Acknowledgements


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Methylmercury levels in fish and other biota routinely exceed thresholds considered potentially harmful to people and fish-eating wildlife throughout much of the United States. Mercury emitted to the atmosphere by industrial activities (e.g. coal-fired power generation, chlorine production) deposits to watersheds, transforms into highly bioavailable methylmercury, and magnifies to high concentrations in food webs. Growing awareness of changing mercury levels in the environment has sparked widespread concern about ecological and human health effects.

Federal agencies, states, and tribes—in partnership with academic researchers, non-governmental organizations, and industry—have been actively engaged in understanding and developing solutions to the mercury pollution problem. Developing regulatory policies designed to reduce mercury emissions from stationary sources, including coal-fired power plants, is one of the primary ways states and the federal government are addressing the mercury threat.

Sufficient information is not currently available for many areas of the United States to fully and accurately assess the benefits and effectiveness of mercury reduction measures. Policymakers, scientists, and the public need a national monitoring program to accurately quantify regional and national changes in atmospheric deposition, ecosystem contamination, and bioaccumulation of mercury in fish and wildlife in response to changing mercury emissions. In the absence of a national mercury monitoring program, federal, state, and tribal agencies and other organizations are collaborating to understand mercury in the environment using limited existing data and monitoring capabilities. This report is the result of a multi-stakeholder, national mercury monitoring workshop, held May 5–7, 2008, to envision a comprehensive and integrated national mercury monitoring network. The report highlights strategies and partnerships for the design and implementation of a national network for tracking mercury pollution in ecosystems.

The process by which mercury deposits to watersheds, transforms to methylmercury, and magnifies to high concentrations in food webs is complex, requiring monitoring of all components of the mercury cycle to assess how changing emissions and deposition affect fish, wildlife, and people. Federal, state, and tribal agencies and other institutions operate a number of programs that monitor how mercury enters, cycles, and impacts ecosystems. However, all parts of the mercury cycle are not monitored, leaving major data gaps nationwide. In addition, agency mercury monitoring and research programs, developed and implemented for a variety of reasons, often sample over different spatial scales and time periods using disparate data-gathering protocols. Consequently, this presents a challenge to effectively combine resulting datasets to provide a complete national view of mercury in the environment.
Agreement emerged from the May 2008 workshop regarding mercury monitoring network goals, objectives, and major design elements. Workshop participants also came to agreement about how to focus collaborative efforts in the near term. Refinement of the monitoring network design will emphasize creation of a national framework for site selection and data sharing. Network planners will seek opportunities to leverage existing monitoring activities and funding sources through engagement with the broader mercury community. Outreach and support-building for existing and expanded monitoring will be directed toward policymakers and federal and state agencies.

In May 2008, scientists, policy analysts, and natural resource managers representing academia, federal and state agencies, tribes, industry, and non-governmental organizations met in Annapolis, Maryland, to refine the scientific and technical design of a standardized, national mercury monitoring network; explore potential implementation strategies; and share information on existing North American mercury monitoring and research programs. The workshop was an important step in building broad support around a conceptual design for MercNet—a comprehensive and integrated monitoring network for the United States. Workshop participants agreed that the network would require standardized, multimedia sampling (i.e., air, water, sediments, fish, and wildlife) through national distribution of approximately 20 intensive monitoring sites, each accompanied by about 10 to 20 cluster sites. The network would operate for an extended period (10–40 years) to quantify the range of responses expected among the nation’s diverse ecosystems.

A national mercury monitoring network must serve a wide range of constituencies and meet multiple objectives. In recent years, extensive planning by a broad-based consortium of scientists, resource managers, and policy analysts has created a foundation for MercNet. The network envisioned will facilitate collaboration among diverse programs and agencies to produce comprehensive, nationally consistent, long-term mercury data through a cost-effective approach. At this time, new funding mechanisms do not exist for expanded mercury monitoring. Thus, efforts to establish the network must leverage existing monitoring capabilities and infrastructure, while striving toward a robust and coordinated set of monitoring sites that will provide the full range of information needed. Should new funding become available, implementation of the monitoring infrastructure described in this report would provide the nationally consistent monitoring necessary for tracking changing mercury levels and understanding ecological effects and response.

### National Mercury Monitoring Workshop Steering Committee

- Richard Arzt, National Oceanic and Atmospheric Administration
- Thomas Atkeson, Florida Department of Environmental Protection
- Ryan Callison, Cherokee Nation
- Charles Driscoll, Syracuse University
- David Evers, BioDiversity Research Institute
- David Gay, National Atmospheric Deposition Program
- Richard Haeuber, U.S. Environmental Protection Agency
- David Krabbenhoft, U.S. Geological Survey
- Robert Mason, University of Connecticut
- Gregory Masson, U.S. Fish and Wildlife Service
- Kristi Morris, National Park Service
- David Schmeltz, U.S. Environmental Protection Agency
- Edward Swain, Minnesota Pollution Control Agency