
ENVIRONMENTAL Fact Sheet



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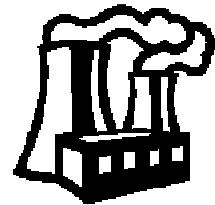
Mercury: Sources, Transport, Deposition, and Impacts

Species Will Be Affected

Mercury is a persistent, bioaccumulative, toxic pollutant. When released into the environment, mercury accumulates in water laid sediments, is ingested by fish, and is passed up the food chain to humans. Mercury contamination is a significant public health and environmental problem. Despite efforts by federal and state governments, as well as the private sector, to reduce releases of mercury to the environment, mercury levels in fish continue to be at levels of concern. New Hampshire is actively participating in efforts to reduce mercury pollution in the state. In the fall of 1998, the New Hampshire Department of Environmental Services (DES) published the [New Hampshire Mercury Reduction Strategy](#). It sets forth a comprehensive set of activities for addressing this problem in New Hampshire.

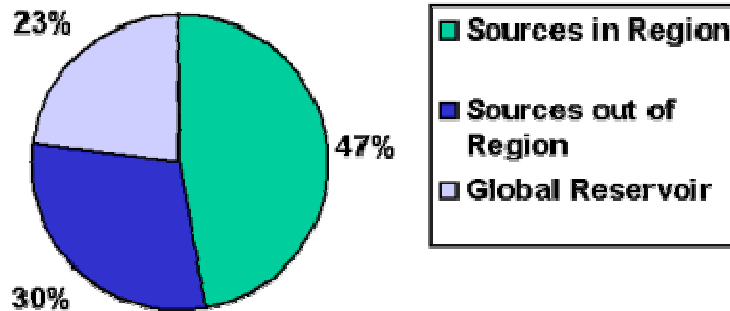
How does mercury get into the environment?

Mercury is introduced into the environment in three ways. First, mercury is emitted into the atmosphere naturally from volcanoes, the weathering of rocks, forest fires, and soils. Second, mercury is emitted as a result of human activities such as the burning of fossil fuels and municipal or medical waste. Lastly, mercury can be re-introduced into the environment through natural processes such as evaporation of ocean water. A 1997 U.S. Environmental Protection Agency report on mercury indicates that mercury emissions from human activities comprise 50 to 75 percent of all mercury released into the atmosphere in the United States. Because mercury is highly persistent once released into the environment, all sources are of concern.



Once it is released into the atmosphere, mercury is transported and deposited on the earth's surface by rain and snowstorms, as well as wind storms and forest fires. The transport and deposition of mercury is dependent upon many variables such as meteorological conditions, other chemical pollutants emitted along with mercury, and the chemical make-up of the air mass. Deposition can occur in as little as five to fourteen days after mercury is emitted to the air, or it can take approximately one year -- during which time mercury can reside in the air and be transported far around the globe.

Estimated Sources of Mercury Deposited in the Northeast* - 1998



*Northeast region includes New England, New York, and New Jersey.

Mercury deposited in New Hampshire is both emitted from in-state sources and carried here from sources upwind. Emissions upwind of New Hampshire are primarily attributable to coal-fired utilities and municipal and medical waste incinerators in the Northeast and Midwest. Studies show that mercury deposition rates in New Hampshire, as in the entire Northeast, are higher than in other areas of the country due to the combination of local emissions and transport from upwind sources. The global mercury reservoir that has resulted over time from both natural and man-made sources also contributes to deposition in the Northeast.

Mercury released into the air in state comes from the incineration of waste (municipal solid waste and medical waste), the combustion of fossil fuels such as coal and oil, and sewage and sludge incineration. In waste incineration, many discarded items (e.g., fluorescent lamps, electronic switches, some thermometers, and older batteries) contain mercury. When these items are burned, mercury is released from the incinerator stack. The burning of fossil fuels for the production of electricity and steam releases mercury during the combustion process. Facilities that burn coal have particularly high emissions of mercury. Other sources such as cars, trucks, and the breakage of fluorescent lamps contribute mercury emissions, but the extent is not well known.

What are the impacts on public health and the environment?

Food, primarily fish, is the most significant source of mercury exposure for the general population. When deposited in waterbodies, mercury is easily converted in sediments to methyl mercury, a particularly toxic form of mercury, that is ingested by and bioaccumulates in the tissues of animals and fish, and is passed up the food chain to humans. Mercury contamination in freshwater fish is widespread and significant enough to warrant fish consumption advisories in New Hampshire and 39 other states. Mercury concentrations tend to be higher in larger, older fish and in fish from tea-colored and relatively acidic waters.

