Plants

Updated February 19, 2004

What is mercury and why is it a problem?

Mercury is a naturally occurring element and a toxic chemical. Both elemental mercury and methylated mercury, which is a chemical variant of the elemental mercury, are potent neurotoxins. Elemental mercury is found in trace amounts in coal. When coal is burned to produce electricity, the mercury in the coal is emitted from the smokestacks of the plant. Once released, the mercury travels through the air and is deposited back to earth through precipitation or dry deposition. The mercury is deposited directly into aquatic environments, and also deposited on land surfaces, where it can be transported into aquatic ecosystems through run-off and erosion. Much of this mercury deposition occurs within 50 miles of the smokestack from which it is released.

Through a complex process, bacteria in aquatic ecosystems create methylated mercury, which is taken up by small animals and travels up the food chain, accumulating in ever-greater amounts in larger and larger fish. This process is known as bioaccumulation. Large predator fresh water species like walleye, bass, northern pike and muskellunge generally have the greatest concentrations of methylmercury. Large saltwater fish like tuna and bluefish also contain high mercury concentrations.

Humans are exposed to this dangerous neurotoxin when we consume mercury-contaminated fish. Even at very low levels, mercury interferes with the development of the nervous system, especially during prenatal development and in early childhood. Methylmercury poses the greatest hazard to the developing fetus. This is the reason most fish consumption advisories warn pregnant women to limit their fish consumption or avoid fish altogether. However, infants and children are also at high risk. Infants may ingest methylmercury through nursing and children are exposed through their diet. Children and infants are more sensitive to the effects of mercury because their nervous systems continue to develop until about age 14.

Mercury threatens the health of older fishermen, too. New evidence suggests exposure to methylmercury can adversely impact blood pressure regulation, heart-rate variability, and heart disease.^{1,2}

¹ Hightower, J.M. 2002. Mercury levels in high-end consumers of fish. *Envr. Health Perspect.* Ephoneline.org, November 1, 2002.

Recognizing the public health threat posed by mercury contamination, state health departments and natural resource agencies have issued fish consumption advisories for mercury. Forty-three states and one territory have issued such advisories. Nineteen of those states have issued blanket advisories for all water bodies in their state.³

Fish consumption advisories are an important interim step to prevent the harmful effects of mercury exposure. Fish consumption advisories do not, however, treat the problem. The only way reduce the contamination of our fisheries is to address the problem at one of its major sources: coal-fired power plants.

Why is the federal government regulating mercury from power plants now?

- Mercury emissions from coal plants are a recognized national problem: Coal-fired electric power plants remain the largest uncontrolled source of mercury in the U.S. Each year, uncontrolled coal-fired power plants in the U.S. emit 48 tons of mercury to the air⁴ in addition to an estimated 33 tons disposed of in waste left over after power plants burn coal.⁵ EPA estimates that coal-fired power plants alone account for 42 percent of all U.S. mercury air emissions.

Municipal, medical and hazardous waste combustors – which are stringently regulated by the EPA – account for about ten percent of U.S. air emissions. Industrial boilers are responsible for ten percent and chlorine manufacturers for six percent. The remaining third is made up of incidental use and products containing mercury. Existing coal-fired power plants not only remain uncontrolled, but if left virtually unregulated, over time they will account for a larger and larger share of mercury emissions, as other source categories meet their obligations to reduce their mercury releases.

The EPA has known hazardous air pollutant (HAPs) emissions, including mercury, are a problem since the Clean Air Act was written in 1970. Congress reaffirmed the mercury problem generally during the 1990 Clean Air Act Amendments, both by listing mercury in the Clean Air Act's list of 188 toxic air pollutants requiring Maximum Achievable Control Technology (MACT) regulations, and by requiring EPA to submit a report to Congress on the issues surrounding power plant hazardous air pollutant emissions. Congress told EPA that based on the Report to Congress, the Agency must make a finding whether or not regulating power plants, including the development of a MACT standard, was "appropriate

² Guallar, E. et al., 2002, Mercury, fish oils and the risk of myocardial infarctions. New England J. of Med., Vol. 347, No. 22.

