

# Northeast States Succeed in Reducing Mercury in the Environment

*Compiled by the New England Interstate Water Pollution Control Commission, Northeast States for Coordinated Air Use Management, and Northeast Waste Management Officials' Association*

*The Northeast states have implemented a number of mercury reduction programs to protect the environment and human health. The programs are innovative and effective, and the results are tangible and positive — signs of progress in the fight against an extremely harmful pollutant.*

Over the past ten years, the Northeast states\* have put tremendous effort into reducing mercury in the environment. In 1998, the New England Governors and Eastern Canadian Premiers Committee on the Environment formed a regional mercury task force with a goal of virtually eliminating all in-region anthropogenic sources of mercury emissions and discharges. This event was instrumental in jump-starting statewide mercury reduction programs across the region. Since the formation of the task force, mercury emissions in the New England states and Eastern Canadian provinces have decreased by more than 55 percent.

The primary concern associated with mercury is human exposure through consumption of fish contaminated with this toxic metal. The mercury that accumulates in fish primarily originates from air emissions; sources include the burning of coal at power plants, burning of mercury-containing products at municipal waste combustors and medical waste incinerators, burning of sewage sludge that contains mercury from dental uses, and releases attributable to broken mercury-containing products. Mercury that is released to the air returns to the land through atmospheric deposition and makes its way into water bodies. Once in water, bacteria convert mercury to a form that can accumulate in fish and other aquatic organisms. If mercury accumulation reaches levels that pose risks to human health, states must issue fish consumption advisories to provide information to their residents on the amount and types of fish that are safe to eat. All of the Northeast states have statewide or regional fish consumption advisories, indicating that mercury pollution is of great significance in this part of the country.

Reductions in mercury levels in fish can be accomplished through placing air pollution control devices on smokestacks or by reducing the amount of mercury that reaches incinerators, which can be achieved through programs to collect, recycle, and reduce use of mercury-containing products. This document briefly describes some of the results of mercury reduction programs in the region that have targeted emissions controls, management of mercury-containing products, and wastewater discharges. More detailed information on each of these topics is provided in three supplementary reports: NESCAUM's *Tracking Progress in Reducing Mercury Air Emissions*, NEWMOA's *Northeast States Succeed in Reducing Mercury and Continue to Address Ongoing Challenges*, and NEIWPCC's *Reducing Mercury in Wastewater and Spreading the Word about Mercury in the Environment*.

According to a study by the Northeast States for Coordinated Air Use Management, Northeast mercury emissions from municipal waste combustors decreased by 85 percent between 1998 and 2002. During the same period, mercury emissions from medical waste incinerators decreased by more than 95 percent. Such reductions have an impact in the water. A recent study conducted in Massachusetts has shown significant declines in fish mercury concentrations coinciding with decreases in mercury emissions from incinerators. In one targeted location in the state, mercury emissions decreased by approximately 87 percent due to new pollution controls and closures of municipal and medical waste incinerators. Fish tissue

\* Includes Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont.

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*During the time when the majority of amalgam separators in operation in Massachusetts were installed, the mercury concentration in the MWRA treatment plant's sewage sludge pellets decreased from 3.8 mg/kg to 1.2 mg/kg.*

*In one location in Massachusetts, mercury emissions dropped approximately 87 percent due to new pollution controls and closures of municipal and medical waste incinerators. Within 36 to 48 months of implementing the controls and closures, fish tissue concentrations decreased significantly.*

concentrations, which were monitored before and after the emissions reductions, decreased significantly within 36 to 48 months of adoption and implementation of the controls and closures. These data strongly suggest that mercury levels in fish living in these types of water bodies can be reduced in a fairly short time period when aggressive mercury controls are employed at the regional and local level.

Since 2000, Northeast states have enacted major legislation to address mercury use in products and ultimately in solid and hazardous waste. This legislation includes bans and phase-outs on the sale of certain products, requirements for product labeling, and requirements for manufacturers to disclose their use of mercury in products that are sold in the region. The states have also pursued mandatory and voluntary programs for collecting certain mercury-containing products at their end-of-life. States have also focused on eliminating or reducing the use of mercury and mercury-added products at various types of facilities, such as schools and hospitals. From 2000 to 2006, the Northeast states have collected and recycled an estimated 7.5 tons of mercury. Restrictions on product sales in the region during this time have eliminated an estimated 14 tons of mercury. Some of the actions that have contributed to these reductions are the recycling of 41,764 mercury-containing thermostats, collection of 120,973 mercury automobile switches and 213,322 mercury thermometers, and removal of 4,696 pounds of mercury from 456 schools.

At the end of 2005, more than half of the dental offices in the New England states and Eastern Canadian provinces had installed dental amalgam separators to reduce the amount of mercury going to wastewater treatment facilities. All of the Northeast states now have legislation or regulations that require installation of amalgam separators, whereas previously many of the states had voluntary programs. In some cases, steps have been taken to reward early compliance. For example, Massachusetts began a voluntary program in 2004 that allowed dentists who installed separators prior to regulations becoming effective in 2006 to be exempt from future Massachusetts Department of Environmental Protection amalgam separator installation, operation, maintenance, and upgrade regulations and related fees until either 2007 or 2010, depending on the date of installation. This program resulted in approximately 75 percent of dentists installing separators. The environmental benefits of the increased separator use can be seen in the decline in mercury concentrations in sewage sludge at the Massachusetts Water Resources Authority treatment plant, which receives sewage from homes, businesses, and industries in 43 greater Boston communities. The mercury concentration in the plant's sludge pellets in September 2004 was 3.8 mg/kg; by August 2006 it had decreased to 1.2 mg/kg. It was during this time that the majority of amalgam separators now in operation were installed.

All of the activities described above have played a significant role in regional mercury reductions. Emissions controls on municipal waste combustors and medical waste incinerators have led to significant reductions from these sources. Improved management of and reduced use of mercury-containing products translated into further reductions. The decrease in mercury released from dental offices has meant lower mercury levels in both sewage sludge and wastewater released to regional water bodies. Reduced sludge concentrations have led to lower emissions from sewage sludge incinerators. All of these declines contribute to lower mercury levels in fish tissue, the ultimate goal of all regional mercury reduction efforts. While these results show great progress, further reductions are needed from in-region and out-of-region sources to ensure that fish are safe to eat. The Northeast states continue to be committed to reducing mercury and will remain dedicated to this effort until fish consumption advisories are no longer necessary.

The three supplementary reports, *Tracking Progress in Reducing Mercury Air Emissions*, *Northeast States Succeed in Reducing Mercury and Continue to Address Ongoing Challenges*, and *Reducing Mercury in Wastewater and Spreading the Word about Mercury in the Environment*, can be found at

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