

# Mercury & Wildlife: A Pervasive Threat



A FACTSHEET OF THE NATIONAL WILDLIFE FEDERATION'S CLEAN THE RAIN CAMPAIGN



While most lakes, rivers, and streams in the U.S. look healthy and untouched, mercury contamination from industrial sources, incinerators, and everyday household products is taking its toll on the delicate web of life.

## Where it Starts

Mercury readily contaminates fish. This is at the heart of the widespread impacts we see in wildlife throughout the U.S. Mercury is emitted into the air by sources such as coal-burning power plants and incinerators. Then it falls to our lakes, rivers, and streams. Once in the water, mercury is converted into methylmercury, the form which is most easily absorbed by living things. Methylmercury is then absorbed by aquatic organisms which are in turn consumed by small fish. Methylmercury concentrations increase with each step up the food chain. As a result, large predatory

fish, like walleye or bass can have mercury contamination levels in their bodies over one million times as high as the mercury levels in surrounding water.

Mercury can affect fish directly: impairing their growth and development, reducing reproduction, and causing behavioral abnormalities and altered blood chemistry. For example, research on the commonly studied zebra fish has shown that mercury reduces hatching success. Other research found that mercury exposure may threaten reproduction in walleye populations.



## Beyond the Waters

### Small Mammals

River otters and mink have been found with high levels of mercury in their tissue. Small mammals are more sensitive to mercury contamination than larger mammals. Adverse effects include involuntary muscle action and problems with movement, impaired vision and hearing, reduced reproductive success, impaired growth and development, loss of consciousness, and death.

### Large Mammals

Continuing up the food chain, mercury can impact large predatory land mammals and marine mammals (whales and seals) by harming the nervous system and reproductive health. Research has suggested that mercury may be a contributing factor in the decline of the endangered Florida panther population. Other species of wildlife affected by mercury contamination in the U.S. include raccoons and American alligators.

### Birds

Mercury's effects on fish-eating birds have been monitored extensively. Species studied include starlings, zebra finches, red-tailed hawks, mallard ducks, and loons. Impacts of high mercury exposures can include reduced food intake and weight loss; weakening in wings and legs; difficulty flying, walking and perching; and inability to coordinate muscle movements. Impacts of chronic, lower level mercury exposures in birds include reduced

hatchability, eggshell thinning, reduced clutch size, increased numbers of eggs laid outside the nest, aberrant behavior and potentially impaired hearing in juveniles. Wading birds, shorebirds, and other water birds – including loons, wood storks, egrets, great white herons, black skimmers, and Forster's terns – are among birds at risk from chronic mercury exposures.

## The Solution: How Can We Protect Wildlife from Mercury Pollution?

Specific steps can be taken at the local, state, and federal level to eliminate mercury pollution at the source.

► **Eliminate or greatly reduce industrial mercury emissions.** Some industrial sources, such as chlorine manufacturers or waste incinerators,

can virtually eliminate their mercury emissions by either switching to mercury-free processes or removing mercury from the incinerator feedstock. For other sources, such as coal-fired power plants, stringent emission limits must be set using existing authority under the Clean Air Act, or other legislation that would achieve reductions at a comparable level and timeframe.

► **End the manufacture and use of mercury-containing products.** Legislation should be passed at the federal, state, and local level to phase out the sale of mercury-containing products, institute mercury-free purchasing, and mandate manufacturer take-back for products that are still on the market and in use.

► **Promote safe disposal of mercury waste.** Mercury is found in dozens of household, business and industrial products. To prevent haphazard disposal of these products, resources need to be allocated to communities for comprehensive mercury collection and recycling facilities.

► **Enact water quality standards that are consistent and protective of people and wildlife.** Mercury monitoring and the process that results in fish consumption advisories needs to be improved in order to more effectively reduce the public's exposure to mercury as well as offer adequate protection to wildlife.



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## Common Loons Threatened by Mercury Contamination

The haunting call of the common loon (*Gavia immer*) has long been a symbol of the beauty and solace one can find along New England's forested lakeshores. Unfortunately, loons are also coming to symbolize the problem of mercury contamination in wildlife of the Northeastern U.S. and Eastern Canada. Mercury levels in loons generally increase from west to east across North America, with the highest concentrations in New England and Eastern Canadian provinces. In Maine, the most recent research estimates that nearly one-fifth of the state's breeding loons are at high or extra high risk for mercury contamination, and over 70 percent exceeding moderate risk levels. One study found that extra-high risk pairs (those exposed to highest mercury levels) hatched 50% fewer young, incubated eggs for significantly less time, and produced lighter eggs than pairs with low or moderate mercury levels. Elevated mercury levels have been linked to aberrant nesting behavior of adult loons, inhibiting territory establishment, egg production, and reducing the survivability of chicks. In surviving chicks, high mercury concentrations may affect brooding and feeding patterns, disrupting the critical energy balance of the young birds. Research in eastern Canada reported that loons found dead or in a weakened state had mercury levels associated with reproductive impairment and toxicity, and these levels were higher than in apparently healthy loons. Even in cases where mercury alone is not causing toxicity, it can contribute to other environmental stresses to lead to increased risks for these and other wildlife.



**Contact:** Felice Stadler  
Clean the Rain Campaign  
National Wildlife Federation  
1400 16<sup>th</sup> Street, NW, Suite 501  
Washington, DC 20036

**Phone/Fax:** 202-797-6692/5486

**Email:** [stadler@nwf.org](mailto:stadler@nwf.org)

**Web:** [www.nwf.org/cleantherain](http://www.nwf.org/cleantherain)