

Mercury Pollution in the Northeast: A Guide for Policymakers

This policy guide has been prepared by the New England Interstate Water Pollution Control Commission, the Northeast States for Coordinated Air Use Management, and the Northeast Waste Management Officials' Association. These three interstate organizations serve the New England states, New Jersey, and New York in the areas of water, air, and waste, respectively.

There is concern about the significant mercury pollution problem in the Northeast and the need for improved national mercury policies and legislation. This guide has been prepared to inform you of the reasons to be concerned about mercury, the status of the mercury issues in the region, and what needs to be done to address the mercury problem. Please consider this information in all future policymaking decisions.

Why should we be concerned about mercury pollution?

Mercury is a potent neurotoxin, particularly damaging to the developing fetus and young child. According to the U.S. Environmental Protection Agency's (EPA) senior researcher on mercury hazards, 16 percent of American women of childbearing age have mercury in their blood above the level considered safe by EPA. This new estimate is based on recent data that confirm a greater amount of mercury is distributed to the fetus than previously estimated. The number of newborn infants at risk for mercury-related brain damage in the United States is now estimated at 630,000, more than twice earlier estimates. In the Northeast, this translates into over 84,000 newborns per year at risk for irreversible neurological deficits from mercury exposure. Recent information is also evolving concerning a link between mercury exposure and an increased risk of adverse cardiovascular effects.

Eating mercury-contaminated fish and shellfish is the primary route of exposure for most people. The mercury in fish is methylmercury, a highly toxic form of this pollutant; only a minute amount of it in a waterbody can render its fish unsafe to eat over time. All the Northeast states have issued fish consumption advisories for mercury. And humans are not the only ones at risk; mercury also threatens fish-eating birds and mammals at the top of the food chain, including species that have long stood as environmental icons, such as loons and eagles.

The prevalence of mercury in the environment, its toxic nature, and the ease of exposure make mercury pollution one of the most critical public health threats in the region. With its potential to cause higher health care costs and to harm commercial and recreational fishing, mercury also poses a serious economic threat.

Where does mercury pollution come from?

Spills of mercury and mercury-containing products can occur in homes, hospitals, schools, and laboratories. Mercury can also be released during the handling, transport, and disposal of mercury bearing waste. However, most of the mercury responsible for tainting waterbodies—and the fish within them—is deposited from the atmosphere. This mercury comes from human and natural sources, but anthropogenic emissions far exceed those that occur naturally. Roughly two-thirds of all mercury deposited in the eastern half of the United States comes from domestic sources. The nation's coal-fired power plants and commercial/industrial boilers are the largest sources lacking substantial emissions regulations.

A study conducted by the Northeast States for Coordinated Air Use Management (NESCAUM), the Northeast Waste Management Officials' Association (NEWMOA), and the New England Interstate Water Pollution Control Commission (NEIWPCC) in 1998 found that nearly a third of the mercury deposited in the Northeast came from U.S. sources outside the region. The study also showed that power plants located outside the region contributed more to mercury deposition in the Northeast than plants within the region. Out-of-region sources are no doubt even more culpable now, given the effective mercury emissions controls implemented in the Northeast since the study and the lack of similar progress elsewhere.

Mercury Pollution in the Northeast:

What is being done in the Northeast to protect public health and the environment?

Implementation of the 1998 New England Governors and Eastern Canadian Premiers Mercury Action Plan has led to a drop in regional mercury emissions of more than 55 percent. This is primarily due to efforts to remove mercury from the waste stream and to require enforceable controls on municipal waste combustors and medical waste incinerators, which have achieved 90-95 percent reductions. Ongoing efforts to reduce the use of mercury in products, remove mercury from schools, and eliminate mercury releases from dental offices are providing further reductions. States in the region are also exploring enforceable controls for sewage sludge incinerators—an important source of in-region mercury emissions. Connecticut, Massachusetts, and New Jersey have adopted mercury control requirements for coal-fired power plants that will ultimately reduce emissions from these sources by 90 percent or more.

