Answers to questions and comments from the Oregon Recreational CyanoHAB Program – December 11, 2025

Meeting Takeaways

- **Identified gaps/challenges with current system:**
  - **Changes to signage**
  - **Clarity in messaging around advisories**
  - **Improved communication with waterbody managers, LPHAs, local watershed councils, etc.**
  - **Improved access to toxin data**
  - **Increased testing/sampling (frequency and spatial coverage across Oregon)**
  - **Decreased sampling/monitoring (instead focus on general education)**
  - **Better interagency sampling coordination**
  - **More attention to Lower Willamette River**
  - **More information on cyanoHABs remediation/prevention**
- **Identified Program Strengths:**
  - **Increased monitoring**
  - **Availability of information (website, signs,**
  - **Satellite information/website**
  - **Agency coordination**
  - **Responsiveness**
  - **Communication**
  - **Partnerships**
  - **Meetings where these topics can be discussed**

Questions

- **Question 1:** What are the two types of cyanoHABs?

  Answer:
  - Planktonic
    - Suspended in the water column
    - OHA issues advisories for planktonic cyanoHABs (but not for benthic cyanoHABs)
  - Benthic
    - Attached to rocks and sediments at the bottom of the waterbody
    - OHA does not issue advisories for benthic cyanoHABs
- **Question 2:** Can we submit a request for a site to be monitored in the future?

- **Answer:** The sampling sites are chosen based on usage, history of blooms, and other factors. Yes, you can submit a request that OHA and DEQ will consider during their yearly review of sampling sites, however, we cannot guarantee that your waterbody would be added to the regular monitoring schedule.

- **Question 3:** What are hepatotoxins?

  Answer: Hepatotoxins are toxins that damage the liver. In people, hepatotoxins can cause the following symptoms:
  - Loss of appetite
  - Malaise
  - Lethargy
  - Headache
  - Fever
  - Nausea
  - Vomiting
  - Diarrhea
  - Blood in urine or dark urine
  - Acute hepatitis or jaundice
  - Rash

  Dogs can have the same symptoms as people mentioned above, but can also display:

  - Excess drooling, foaming at the mouth
  - Photosensitization
  - Hepatoenteritis or necrotic hepatic lesion

- **Question 4:** What elements are included in your RUVs?

  Answer: Please see the information contained in Appendix B (starting on page 12) of our Advisory Guideline Document for details related to the development of the Recreation Use Values (RUVs).

  The RUV is a threshold value for toxicity. When calculating the RUV, we adjusted for body weight and the rate of accidentally swallowing water while swimming for children aged 6-11 years old. We use this age range because it represents one of the most vulnerable populations to cyanotoxin exposure, and because children are more likely to accidentally swallow water while swimming. When toxin

concentrations are above the RUVs, recreational activities that cause someone to accidentally swallow water can result in damage to the liver, nervous system, and other organs.

- **Question 5:** When do the icons on the advisory maps reset? January 1st I assume?

  Answer: This typically happens once all advisories have been lifted for the season, which sometimes lasts into early 2026.

- **Question 6:** Are advisories issued when there is an exceedance of dog educational toxin values?

  Answer: No, OHA's recreational health advisories are only issued based on potential human health impacts.

- **Question 7:** Can you break down the illness report as to location?

  Answer: This information is not posted publicly. For individual illness reports, this falls under protected health information. Individual illnesses, or small cohorts of illnesses, are also subject to the OHA Small Numbers Reporting Guidelines, which helps to ensure the confidentiality and reliability of data that is distributed to the public. When toxic cyanoHABs are detected, and in the event of a suspected or confirmed human illness due to cyanotoxin exposure, OHA works closely with County Public Health Authorities to respond to the event.

- **Question 8:** ELISA for testing is typically more sensitive than specific and used for screening, is there another test used as a confirmatory assay?

  Answer: EPA Method 546 (ELISA) is the only test used for Oregon's non-regulatory, recreational cyanoHAB program. Method 546 is the only validated method for microcystin analysis that DEQ uses as an accredited laboratory, and most of Oregon's advisories are based on microcystin exceeding the RUV. For a regulatory program like Drinking Water, DEQ screens for cylindrospermopsin using Method 546, and if detected, uses Method 545 (LC-MS/MS) to validate the concentration. Method 545 is validated for cylindrospermopsin, while Method 546 is not. Decisions related to method selection and laboratory accreditation are internal to DEQ.

