

plankton or bacteria. These microorganisms are consumed by organisms higher in the food chain, or after dying, settle to the bottom of the lake and are incorporated into bottom sediments. Studies of sediment cores show that younger sediments deposited since industrialization have mercury concentrations that are about 3-5 times that of historical sediments. Thus, the fact that these sediments are primarily composed of dead microorganisms that were once the bottom of the food chain would suggest that modern levels of mercury in the food chain are elevated over preindustrial times.

If human-related emissions could be eliminated or reduced, how long would it take for ecosystems to recover?

The only way to attempt to answer this question is to incorporate all the best information currently available on how mercury behaves in the environment into a computer model. Such a model was constructed as part of the research effort on northern Wisconsin lakes. Modeled scenarios predict that if emissions could be reduced by 5 percent, it would take 8 years before any change in fish concentrations would be observed, and the decrease would be small.

The Role of the USGS in Mercury Studies

As a national agency with a mission to describe the nation's water resources, the USGS is uniquely positioned to provide a

leadership role in aquatic mercury investigations. The USGS was a prominent participant in studies conducted in northern Wisconsin, which largely form the basis of current knowledge about mercury in aquatic ecosystems. With offices in every state, staffed with scientists trained in the collection of water samples, the USGS can conduct studies on mercury contamination throughout the country. The ongoing National Water-Quality Assessment (NAWQA) program provides additional infrastructure and expertise to gain a national perspective on mercury contamination. A recently established mercury research laboratory in Madison, Wisconsin gives USGS scientists the necessary analytical capability to conduct state-of-the-art contamination studies. Thus, the USGS is well situated to advance the understanding of mercury cycling in aquatic ecosystems and to assist resource management agencies in developing strategies for reducing the effects of mercury contamination.

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Suggested Reading

Mercury as a Global Pollutant (D.B. Porcella, J.W. Huckabee, and B. Wheatley editors), *Water, Air and Soil Pollution*, 80 (1-4), 1995.



CURRENTLY, THE U.S. GEOLOGICAL SURVEY IS CONDUCTING MERCURY CYCLING STUDIES IN THE FLORIDA EVERGLADES.



CLEAN SAMPLING TECHNIQUES CAN BE ADAPTED FOR USE IN ALMOST ANY ENVIRONMENT, INCLUDING WETLANDS, LAKES, AND STREAMS.



THE U.S. GEOLOGICAL SURVEY HAS PARTICIPATED IN MERCURY CYCLING STUDIES IN NORTHERN WISCONSIN LAKES.



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