

Communicating the Risks of HABs: Oregon Health Authority

Background and Health Department Activities

The Oregon Health Authority (OHA) is a large umbrella agency that works with 34 independent local health departments to promote health and reduce disease, injury, and death in the state. OHA has been engaged in activities related to harmful algal blooms (HABs) since 2003, but started a formal HABs surveillance program in 2008 after receiving a grant from CDC. This funding enabled OHA to create educational outreach materials, [develop](#) a HABs website and hotline, create guidance documents outlining the advisory and sampling processes, develop advisory guideline values (GVs) for four separate cyanotoxins, offer HABs workshops, and convene a science advisory panel. The panel consisted of academic experts and federal, state, and local staff who helped OHA develop program elements that remain in use today. When the grant ended in September 2013, OHA triaged important pieces of the program so that it could continue, including issuing and lifting health advisories, maintaining the website and hotline, and delivering workshop presentations.

Because Oregon's program is voluntary, not all designated management agencies (DMAs) or local jurisdictions perform HABs sampling, and those that do must limit the cost of sampling and analysis to a few heavily used recreational water bodies. Since sampling is random, OHA staff work closely with the partners at the Oregon Department of Environmental Quality (DEQ) who can, upon request from OHA and as necessary, step in to perform these activities when either no DMA is available, or when no testing is performed. Due to the high cost of performing HABs surveillance, program coordination, and sampling and analysis, it is difficult for DEQ and other state and local agencies to sustain a full monitoring and sampling program without funding. Because no one agency has designated funding, it has been challenging for OHA to sustain the full suite of program elements. The agency has taken steps to redefine how the program is operated and how resources can be leveraged on the state and local levels, including passthrough funding from the health department's drinking water program, to provide sampling and analysis on strategic water bodies in the state. OHA has leveraged partnerships with various groups, including the Klamath Basin Monitoring Partnership and the Karuk Tribe, several water improvement districts, the Tenmile Lake Basin Partnership, advocacy groups, such as Willamette Riverkeeper, and several watershed councils and groups.

In the past, limited sampling and a lack of monitoring across the state resulted in problems that were elevated to the governor's office. To help address HABs occurring on unmonitored water bodies, Gov. Kate Brown requested that DEQ provide sampling when directed by HABs program staff. OHA and DEQ use criteria that allow for DEQ sampling in the most critical areas, or on popular recreational water bodies. To help OHA and DEQ to provide this service without additional funding, staff developed a memorandum of understanding (MOU) signed by the directors of seven state agencies, including the directors of OHA and DEQ. This MOU describes how agencies can assist OHA and DEQ with sample collection, outreach, and signage as their agencies' resources allow. Current protocol is for DMAs to identify and sample a bloom on a water body under their jurisdiction. If they choose not to sample, do not have the resources to sample, or if the bloom is affecting a water body where no responsible DMA is present, then OHA and DEQ will decide if sampling is necessary based on established criteria, which outline a number of potential exposures and conditions that may limit the public's access to a given water body. If sampling is necessary, OHA will ask DEQ to perform sampling.

Using CDC grant funds, OHA created permanent onsite signage for several popular water bodies. These signs can be flipped open to indicate when an advisory is in effect, or closed once the advisory is lifted. OHA also provides sign templates for all water bodies, particularly on those where no permanent signage has been placed. DMAs, local health departments, state park rangers, campground hosts, and others responsible for signage can flip these permanent signs or post temporary signs as appropriate. Responsibility for sampling and posting signs varies throughout the state.

Every year, OHA hosts HABs stakeholder meetings, which are organized and supported by the Oregon Lakes Association and in conjunction with Oregon State University. Stakeholder meetings consist of a classroom portion during which OHA and other agencies present on HABs, experiences, and new information, and a lab portion during which stakeholders and other interested Oregon residents can learn how to identify cyanobacteria under a microscope. At the last meeting in January 2018, OHA discussed the new cyanotoxin GVs for the upcoming summer recreation season, shared highlights and analyses from the 2017 season, and assessed the state's interest in Washington's HABs program, which is funded through a portion of the state's boat licensing fees.

Development of Health Advisories

In 2009, the toxicologist working with the HABs program coordinator developed a set of GVs for cyanotoxins and cell counts used to determine when an advisory should be issued or lifted. Until 2018, OHA was one of the only health departments in the United States with its own set of GVs. These GVs were [incorporated](#) into two guidance documents for harmful cyanobacteria blooms in recreational water and used by OHA, DMAs, and other responsible parties. One document, "Public Health Advisory Guidelines for HABs in Freshwater Bodies," [outlines](#) the advisory process for HABs, the criteria for issuing and lifting advisories, the rationale and methodology used to determine OHA's GVs, and the cyanoHABs coordination process. The other, "Sampling Guidelines for HABs in Recreational Waters," [describes](#) the sampling process, providing information on what to sample, where to sample, and how to preserve and ship. To develop these GVs, OHA staff used cell count information from the World Health Organization, and toxin information from research performed nationwide and worldwide, using much of the information provided by research performed in California and Washington.

Over the years, language used in OHA's health advisories has evolved with input from DMAs and other local water body managers, local health departments, and the DEQ. In 2018, OHA updated its GVs for advisories based on EPA guidance and the agency's draft guideline values. Although EPA has not yet published these values, OHA felt that the science behind the EPA's proposed values provided the data and the justification needed to reduce Oregon's GVs now, ahead of EPA's official release. OHA's GVs are listed in the tables below for both recreational waters and drinking water. The most prevalent cyanotoxin is microcystin. This is the cyanotoxin most often detected, although anatoxin-a, cylindrospermopsin, and saxitoxin have sometimes been found.