³ See U.S. EPA, 2003. Update: National Listing of Fish and Wildlife Advisories. EPA-823-F-03-003. May 2003. In addition, states with blanket advisories are Connecticut, Florida, Illinois, Indiana, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, North Dakota, New Hampshire, New Jersey, Ohio, Pennsylvania, Rhode Island, Vermont, and Wisconsin.

⁴ www.epa.gov/ttn/atw/combust/utltox/utoxpg.htm. File name: plant_set_state

⁵ www.epa.gov/tri

and necessary.” In 1998, EPA published its *Report to Congress*, which confirmed that power plant hazardous air pollutants are indeed a serious problem.⁶

In December 2000, EPA found that federal regulation of the electric utility industry under the MACT approach of section 112 of the Clean Air Act was “appropriate and necessary.” That determination was made on the basis of public health evidence and scientific study of control options. The determination included the conclusion that while many hazardous air pollutants are emitted by the industry, mercury emissions from coal-fired power plants and nickel emissions from oil-fired power plants⁷ were the toxic air emissions of greatest concern. At the same time, EPA also listed electric utility generating units as an industrial category requiring MACT regulation.

Because of the determination and the listing of the electric utility industry, EPA is required to set a MACT standard under §112 of the Clean Air Act. A MACT standard is a technology-based standard that requires utilities to achieve emissions reductions based on the levels actually achieved by the best performing existing units currently in existence.

- No nation-wide regulations for coal plant HAP emissions: Currently, there are no federal regulations that cover hazardous air pollutant (HAP) emissions from all coal- and oil-fired power plants. However, beginning in 2000, states must require HAPs MACT controls on new plants proposed in their jurisdictions. These controls are determined on a case-by-case basis, based on the requirements set out in §112 of the Clean Air Act.
- Deregulation: The electric utility industry is now deregulated and power is sold across state lines. Because of the multi-state nature of the industry, it makes sense for the federal government to mandate one standard for all plants, in order to create a level playing field, and avoid confusion.
- State actions good, but not enough: Some states such as Minnesota, Wisconsin, Massachusetts and New Jersey have taken legislative or regulatory steps to curb HAP emissions, including mercury from power plants in their states. But as we all know, air pollution does not respect political boundaries. Mercury travels in the air from state to state and around the globe.

Can Mercury Emissions from power plants be controlled?

- Yes. With commercially available, cost-effective technologies currently in use, coal-fired power plants can achieve a 90% reduction in mercury emissions compared to uncontrolled levels. Furthermore, these plants can achieve such reductions at a nominal cost of about 1/50th of a cent per KWh. It currently costs about 2 cents/KWh to make electricity from coal.

⁶ U.S. EPA: Study of Hazardous Air Pollutant Emissions from electric utility Steam Generating Units – Final Report to Congress. 453/R-98-004a. February 1998.

⁷ Nickel, in the form of nickel subsulfide, is a known carcinogen emitted by oil-fired power plants. *Id.* Executive Summary at ES-8.

- Yes. Other tests have demonstrated the possibility of reaching 98% mercury reductions at new units.
- Yes. Where there is a will, there is a way. American ingenuity is such that when faced with a challenge, we can generally figure out how to solve the problem and do so at a reasonable cost.

What is EPA currently proposing?

The nation's power plants currently emit 42 tons of mercury per year. If MACT rules were written and finalized for this industry, as the Clean Air Act requires, the nation's coal-fired power plants would be required to emit between 4 and 10 tons of mercury per year by 2008. EPA has stated that such control levels are achievable using existing technologies, in that timeframe.

Regrettably, EPA's current proposal offers a choice between three insufficient alternatives:

- Alternative 1: In this option, EPA retains its December 2000 determination that it is "appropriate and necessary" for electric generating units to be regulated under §112 of the Clean Air Act. In so doing, EPA proposes to establish a Maximum Achievable Control Technology (MACT) standard that would include minimum emissions levels, or "floors," for power plant mercury emissions.

The problem with EPA's proposed MACT floors is that they are orders of magnitude less stringent than that which the Clean Air Act currently requires. If mercury was regulated in this manner, mercury air emissions from the nation's power plants would only be reduced to a level of 30-34 tons per year by 2008. Implementing this alternative would require only a 20-30% reduction in mercury emissions from the electric utility sector. Compare that to the 4-10 tons per year level that EPA has asserted is achievable with currently available technology (a 90% reduction) by 2008.

