

Plan to Rid Freshwaters of Harmful Algal Blooms Short on Solutions

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WASHINGTON, DC, August 6, 2008 (ENS) - A report on ways to minimize the impacts of harmful algal blooms in freshwaters across the United States presented by federal government agencies on Monday offers few solutions and relies heavily on future research to develop responses to the noxious and often toxic plants.

These algae can form unsightly and foul-smelling mats, localized areas of low oxygen in the water, and clogged water intakes.

Impacts include foul taste and odor problems in drinking water sources and farm-raised fish, domestic and wild animal deaths, and reduced recreational opportunities due to noxious or toxic blooms. Human illness has been associated with large toxic blooms in recreational waters.

The National Oceanic and Atmospheric Administration, the Environmental Protection Agency, and the National Science and Technology Council released the interagency [report](#), which draws on the expertise of scientists in dozens of government agencies.

It emphasizes the importance of developing methods for detecting the cells and toxins of these harmful algal blooms in fresh water and understanding how the toxins are taken up and how they affect humans and animals.

"Freshwater HABs pose serious threats to human and ecological health," said NOAA Administrator Conrad Lautenbacher. "This report assesses the state of knowledge about freshwater HABs in the U.S. and sets research priorities to improve our ability to minimize or even prevent impacts of these events."

A majority of states have now experienced these freshwater blooms. Human activities, such as nutrient pollution, alteration of water flow, and introduction of invasive species, are thought to contribute to them.

Progress to date on research and response has been made mostly through research at the individual project level with larger federal research and response efforts concentrated on the Great Lakes region.



CyanoHAB on an Oregon lake (Photo by Stephen Hager)

"The central importance of this report is that this is the first comprehensive look at harmful algal blooms in U.S. fresh waters," says Paul Sandifer, a senior scientist with NOAA's Oceans and Human Health Initiative and co-chair of the Interagency Working Group on Harmful Algal Blooms, Hypoxia and Human Health that produced the report.

"Freshwater algal blooms are equally as important and problematic as those found in marine waters," said Sandifer, a former member of the U.S. Commission on Ocean Policy. "They can affect drinking water for the millions of people across the country who rely on surface fresh water supplies such as the Great Lakes."

The report, "Scientific Assessment of Freshwater Harmful Algal Blooms," presents a plan to minimize health and economic impacts of freshwater HABs but a great deal of research will be required to ensure the resilience of the nation's freshwater ecosystems.

Priorities include understanding causes in order to better predict blooms, improving environmental monitoring for early warning, improving risk assessments for humans and the environment, developing bloom prevention and control methods, and finally supporting HAB research and response infrastructure.

Scientists at the National Exposure Research Laboratory are exploring the use of titanium dioxide, an emerging "green" technology, for the treatment of microcystins in drinking water. They also are developing techniques for separation, detection, identification and quantitative measurement of six cyanobacterial toxins.

Across the Midwest, some states are already monitoring for HABs. In Indiana, the Department of Environmental Management, along with Soil and Water Conservation Districts, conducts sampling.

The Iowa Department of Natural Resources and Iowa State University monitor 132 lakes for cyanobacteria and associated toxins.

In Nebraska many agencies are involved. The Nebraska Natural Resource Districts, Public Power District, Game and Parks Commission, and Department of Environmental Quality, in collaboration with the U.S. Army Corps of Engineers, monitor CyanoHABs in lakes and inform the public online.

Michigan and Minnesota each provide monitoring. In Wisconsin, the Department of Natural Resources maintains general CyanoHAB information on the internet, while the Division of Public Health provides a fact sheet on cyanobacteria, their toxins, and health impacts.

The report recommends creation a national agreement on monitoring strategy, including federal guidelines to determine when beach closings and health advisories

are needed.

But it's not enough to monitor for algae. The report says that outreach to the public can lessen HAB impacts by promoting awareness of potential threats, by sharing accurate perceptions of drinking water, recreational water, and the safety of freshwater fish and crustaceans, and by fostering community participation in HAB prediction and response efforts.

The report recommends that scientists develop effective HAB control methods that have minimal impacts on the environment.

Potential control techniques to investigate further include increasing flushing rates, ultrasound, electrocoagulation, new and existing coagulants, and new algicidal or algistatic compounds.

Scientists are seeking effective treatment technologies to remove cyanotoxins from drinking water. Investigations of enhanced coagulation technology, filtration effectiveness, and disinfectant by-products are important, the report says. Microcystins, cylindrospermopsin, and anatoxin-A are the primary algal toxins of concern for regulation under the federal Safe Drinking Water Act.

Researchers are combining ground-based measurements and satellite image data to characterize bloom dynamics and inform development of future bloom forecasting tools.

For dealing with HABs this season, some help is available at the Harmful Algal Bloom Event Response [website](#) developed by NOAA's Center of Excellence for Great Lakes and Human Health.

Never drink untreated surface water, whether or not algal blooms are present, warns the Wisconsin Division of Public Health in the report. Boiling the water will not remove toxins.