Table 1 provides the updated GVs that will be used to issue and lift recreational advisories when DMAs and others use a toxin-based monitoring approach to sampling.

Table 1. Health advisory guidance values for cyanotoxins in Oregon recreational waters (µg/L).

Microcystin	Cylindrospermopsin	Saxitoxin	Anatoxin-a
4	8	4	8

In addition to the HABs program for recreational waters, OHA’s drinking water program also works with drinking water facilities to identify and sample for cyanobacteria and cyanotoxins in source water, and as necessary, in finished water. Unlike the recreational program, the drinking water HABs program has some regulatory authority to force drinking water facilities to test when necessary, and even provides the funding for drinking water facility staff to sample and ship for analysis. Because drinking water can be a serious route of exposure, OHA’s drinking water program has adopted the acute toxicity values for cyanotoxins in drinking water established by the EPA. These values are found in Table 2. If at any time these cyanotoxin values are exceeded in finished water, OHA expects public water system staff to issue a “Do Not Drink” press release.

Table 2. Drinking water guidance values (µg/L).

	Microcystin	Cylindrospermopsin	Saxitoxin	Anatoxin-a
Adults	1.6	3	1.6	3
Ages 5 Year and Younger	0.3	0.7	0.3	0.7

Since dogs are cyanotoxin-sensitive animals and dog deaths have been confirmed due to cyanoHABs, OHA developed dog-specific GVs for cyanotoxins in recreational water (see Table 3). Oregon is one of the only states to have GVs specifically for dogs. Although HABs staff do not use this information for advisory purposes, they do use it extensively in their education and outreach. Due to dog deaths, OHA issued a permanent advisory for the potholes along the South Umpqua River and Lawson Bar and posted signs warning of cyanotoxins in these potholes.

Table 3. Dog-specific guidance values for recreational waters (µg/L).

Microcystin	Cylindrospermopsin	Saxitoxin	Anatoxin-a
0.4	0.4	0.2	0.02

Educational HABs signs and colorful posters concerning people and dogs are [available](#) on the OHA HAB website. OHA also developed templates for DMAs and other water body managers that can be requested and emailed for printing, lamination, and posting anywhere the public has access to an affected water body. Educational brochures, pet-specific advice, and dog safety posters are available in both English and Spanish. OHA also uses the CDC’s pet safety and veterinary reference cards to educate veterinarians about cyanotoxin exposure and to provide information pet owners can take with them to the vet in the event of a potential exposure. Both the recreational and drinking water HABs websites provide additional resources, such as a list of labs available for cyanobacteria cell and toxin testing, a page dedicated to frequently asked questions, and facts about HABs for water system operators.

Rollout and Dissemination of Advisory and Relevant Resources

The public is OHA's largest audience for HABs resources and messaging. The agency uses press releases to alert people when an advisory is issued on a water body. OHA also develops targeted media messages and talking points for other audiences, including state legislators. OHA and DEQ have requested funding from the legislature to reinvigorate the HABs surveillance program and provide funding for DEQ's sampling efforts. Although OHA continues to provide ad hoc outreach on HABs education and awareness, clinicians, doctors, and veterinarians supplement these efforts whenever possible.

Although the HABs program no longer has a health educator, website updates and changes to the press releases occur on a regular basis to keep up with current research and information. OHA believes that messaging about HABs and cyanotoxins should be informative and compelling, without being too alarming. For this reason, public health messages have been updated over time to be more descriptive and instructive regarding the water body, routes of exposure and symptoms, and how to reduce exposure without the use of inflammatory language. During the peak HABs season from April to October, the public can receive information about advisories by calling OHA's HABs hotline, by going to the HABs website, or by calling or emailing the HABs program coordinator. People can also sign up to receive messages about advisories by emailing habhealth@state.or.us, or through the website.

As part of its informational website, OHA provides an interactive map displaying the location of a HABs advisory, the level of toxin or the number of cells found in the sample, and other information such as when the advisory was issued or lifted. OHA anticipates several improvements to the map, including information on where a bloom has been identified, but no sampling is being performed; popular lakes that are not monitored; and lakes where HABs have been identified, but cells or toxins are below OHA's GVs, so no advisory was issued.

Key Messages for the Public

- When in doubt, stay out.
- HABs are generally foamy, scummy, thick like paint, pea green, blue-green or brownish-red.
- Most exposure is through ingestion. Toxins are not absorbed through the skin; however, if you or your pet do come into contact with a bloom, wash off affected skin with soap and water using another water source.
- You can't tell if a bloom is toxic just by looking at it. The size of the bloom is not associated with the amount of toxins that can be produced.
- Never drink, cook, or try to filter water affected by HABs.
- Children and pets are at greatest risk because of their size and level of activity, as well as the multiple routes of exposure to dogs.

Gaps and Challenges

Being an early developer of GVs for cyanotoxins was difficult, due to the dearth of federal guidance on this issue until recently. However, OHA appreciates that EPA has developed federal GVs that should soon be published, as this assists states with program implementation, and provides some consistency nationwide. Oregon has updated the state's GVs using the methodology and rationale that EPA's research provided, and will be using them for the first time in 2018. As EPA resources and materials become available, OHA will provide links to more information on its website. While funding is a

challenge to the HABs program, staff will continue to provide technical assistance to DMAs and other sampling entities, as well as education and outreach resources for the public to help educate them about the risks associated with exposure and how they can reduce illness and pet deaths due to cyanotoxins.

Oregon HABs Quick Facts	
Advisory	Recreational
Collaborators	DEQ, local health departments, water body managers, watershed councils, U.S. Forest Service, Army Corps of Engineers
Languages for Materials	English, Spanish
GIS Mapping	Not in-house, but through data.oregon.gov.
Website	http://www.healthoregon.org/hab

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