- Alternative 2: EPA proposes in this alternative to retain its December 2000 determination, and promulgate a MACT standard as in Alternative 1 above, but then establish an as-yet vaguely defined "cap-and-trade" program for mercury emissions based on the MACT levels.
- Alternative 3: In this option, EPA would revoke its December 2000 determination that it is "appropriate and necessary" to regulate power plants under §112. EPA proposes this despite the fact that mercury, and other HAPs emitted by the electric utility industry remain listed by Congress as air toxics requiring MACT regulation.

Instead, EPA proposes to treat mercury as a conventional pollutant, by establishing a performance standard under §111 of the Clean Air Act. This is the section of the Act under which pollutants like sulfur dioxide and nitrogen oxides, which are not toxic, are regulated. A performance standard would be even less stringent than the proposed MACT floors in the

first alternative. In addition, EPA asserts that this alternative would allow a “cap-and-trade” program for mercury.

The problem with this alternative is that EPA is not authorized by the Clean Air Act to regulate mercury as anything but a hazardous air pollutant. Congress, in Section 112(b) of the Clean Air Act specifically listed mercury as a HAP, along with 187 other compounds. Section 112 further requires that listed HAPs are regulated differently than conventional air pollutants like SO₂ and NO_x.

Further, this proposal is not sufficient to provide needed reductions in mercury emissions to protect public health. If mercury was regulated in this manner, mercury air emissions from the nation’s power plants would only be reduced to a level of 15 tons per year but not until 2018. Implementing this alternative would essentially only equal a 70% reduction in mercury emissions from the electric utility sector, despite the fact that EPA has stated that 90% reductions are achievable by 2008. Equally important to recognize is that that level of reduction would not be achieved until 2018, a full decade after reductions are required in the current Clean Air Act.

Finally, this alternative allows the trading of mercury emissions credits through a cap-and-trade program. While market mechanisms such as cap-and-trade can be highly effective for the regulation of conventional air pollutants like SO₂ and NO_x, the League believes it is not legal to regulate hazardous air pollutants in this manner.

Moreover, the League believes it is poor public policy because of the potential for “hot spots.” A great deal of mercury is deposited within 50 miles of the plant from which it is emitted. Under this proposal, most of the reductions will likely come from power plants that burn eastern bituminous coal, while requiring very little emission reductions from power plants that burn western subbituminous coal. As a result, states like Minnesota, Wisconsin, Michigan, and Illinois, whose plants use a significant amount of western coal will see even more limited mercury reductions. Plants in Ohio and Indiana that use mostly eastern bituminous coal would have an incentive to switch to western coal. This could have the perverse effect of potentially increasing local emissions of mercury from plants in Ohio and Indiana. It would also create further strain on the coal industry in the eastern U.S.

Why is the League concerned?

- EPA’s proposals are inadequate: The League is concerned that EPA’s proposals are all much weaker than what is mandated by the Clean Air Act. The League also believes that all of EPA’s proposals are much weaker than what we know is already achievable and cost-effective in this industry. Most notably, the League believes the proposal is weaker than reduction levels EPA has previously suggested.

EPA is charged with regulating hazardous air pollutant (HAP) emissions from all industries, including the utility industry. These HAPs include many compounds that cause multiple and extreme adverse health effects in humans. Among them is mercury, a known human neurotoxin that has been listed since 1971 by EPA and since 1990 by Congress as a HAP

requiring maximum control. But EPA's proposal does not satisfy this requirement – indeed EPA's third alternative treats mercury as though it were a conventional air pollutant.

- Mercury threatens public health: The League is concerned because we know that excessive levels of mercury in maternal blood supplies are causing fetal developmental damage now. According to the Centers for Disease Control, one in 12 women of childbearing age in the U.S. have unsafe levels of mercury in her blood. This means that approximately 300,000 children are born each year with a heightened risk for neurological and developmental problems related to mercury exposure. Even more recently, EPA estimated that as many as 630,000 children may be born each year with unhealthy levels of mercury in their blood. The effects linked to prenatal exposure to high levels of methylmercury include impaired memory, inability to process and recall information, and impaired visual and motor function.⁸
- Mercury is an economic issue: The League is concerned because sportfishing is a popular and lucrative activity. According to the American Sportfishing Association, in 2001 recreational fishing generated more than \$116 billion in total economic output and supported more than one million jobs.⁹ Mercury contamination threatens the resource on which sportfishing depends and has real economic consequences.