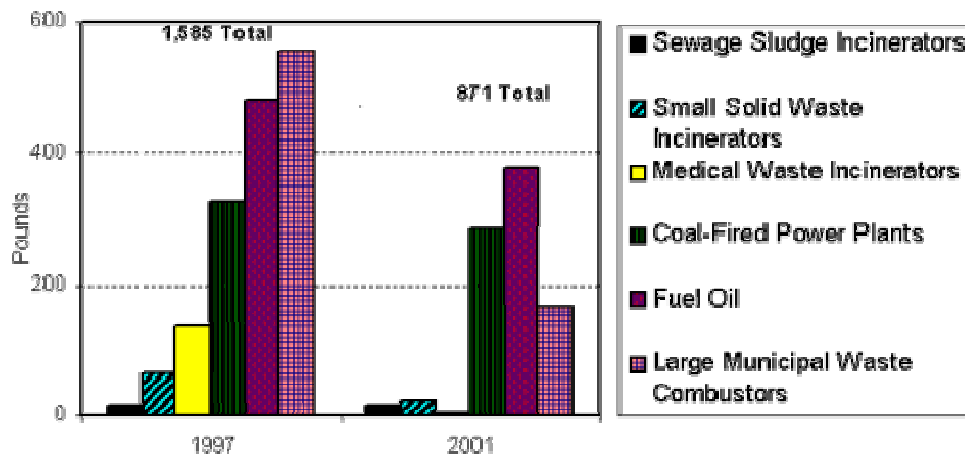


Mercury exposure in humans can lead to a variety of negative health effects, including neurological, kidney, gastrointestinal, genetic, cardiovascular, and developmental disorders, and even death. Methyl mercury is transported

across the blood-brain barrier and, in pregnant women, across the placenta into the fetus. Because methyl mercury inhibits the normal development of the nervous system in young children and fetuses, New Hampshire's fish advisory recommends that women of childbearing age and young children limit their consumption of freshwater fish to no more than one meal per month.

In addition to the effect on humans, fish-consuming wildlife such as loons, eagles and otters are also at risk from mercury contamination. Reproductive problems are the primary concern for birds suffering from mercury poisoning. Other mercury effects in birds and mammals include liver damage, kidney damage, and neurobehavioral effects.

**Mercury Emissions in New Hampshire, 1997–2001
45 Percent Reduction**



What is being done to reduce the release of mercury to the environment?

To address these concerns, New Hampshire's *Mercury Reduction Strategy* was released in October 1998. The Strategy contained 40 recommended actions for reducing man-made releases of mercury to the environment and contained a goal of 50 percent reduction in mercury emissions by December 2003, with an overall goal of the virtual elimination of anthropogenic mercury releases. The recommendations address issues ranging from air emissions reduction from various sources to increased source reduction and recycling efforts.



New Hampshire has completed a number of projects contained in the strategy to address mercury reduction, as well as instituted sampling and monitoring efforts to measure environmental impacts of mercury contamination. By the year 2002, these efforts resulted in a 45 percent reduction in mercury emissions, with a 55 percent reduction expected by 2004. The focus of DES activities include (1) legislative efforts to reduce mercury in consumer and commercial products; and (2) continuing outreach to users of mercury and mercury devices, such as hospitals, schools, and dentists. An initiative has been launched that focuses on motor vehicle salvage facilities and the removal and recycling of mercury-added convenience lighting switches prior to vehicle crushing.

In response to legislation passed in 2002, DES adopted a set of rules in 2003 that requires dentists to install amalgam separators with a 99 percent removal efficiency. DES has also been

participating in an effort by the Department of Health and Human Services to obtain a grant to do some biomonitoring of humans for mercury levels.

DES is also actively involved in the implementation of the New England Governors and Eastern Canadian Premiers Mercury Action Plan, which is a regional and bi-national effort to virtually eliminate anthropogenic mercury releases, and the NEWMOA mercury workgroup, which focuses on mercury-added products and wastes. New Hampshire also chairs the Interstate Mercury Education and Reduction Clearinghouse, which focuses on obtaining compliance by manufacturers related to the various state mercury product laws.

DES also conducts education and outreach activities on mercury hazards, alternatives to mercury containing products and methods to reduce the release of mercury to the environment. For more information on mercury in the environment and New Hampshire's *Mercury Reduction Strategy*, contact the DES Pollution Prevention Coordinator at (603) 271-6398.