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ECOS

Risk Communication of Harmful Algal Blooms

Ohio Environmental Protection Agency

Background and Environmental Agency Program/Capacity

The Ohio Environmental Protection Agency (Ohio EPA) is an independent agency tasked with environmental protection in the state. The agency's strategy on messaging and responding to HABs in drinking water and recreational waters was created in 2011, and is implemented in coordination with the Ohio Department of Health (ODH) and the Ohio Department of Natural Resources (Ohio DNR). In 2012, the agency realized that differences in drinking water and recreational advisories challenged the effectiveness of disseminating information to the public. So, the original 2011 joint strategy was subsequently separated into two different strategies, which are now revised with more specific information on techniques, timing, and content of communications to water systems, local health departments, and communities.

In 2013, cyanotoxins were first found in finished drinking water in Ohio above the state's drinking water threshold for microcystins at a small public water system on Lake Erie. Cyanotoxins were detected in finished water again in 2014 at the City of Toledo, putting the strategy and public communication protocols to the test. Upon confirmation of contamination, Ohio EPA immediately advised that the city issue a "do not drink" or "do not use" advisory. After the advisory was issued, the mayor hosted news conferences regularly. During the crisis, other regions helped provide drinking water to the Toledo community and coordinate messages with local officials.

Through its experience in Toledo, Ohio EPA learned critical lessons about timing of messaging and how to effectively communicate in a crisis. The Toledo Crisis also prompted passage of legislation in July 2015 to address HABs and require Ohio EPA to write rules protecting public water systems. Effective June 1, 2016, the state adopted new rules requiring routine cyanotoxin monitoring and screening for Ohio's 120 public water systems using surface water sources, adopting the federal Health Advisory Level for microcystins, and establishing analytical methods, public notification, and laboratory certification procedures. The rules also require development of Treatment Optimization Protocols and HAB General Plans if cyanotoxins are present in source water. These efforts provide public water systems with clearer expectations and regulatory certainty, and increase public confidence in the quality of finished water and the state's ability to respond to future events.

In 2017, Ohio EPA provided $1.5 million in Cyanotoxin Monitoring grants and $150 million in 0% interest loans for HAB infrastructure loans to Ohio public water systems, providing critical tools to quickly identify and monitor HABs in the short-term while addressing the larger-scale infrastructure needs to prevent, avoid and treat future HABs. Locally, water utilities are taking steps to address HABs and better communicate to their customers, including the City of Toledo who developed a dashboard on their website to illustrate current levels of contaminants detected in the lake and finished water.

Rollout and Dissemination of Advisory and Key Messages for the Public

Ohio relies on tiered Drinking Water Advisory Thresholds for four cyanotoxins, as outlined in the state's Public Water System HAB Response Strategy. The Strategy also outlines values for anatoxin-a, saxitoxins, and cylindrospermopsin, and Ohio Administrative Code defines values for microcystins. Ohio has adopted U.S. EPA's Health Advisory Levels for microcystins and cylindrospermopsin. Depending on the level of cyanotoxins in the finished water, Ohio EPA issues a "do not drink" or "do not use" warning. The agency communicates with emergency management officials and others before advisories are sent out, including critical users such as hospitals, nursing homes, and surgical centers.

ODH follows a messaging matrix to provide facility-specific guidance. The public water system may end a public notice when algal toxin levels are below the drinking water thresholds in two consecutive samples collected at least 24 hours apart.

To trigger a recreational water advisory, cyanotoxins must measure above the Recreational Public Health Advisory thresholds defined in Ohio's **HAB Response Strategy for Recreational Waters**. The strategy establishes tiered thresholds for the same four cyanotoxins outlined in the Public Water System HAB Response Strategy. If a HAB is visually confirmed and the contamination levels are equal to or exceed the Recreational Public Health Advisory threshold, the state posts signs that discourage swimming and wading for vulnerable populations (i.e. children, pregnant women, and pets). If HAB cyanotoxin levels are equal to or exceed the Elevated Recreational Public Health Advisory threshold, a sign is posted that warns people to avoid all contact with the water.

Ohio EPA posts all compliance cyanotoxin data on its HABs **website**, which includes information on both drinking water and recreational waters. The site also links to **BeachGuard**, a website that lists all Ohio beach advisories for bacteria and HABs, providing a one-stop-shop for citizens seeking information on beach health and/or beach safety. The website also links to other agencies. Ohio EPA, Ohio DNR and ODH coordinate closely during HABs events on recreational waters and have developed an Inter-Agency Communication and Coordination Protocol. Local health departments are increasingly engaged in HAB response, and are notified when blooms are confirmed and advisories are posted. The local health departments are important points of contact during an event, often receiving calls from citizens about potential illness and exposures.

Gaps and Challenges

One of the greatest challenges for Ohio EPA in communicating risks to the public is assuring coordinated and consistent messaging throughout the response and across all agencies. During the Toledo incident, the state and the City of Toledo issued different messaging which caused people to use water more conservatively than necessary. During a water crisis event, state and local officials and water utilities must have unified and coordinated messaging. Any mixed and uncoordinated messages will rapidly erode public trust and make the situation harder to control, especially in social media.

In reviewing the state's response to the large-scale Toledo incident, it became clear that roles and responsibilities of all potential parties involved, including highway patrol, state and local emergency management officials and health departments, and municipal and state managers, needed to be identified and practiced. These partners are now included in pre-season and routine HAB updates and convene annually to coordinate event response. In revising its HABs communications strategies, Ohio EPA is focusing on filling in loopholes and improving outreach and education across the state.

Ohio EPA notes that it does not take a lot for people to lose confidence in drinking water, and it takes a long time to regain trust. While Toledo did well recovering from its 2014 incident, there are still residents that do not trust the water and rush out to buy bottled water when a HAB appears on the lake or rumors circulate on social media. Ohio EPA stresses the importance of the city (i.e. mayor) issuing communications first, followed by the Ohio EPA Director, to avoid losing the public's confidence.

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