Northeast-Midwest Institute Study Finds Inadequate Water Data in the Lake Erie Drainage Basin

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A new study released today by the Northeast-Midwest Institute and the U.S. Geological Survey found that current water quality monitoring in the Lake Erie drainage basin is inadequate for evaluating agricultural management practices for improving the health of Lake Erie. The monitoring challenges identified in the Lake Erie drainage basin, such as the lack of overlap between monitoring sites and areas targeted by conservation incentive programs, likely apply in other regions across the country. According to Elin Betanzo, lead author of the study, "A substantial increase in agricultural management practice use is needed to generate and detect statistically significant reductions in nutrient loads to Lake Erie, even in places where the needed water data are collected." The study presents several strategies for improving efficiencies and results of both water monitoring and conservation incentive programs across the Lake Erie drainage basin.

Harmful algal blooms driven by nutrient loadings to Lake Erie have affected the Lake Erie region for several years, including a bloom in August 2014 that resulted in a drinking water advisory restricting water use for 400,000 people for three days in Toledo, Ohio. Agriculture is the dominant land use in the western Lake Erie drainage basin where nonpoint nutrient sources account for 71 percent of the nutrient load to Lake Erie (Ohio Lake Erie Phosphorus Task Force, 2010). Consequently, agricultural management practices are among the most important tools for reducing nutrient loads that lead to harmful algal blooms in Lake Erie.

"This report by the Northeast-Midwest Institute provides specific recommendations on how to better use our limited resources to monitor and prevent harmful algal blooms in Lake Erie," said **Representative Mike Kelly (PA-03, Co-Chair of the Northeast-Midwest Congressional Coalition)**. "Using the report, we can identify the most efficient and effective monitoring sites to better understand what management changes will achieve the results we need to keep Lake Erie healthy for everyone in the region."

According to **Representative Marcy Kaptur (OH-09, Co-Chair, Great Lakes Task Force)**, "Good science must guide our efforts to reduce the flow of nutrients into Lake Erie. This study by the Northeast-Midwest Institute charts a course for targeting conservation work, improving our water testing, and coordinating our strategic action to stop the threat of toxic algae in the Great Lakes."

The study calls for targeted monitoring in small watersheds and enhanced collaboration and coordination among water monitoring organizations and agriculture agencies within the Lake Erie drainage basin. Such collaboration, the study notes, is essential to efficiently collect the data needed to measure nutrient load reductions to Lake Erie that will prevent future harmful algal blooms such as the one that impaired Toledo's water supply last summer.

The study presents important findings regarding existing water data in the Lake Erie drainage basin:

- Only 15 of the 1,890 active and historical water quality monitoring sites are located in small (50 square miles and smaller) and large watersheds, and sampled with sufficient frequency to detect reductions in nutrient loads at the watershed scale. Nutrient reductions resulting from agricultural management practices can be measured sooner in small watersheds as compared to larger watersheds. Watersheds 1,000 square miles and larger that drain directly to Lake Erie are responsible for the largest agricultural nutrient loads that contribute to harmful algal blooms in Lake Erie.
- There is a lack of small watershed monitoring sites in priority areas for water quality monitoring (areas vulnerable to soil loss and with high phosphorus yield), and areas with conservation incentive programs.

- Active monitoring sites are collecting necessary large watershed data in the Maumee River, Sandusky River, and the River Raisin watersheds. Continued, long-term water quality monitoring is essential in these large agricultural watersheds to detect nutrient load reductions to Lake Erie.

The study also presents recommendations for immediate action:

- Locate new small watershed monitoring sites and conservation incentive areas in unmonitored high priority watersheds.
- Identify modifications to existing water monitoring and conservation incentive programs that allow for the most efficient use of small watershed monitoring resources. A coordinating entity should lead this collaborative planning process enlisting both water monitoring and agriculture organizations.
- For both existing and new water quality monitoring sites, maintain sampling for a minimum of ten years after new agricultural management practices are installed to evaluate their effectiveness in reducing nutrient loading.
- Substantially increase the use of agricultural management practices to generate statistically significant nutrient load reductions at both small and large watershed scales in the Lake Erie drainage basin.
- Ensure access to management practice implementation and land use data in monitored watersheds to quantify the relationship between these practices and water quality trends.

The Northeast-Midwest Institute will host a Capitol Hill briefing in July to share the findings and results from the study. Download the full report and sign up for announcements about future reports at www.nemw.org.

Next steps in this project

Today's report is the first in a series of three reports evaluating the availability of water data needed to address urgent water policy issues. The next report in this series will examine whether surface water and groundwater data are available to determine whether shale gas development is changing water quality in the Susquehanna River Basin. The Northeast-Midwest Institute will continue these investigations by exploring the water-quality data available across the entire Northeast-Midwest region and the types of policy questions these data can inform in a third, State of the Region report to be released in early 2016.

About the Northeast-Midwest Institute

The Northeast-Midwest Institute is a non-profit nonpartisan research, education, and policy organization dedicated to economic vitality, environmental quality, and regional equity for Northeast and Midwest states.

About the U.S. Geological Survey National Water Quality Assessment Program

Information about the National Water Quality Assessment Program can be found at http://water.usgs.gov/nawqa.