Controlling Air Emissions from Key Sources

The Northeast states have demonstrated that cost-effective technology exists to control mercury from municipal waste incinerators. Effective means of reducing mercury emissions from electric utility and other commercial/industrial boilers are not far behind; pilot and full-scale applications of technologies, such as activated carbon injection, have demonstrated that mercury control efficiency of more than 90 percent is feasible for power plants, with costs that are comparable to the cost of nitrogen oxides (NOx) removal required under the federal program to achieve national ambient air quality standards for ozone. Promising technologies that are emerging include enhanced wet scrubbing, coal processing techniques, and post-combustion multi-pollutant control technology.

Efforts are also underway in several Northeast states to reduce mercury emissions from another large source, iron and steel manufacturing plants that melt scrap metals. Scrap metals are contaminated with mercury, much of which originates from mercury-containing switches in motor vehicles. The mercury is released to the air when the plants melt the scrap metal to manufacture new products. The most cost-effective approach is to remove the switches from end-of-life vehicles at the point that they are first processed by automobile dismantlers and metal recyclers.

Reducing Mercury in Products & Waste

A number of Northeast states have enacted legislation to address the releases and problems associated with the mercury in products and, therefore, in waste and wastewater discharges. The legislation requires reporting by manufacturers and importers on the mercury content of products, requires mercury-added products to be labeled, establishes limits on the disposal of certain mercury-containing waste, and places restrictions on the sales of certain mercury-added products. A summary of the status of this state legislation and the associated state programs that implement the laws is available at www.newmoa.org.

All of the Northeast states have initiated aggressive programs to address key sources of mercury pollution that they can control. The programs promote the collection and recycling of mercury-containing wastes, including spent mercury switches from cars, used mercury glass fever thermometers, used fluorescent and high intensity discharge lamps, elemental mercury and mercury-added products from middle and high schools, and used mercury-added measuring and other devices.

Currently there are only a handful of federal programs, policies, or regulations that address the problems associated with mercury in products and wastes. EPA has recently begun to initiate some voluntary programs to address mercury in selected products and wastes.

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What is the federal government doing to protect public health and the environment from mercury contamination?

EPA, and particularly EPA Regions 1 and 2, have provided some critical support to reduce mercury emissions and use. National regulations on municipal waste combustors and medical waste incinerators have led to sharp reductions of emissions from these sources nationwide. In addition, EPA has provided financial and in-kind support to the states in carrying out some key activities under the New England Governors and Eastern Canadian Premiers *Mercury Action Plan*, including: providing financial and other assistance to states for recycling programs, outreach activities, and mercury deposition, fish tissue, and sediment monitoring; conducting Northeast mercury emission inventories; and supporting conferences on mercury science and reduction of mercury in products.

The progress being made by the Northeast states and EPA New England in reducing regional mercury emissions highlights the need to address the deposition attributed to sources outside the region. In fact, power plants in the Midwest and Southeast are now among the largest contributors to deposition in the Northeast. Consequently, federal power plant regulations have become the key to mitigating the public health, environmental and economic risk from mercury in the Northeast.

Limitations on Power Plant Emissions

EPA recently proposed regulations limiting the mercury emissions of power plants nationwide. While this is an encouraging development, EPA is proposing a 29 percent reduction in emissions, which is well below what can be currently achieved through the application of modern air pollution control technology and is required by Section 112(d) of the Clean Air Act (CAA). The CAA requires EPA to establish a Maximum Achievable Control Technology (MACT) floor for existing sources. This floor cannot be less stringent than the average emissions limitation achieved by the best-performing 12 percent of the existing sources for which emissions information exists, and it represents the minimum level of control to be required at a facility. If coal-fired utility boilers are ranked by their percentage of mercury reduction, as measured from the mercury content of the coal they burn, the average of the top 12 percent is a 91 percent reduction, far more than the 29 percent proposed by EPA. It should be noted that when comparing the residual mercury produced at these two levels of reduction, EPA's proposal would lead to almost five times more mercury contamination nationwide than would be seen under a MACT approach.

A strong national approach to mercury reduction would greatly benefit the Northeast states with regard to Section 303(d) of the federal Clean Water Act. It requires states to identify waterbodies that are not meeting surface water quality standards for pollutants, and then establish for each waterbody—and for each pollutant—a total maximum daily load (TMDL). The TMDL identifies the level of a pollutant that the waterbody can tolerate and still meet water quality standards. Due to the continued deposition of airborne mercury from sources outside the Northeast, thousands of waterbodies in the region have mercury levels that are too high; the states now face the daunting challenge of determining TMDLs for mercury for each one of them.

