

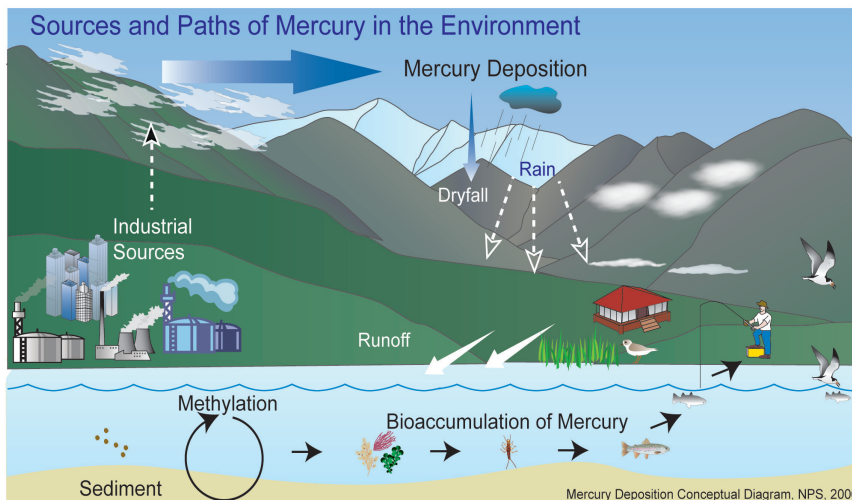


## Air Resources Division

# NPS Airborne Mercury Issues Fact Sheet

September 2006

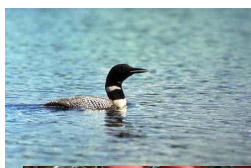
- Human activities have greatly increased the amount of mercury (Hg) currently cycling in the atmosphere, soils, lakes, and streams through processes such as burning coal for electricity and burning municipal, hazardous, and medical waste. Natural sources, such as volcanoes and geothermal features found in Yellowstone National Park, also release mercury into the environment. Once in the environment, mercury can be resuspended into the air by wildfires and prescribed fires.



- Mercury is emitted to the air in the elemental or inorganic form and deposited to ecosystems by precipitation or dry deposition. In the environment, particularly certain types of wetlands, biological processes convert these bio-unavailable forms into methylmercury, which is toxic and accumulates up the food chain.

- The National Park Service (NPS) is concerned about bioaccumulation of [mercury in park ecosystems](#). Fish consumption is the most important pathway for human and wildlife exposure to methylmercury. Toxic effects of methylmercury include reduced reproductive success, impaired growth and development, behavioral abnormalities, reduced immune response and decreased survival.

- States monitor mercury in fish and issue public fish consumption advisories if appropriate. Women who are pregnant or may become pregnant, nursing mothers and young children, are advised to limit consumption of fish to avoid complications from toxic bioaccumulation of mercury. Many national parks are located in areas with fish consumption advisories, including the majority of parks in the Great Lakes and the eastern half of the United States.



Common Loon, Brook Trout, American Alligator (NPS Photos)

- [Mercury effects in wildlife](#) have been studied in national parks including Acadia, Isle Royale, Shenandoah, Voyageurs, and Everglades. Findings show that mercury not only affects fish, amphibians, and fish-eating predators such as the common loon, bald eagle, and American alligator, but that mercury is also present in terrestrial animals such as tree swallows, bats, and endangered Florida panthers.

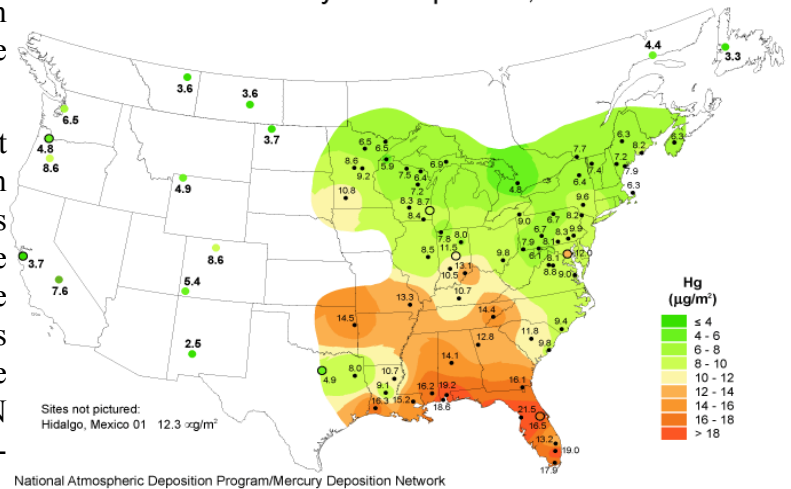
- o Analysis of lake sediment cores across varied national parks indicates that the accumulation rate of mercury has increased since pre-industrial times.

- o In numerous parks, acid rain has been found to increase mercury methylation and biotic uptake.

o In Voyageurs National Park, reservoir management and the resultant fluctuations in water levels can be used to decrease the rate of mercury methylation.

- The Mercury Deposition Network (MDN), part of the National Atmospheric Deposition Program (NADP), includes 95 sites (13 in parks) and assesses mercury in precipitation. MDN measures both the concentrations of mercury in rain and snow and the mercury loading, or wet deposition, to ecosystems through precipitation. The map (right) shows the spatial distribution of mercury deposition at MDN sites. Deposition is not directly related to methylmercury production and bioaccumulation. Methylmercury production is not consistent or predictable, because conversion is controlled by microorganisms that depend on certain environmental conditions.
- Control technologies are now available to reduce mercury emissions from industrial sources. The Clean Air Mercury Rule permanently caps and reduces mercury emissions from coal-fired power plants, mainly through existing controls for other pollutants. There are also mercury-specific controls, most notably activated carbon injection, used on municipal waste combustor and medical waste incinerator facilities. While some manufacturers have reduced or eliminated their use of mercury in products, items such as batteries and thermometers still contain mercury. Products containing mercury should be properly disposed of and many state and local agencies have developed household hazardous [waste collection programs](#).

Total Mercury Wet Deposition, 2005



National Atmospheric Deposition Program (NADP)



Rocky Mountain National Park (NPS Photo)



Olympic National Park (NPS Photo)



Voyageurs National Park (NPS Photo)



Everglades National Park (NPS Photo)

### For more information:

NPS, Mercury in National Parks: [http://www2.nature.nps.gov/air/Studies/air\\_toxics/mercury.cfm](http://www2.nature.nps.gov/air/Studies/air_toxics/mercury.cfm)

US EPA, Mercury: <http://www.epa.gov/mercury>

USGS, Mercury in the Environment: <http://www.usgs.gov/mercury/>

NADP, Mercury Deposition Network: <http://nadp.sws.uiuc.edu/mdn/>