

Great Lakes Mercury Connections

A Report on the Extent and Effects of Mercury Pollution in the Great Lakes Region

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MERCURY POLLUTION IN THE GREAT LAKES REGION—NEARLY FORGOTTEN, BUT NOT GONE *NEW SCIENTIFIC RESEARCH HAS IMPORTANT POLICY IMPLICATIONS*

Detroit, Michigan – The scope and intensity of mercury pollution in the Great Lakes region is much greater than previously reported, but additional mercury controls should bring needed improvement, according to a new summary of scientific research on the subject.

Despite general declines in mercury levels in the Great Lakes region over the past four decades, mercury concentrations still exceed human and ecological risk thresholds, especially in inland lakes and rivers, according to the report *Great Lakes Mercury Connections: The Extent and Effects of Mercury Pollution in the Great Lakes Region*, which summarizes 35 new scientific papers. Also, new research indicates that for some species of fish and wildlife in particular areas, mercury concentrations may again be on the rise.

While the risk of elevated mercury concentrations to human health is well known—all of the Great Lakes states and the province of Ontario have issued fish consumption advisories due to high mercury—new studies cited in the report suggest that adverse effects of mercury on the health of fish and wildlife occur at levels much lower than previously reported.

“The good news is that efforts to control mercury pollution have been very beneficial,” says David C. Evers, Ph.D., executive director and chief scientist at Biodiversity Research Institute, and the principal investigator in the Great Lakes study. “However, as we broaden our investigations, we find that fish and wildlife are affected at lower mercury concentrations and across larger areas, and that impacts can be quite serious. For example, we found that estimated mercury concentrations in the blood of common loons were above levels that are associated with at least 22 percent fewer fledged young in large areas of the Great Lakes study region.”

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Great Lakes Mercury Connections distills key results from 35 peer-reviewed papers in special issues of two scientific journals: *Ecotoxicology* and *Environmental Pollution*. The report represents the work of more than 170 scientists, researchers, and resource managers who used more than 300,000 mercury measurements to document the impact and trends of mercury pollution on the Great Lakes region.

A collaboration of the Biodiversity Research Institute in Gorham, Maine, the Great Lakes Commission based in Ann Arbor, Michigan, and the University of Wisconsin-La Crosse, the project is the product of a binational, scientific synthesis sponsored by the Commission through its Great Lakes Air Deposition Program, funded by the U.S. Environmental Protection Agency (EPA).

“One of our core missions is to support the policymaking process with good science,” says Tim Eder, executive director of the Great Lakes Commission. “This report represents a wealth of scientific knowledge developed by some of North America’s leading experts in this field. It portrays the most accurate and well documented picture yet of the impact of mercury contamination on the Great Lakes environment.”

The research details how mercury pollution is changing over time. “When we analyzed lake sediments, we were surprised to see such a strong connection between mercury loadings to the region and mercury emissions in the region,” says Charles Driscoll, Ph.D., University Professor of Environmental Systems Engineering at Syracuse University and co-principal investigator on the project. “We documented a 20 percent decline in sediment mercury deposition from peak values around 1985. This decline was concurrent with a 48 percent *decline* in mercury emissions from sources in the Great Lakes region and a 17 percent *increase* in global emissions, clearly illustrating the benefit of controlling domestic emissions. It is likely that additional national and regional air emission controls would result in further declines in mercury contamination of the Great Lakes region as well as other areas of the U.S. and Canada.” Among other findings, the report points out that the northern reaches of the Great Lakes region are particularly sensitive to mercury and that, despite improvements, fish mercury concentrations remain above the EPA human health criterion in these sensitive areas.

“The decline in mercury contamination of fishery resources across much of the Great Lakes region is very welcome news,” says James G. Wiener, Ph.D., Wisconsin Distinguished Professor at the University of Wisconsin-La Crosse, and co-principal investigator in the study. “However, the fish in many of the region’s inland lakes and rivers exceed important human and environmental health thresholds. For instance, we looked at six commonly eaten game fish and found that average mercury concentrations in these fishes exceeded the EPA human health criterion in 61 percent of the study region.” Dr. Wiener further noted that some long-term mercury trends appear to be changing. “The observations of recent increases in mercury concentrations in some fish and wildlife populations in the region is also cause for concern, because we do not understand why these increases are occurring.”

Atmospheric emissions are the primary source of mercury deposition in the Great Lakes basin; the report projects that further controls on those emissions “are expected to lower mercury concentrations in the food web, yielding multiple benefits to fish, wildlife, and people in the Great Lakes region.”

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Great Lakes Mercury Connections is being officially released today in Detroit at the Great Lakes Commission's 2011 Annual Meeting, and the opening day of the first-ever "Great Lakes Week" event. Great Lakes Week is bringing together representatives of the U.S. and Canadian governments along with public and private groups to focus on finding solutions to the most pressing environmental and economic challenges facing the lakes.

Great Lakes Mercury Connections and related multimedia materials are available online at: www.briloon.org/mercuryconnections/GreatLakes.

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The mission of the **Biodiversity Research Institute** is to assess emerging threats to wildlife and ecosystems through collaborative research, and to use scientific findings to advance environmental awareness and inform decision makers. BRI's science programs include wetlands, mammal, raptor, waterfowl, migratory bird, marine bird, coastal bird, wildlife and renewable energy, and tropical programs. The Institute's research efforts stretch throughout most of North and Central America, as well as across sites in South America, Russia, South Africa, and Europe. For more information visit www.briloon.org.

The **Great Lakes Commission**, chaired by James Tierney, assistant commissioner for water resources at the New York State Department of Environmental Conservation, is an interstate compact agency established under state and U.S. federal law and dedicated to promoting a strong economy, healthy environment, and high quality of life for the Great Lakes-St. Lawrence region and its residents. The Commission consists of governors' appointees, state legislators, and agency officials from its eight member states. Associate membership for Ontario and Québec was established through the signing of a "Declaration of Partnership." The Commission maintains a formal Observer program involving U.S. and Canadian federal agencies, tribal authorities, binational agencies, and other regional interests. The Commission offices are located in Ann Arbor, Michigan. Learn more at www.glc.org.

The **University of Wisconsin-La Crosse**, founded in 1909, is one of 13 comprehensive educational institutions in the University of Wisconsin System. UW-L has more than 10,000 students enrolled in 43 undergraduate majors, 17 master's degree offerings and three certificate programs. The University's River Studies Center, created in 1972, focuses on research and informational programs with an emphasis on resources of the Upper Mississippi River basin and the Great Lakes region. For more information visit www.uwlax.edu/biology/rivercntr/.