But the value of fishing cannot just be measured in dollars. Although less tangible and difficult to quantify, the effects of mercury pollution on an ecosystem can affect the quality of the fishing experience. A survey of anglers underscores the importance of the social aspects of fishing.¹⁰ Some of the main reasons that people fish are to relax, to spend time with family and friends, and to be close to nature. Warnings about eating fish due to mercury contamination detract from this experience. Reducing environmental contaminants like mercury must be a goal so we can continue to conserve and protect this resource.

- Fishing is important to Ikes: League members share a rich tradition of outdoor recreation centering on the nation's lakes and rivers. We are cabin owners, fishermen, hunters, and outdoor enthusiasts whose lakes, rivers and forests are our passion. The ability to pass these traditions on to future generations is threatened by mercury contamination. Female anglers of child-bearing age and children who like to fish must not eat the fresh bass, walleye, northern pike, or other finfish they catch, in order to be completely sure to avoid the adverse effects of mercury. And unless action is taken to eliminate mercury pollution from our lakes, streams and rivers, we will not be able to assure that our children's children are safer from these risks.

⁸ U.S. EPA, 1997f. Mercury Study Report to Congress, Volume V: Health Effects of Mercury and Mercury Compounds. EPA-452/R-97-007; Toxicological Effects of Methylmercury, National Academy Press, Washington D.C., 2000.

⁹ U.S. Department of the Interior, Fish and Wildlife Service. U.S. Department of Commerce, U.S. Census Bureau. 2001. National survey of fishing, hunting, and wildlife associated recreation. FHW/01-Nat. October 2002. Tables 55 and 64.

¹⁰ The Future of Fishing in the United States: Assessment of Needs to Increase Sport Fishing Participation. November 1999. Conducted by Responsive Management National Office.

What does the League recommend?

The League recommends that the EPA:

- Finalize a the Maximum Achievable Control Technology (MACT) standard that meets the requirements of the Clean Air Act. EPA must require through that standard a 90% reduction of electric utility mercury emissions by 2008.
- Reject the alternative §112 and §111 performance standard approaches and their associated mercury trading proposals. These alternatives would cause additional mercury related adverse health risks through the promotion of pollution trading and would allow unacceptable amounts of mercury pollution to continue.

Submit Your Own Comments to EPA

If you prefer to draft your own comment letter to EPA, you can send your comments to the following:

- Electronically: There are two ways to submit your comments electronically to EPA.
 - *EPA's EDOCKET*
EPA's electronic public docket system is an "anonymous access" system, which means EPA will not know your identity, e-mail address, or other contact information unless you provide it in the body of your comment. Please note: EPA's policy is to not edit your comment, therefore any identifying or contact information provided in the body of a comment will be included in the official public docket. [Submit a comment through EDOCKET](#).
 - *Email*
Comments may also be sent by electronic mail (e-mail) to A-and-R-Docket@epa.gov, Attention Docket ID No. OAR-2002-0056. In contrast to EPA's electronic public docket, EPA's email system is not an "anonymous access" system. EPA's e-mail system automatically captures your e-mail address and includes it as part of the comment that is placed in the official public docket. [Submit an email comment now](#).
- Facsimile: Fax your comments to the EPA Docket Center at (202) 566-1741, Attention Docket ID. No. OAR-2002-0056.
- Mail: Send two copies of your comments to:

Environmental Protection Agency
EPA Docket Center (EPA/DC)
Air and Radiation Docket and Information Center, 6102T
1200 Pennsylvania Avenue, NW
Washington, DC 20460
Attention Docket ID No. OAR-2002-0056
- For information on other delivery options, go to EPA's [How to Comment](#) website.

REMINDER: Please make sure you include this subject line at the beginning of your letter:
Re: Proposed National Emission Standards for Hazardous Pollutants; and, in the Alternative,
Proposed Standards of Performance for New and Existing Stationary Sources: Electric Utility
Steam Generating Units; Docket ID No.OAR-2002-0056, 69 Fed. Reg. 4652 (January 30, 2004).