Addressing the National Stockpile of Mercury

The states in the Northeast have initiated aggressive programs to promote mercury use reduction and to segregate and collect mercury products at the end of their useful lives. However, the absence of a national mercury surplus management strategy is a significant obstacle to the success of these programs.

There is a growing gap between the supply and demand for mercury, which has created an excess amount of mercury available as a commodity. The United States is currently a net exporter of mercury. This trend will continue into the foreseeable future and is expected to increase as more chlor-alkali plants close or convert to the non-mercury cell process, as

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recycling of mercury from existing products increases, and as demand decreases in response to mandatory and voluntary reduction initiatives. Recent data already indicate that the worldwide secondary supply of mercury has begun to exceed the demand for mercury use.

Preventing the reintroduction of excess and unwanted mercury into commerce is a key goal of the states in the Northeast. It should be a nationwide goal as well. Consider that:

- Mercury pollution is an issue of widespread importance throughout the country.
- The federal government already has a significant stockpile of mercury and many years of experience managing it.
- Economies of scale could be achieved by consolidating excess supplies.

Clearly, the long term management and storage of mercury should be a federal responsibility.

What more needs to be done and is it reasonable?

While the Northeast states have made great progress in reducing mercury sources and emissions, more needs to be done. The states must:

- Continue to reduce emissions from in-region sources, such as power plants, industrial and commercial boilers, iron and steel melters, and sewage sludge incinerators.
- Expand efforts to effectively reduce releases associated with the handling, transportation, recycling, and disposal of mercury-containing products and waste.
- Provide increased funding and guidance to communities and local solid waste management districts to provide cost-effective mercury-containing waste collection programs for both households and businesses.

But state efforts will not be enough. The significant investment being made in the Northeast to reduce the public health and environmental risk associated with mercury pollution continues to be undermined by federal regulations that fail to prevent transported mercury from being deposited at dangerous levels in the region's lakes, ponds, rivers, and bays. To adequately address this issue:

- EPA must develop a strong set of MACT standards since it is the legally mandated regulatory path under the Clean Air Act and also constitutes a more efficient way to reduce all emissions of hazardous air pollutants from the coal fired utility units in a timely manner, or as an alternative,
- The U.S. Congress must move forward with legislation that establishes a strict new federal standard for mercury emissions that would result in emissions reductions equivalent to those required by a MACT approach. The solution to the problem of continued deposition of transported airborne mercury lies in the adoption and implementation of adequate national controls for power plants and large industrial boilers.
- The U.S. Congress needs to address the problems associated with the long term management and storage of excess mercury.

The history of U.S. air pollution and waste management control progress is testament to the technology-forcing effects of environmental regulatory requirements. Regulations with well defined targets and deadlines have consistently driven innovation in control technology, resulting in dramatically lower emissions and waste—and implementation costs—than initially projected. The promising state of technology development for mercury-specific controls means U.S. power plants are well-situated to comply with a stringent federal standard for mercury in a timely and cost-effective manner. The state mercury standards in the Northeast have demonstrated it is possible to reduce mercury emissions to very low levels at a reasonable cost; it is time for federal standards that will result in the same progress nationwide.

The logo for the Northeast Interstate Water Pollution Control Commission (NEIWPCC) features a stylized water drop icon to the left of the acronym "NEIWPCC" in a bold, sans-serif font.The logo for the Northeast States Council on Air Quality Management (NESCAUM) features a stylized wave icon to the left of the acronym "NESCAUM" in a bold, sans-serif font.The logo for the Northeast Mercury Oxidation Association (NEWMOA) features the acronym "NEWMOA" in a bold, sans-serif font, with a stylized map of the Northeast region below it.

References and supporting documents for specific facts in this document, as well as additional information about individual state efforts can be found on the NEIWPCC, NESCAUM, and NEWMOA websites at www.neiwpcc.org, www.nescaum.org, and www.newmoa.org