
ENVIRONMENTAL Fact Sheet



29 Hazen Drive, Concord, New Hampshire 03301 • (603) 271-3503 • www.des.nh.gov

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Mercury In The Environment

What is Mercury and how is it used?

Mercury (Hg) is a naturally occurring element found in rocks, soils, sediments and the atmosphere. It is a relatively stable metal which does not readily react chemically. Mercury will vaporize at relatively low temperatures and can enter the atmosphere through the combustion of mercury containing materials (e.g., coal) and through natural processes such as the eruption of volcanoes.

Historically, mercury was used by man in many ways including the manufacturing of mirrors and hats, as a fungicide for agricultural applications, as an ingredient in paints, as a processing chemical for production of chlorine and as a component of electrical products such as batteries and fluorescent lamps. During wartime mercury was used as a component of detonators for ordinance. In recent years as the toxic potential of mercury has become better understood, many of these applications have been discontinued and the quantity in use today is significantly less than in the past.

Among the more common occurrences of mercury in human activity is its presence in coal. As a naturally occurring metal, mercury is found in coal. When burned, the combusted coal releases mercury into the atmosphere. Coal fired power plants in the Midwest are viewed as a significant source of mercury to the northeastern states.

How is Mercury Emitted into the Environment?

Mercury is emitted into the environment through three main processes. The first is a natural process: mercury emitted from soils, volcanoes, the weathering of rocks, and forest fires. The second is the anthropogenic (man-made) process: mercury emitted as a result of human activities such as the burning of municipal waste and fossil fuels. The third process is when previously deposited mercury is re-emitted or recycled to the environment through various natural processes such as the cycling of mercury between the oceans and atmosphere. The original source of this recycled mercury can be both natural and anthropogenic.

How is Mercury Transported to New Hampshire's Freshwater Fish?

The major pathway of mercury to lakes is atmospheric deposition. Mercury is emitted to the atmosphere in one of three forms: gaseous elemental, gaseous divalent and particulate. Gaseous elemental mercury is relatively insoluble and can remain in the atmosphere for up to a year and can travel long distances. On the other hand, gaseous divalent and particulate mercury tend to drop out of the atmosphere in a relatively short space and time. The elemental mercury is the

reason that remote ponds can receive mercury from manmade sources and the reason that much of the mercury in New Hampshire waters originates from outside the state. The divalent and particulate mercury explains why waters near sources such as a coal-fired power plant tend to have higher mercury levels. The deposited mercury can accumulate over time in the organic matter of lake sediments where bacteria can convert the mercury to methylmercury, an organic form that can enter the food chain and is toxic. The mercury is consumed by progressively higher organisms (moves up the food chain) and eventually bioaccumulates in large adult fish. Fish themselves may be affected by the mercury but fish-eating birds and mammals (including man) at the top of the food chain tend to be most susceptible to the toxic effects of mercury. All species of fish can contain mercury, with the larger, older, predatory fish having the highest amounts. Research has shown that much of the mercury in fish is from newly-deposited mercury and that fish mercury levels can be reduced relatively quickly if a major source is removed.

What is DES Doing to Reduce Mercury Emissions?

First of all, DES has determined that all major sources of mercury emissions installed in the state since April 1990 are in compliance with toxic ambient air limits. The state has taken legislative and regulatory action to reduce mercury emissions from existing in-state sources. DES is participating in regional efforts, including a total maximum daily load (TMDL) study, to reduce out-of-region sources of mercury to the state. The state has also participated in lawsuits to cause the enforcement of Clean Air Act requirements in other areas of the country.

How is New Hampshire Reducing Other Mercury Sources in the State?

New Hampshire has been very proactive about reducing mercury in household trash. Legislation was passed to reduce and eventually eliminate mercury in household batteries. New Hampshire was also one of the first states in the nation to adopt legislation to reduce mercury in packaging and now regulates mercury amalgam in dental offices. In addition, DES has an active outreach program to encourage recycling to reduce the amount of trash that needs to be incinerated.

Additional information on what DES is doing to reduce mercury in the state is available on the web at <http://des.nh.gov/organization/commissioner/p2au/pps/ms/mrpptp/index.htm>