- **Question 9:** Please discuss future plans for benthic HABs monitoring and/or advisories. I understand the science is still being developed but it is becoming clear there is ongoing toxin production in many locations that we haven't appreciated in the past

  Answer: EPA staff are currently studying benthic cyanoHAB sampling techniques. DEQ is hoping to use information from that study to inform a sampling protocol for benthic cyanoHABs that can help the recreational cyanoHAB program understand potential human health risks. If OHA has a way of understanding human health impacts and DEQ has resources to do additional sampling, the recreational cyanoHAB program will try to incorporate benthic sampling into the advisory process.

  OHA and DEQ are coordinating with the Washinton Department of Health, Washington Ecology, and Clark County staff on a response and communications approach around benthic cyanoHABs in the shared Columbia River corridor.

- **Question 10:** For water bodies that are part of the regular DEQ recreational monitoring network, if a bloom occurs outside of the DEQ sampling round, is the expectation that the waterbody manager does a sample collection and toxin analysis or will DEQ come back to do a sample for toxin analysis?

  Answer: If DEQ has resources, they will resample the waterbody. However, if you are a natural resource manager and your agency has the capacity to take a sample and send it to DEQ following the sampling guidelines, please email Nathan.Reetz@deq.oregon.gov to talk about details/logistics.

  Question 11: Will we get these slides mailed to us?

  Answer: Slides will be posted to the OHA HAB webpage (www.healthoregon.org/HAB), along with a link to the meeting recording and meeting summary.

- **Question 12:** This probably clarifies my question a little better. OHA's threshold of 0.8 µg/L is based on protecting the most sensitive populations, while the World Health Organization sets a more lenient threshold of 2.4 µg/L based on broader population risk. This raises the question: Should public health policy aim to protect 15–25% of the population at the expense of broader usability, or adopt a model that

safeguards 75–85%? If we have no reports of illness/deaths and YOU say the numbers are low for symptoms, etc… Where or why do we have such a low threshold.

Answer: To clarify, OHA's Recreational Use Value for microcystin is 8 µg/L (not 0.8 µg/L). The OHA Mission is to ensure all people and communities can achieve optimum physical, mental, and social well-being through partnerships, prevention, and access to quality, affordable health care—this includes our most vulnerable populations. Public health guidelines are set up to protect the most vulnerable populations, which in the case of cyanotoxin exposure, includes infants, children under the age of six (6), and pregnant and nursing individuals. By ensuring protection for these vulnerable populations, OHA is ensuring protection for all Oregonians.

- **Question 13:** Will a recording of this meeting be sent out?

  Answer: Slides will be posted to the OHA HAB webpage (www.healthoregon.org/HAB), along with a link to the meeting recording and meeting summary.

- **Question 14:** Can you speak about the communication protocols in case of an emerging bloom? Water body managers should be notified immediately as opposed to state going to an intermediary (i.e. county health). At the very least water body managers should be communicated with in tandem with intermediaries.

  Answer: OHA communications protocol for Advisory Issuance - Option 1 (Bloom present without toxin information)**:**
  - Contacts waterbody managers to obtain photos to verify bloom extent/severity (along with satellite imagery, when possible)
  - Contacts LPHA and Tribal liaisons and LPHA administrators to let them know that an advisory will be issued
  - Communicates with internal and relevant external communications staff about the advisory/press release
  - Circles back with waterbody managers and ask to post signage

  OHA Communications protocol for Advisory Issuance - Option 2 (Toxin value is above RUV):
  - Contacts LPHA and Tribal liaisons and LPHA administrators to let them know that an advisory will be issued

    - Communicates with internal and relevant external communications staff about the advisory/press release
    - Circles back with waterbody managers and ask to post signage

- **Question 15:** If campground programs - would OHA, DEQ be interested in providing a presentation?

  Answer: OHA would certainly be open to that, please contact us at hab.health@oha.oregon.gov and we can discuss!

- **Question 16:** What short term mitigation strategy will be put in place to manage the formation of harmful algae blooms at Ross Island Lagoon, Willamette Cove and Waptato Marsh?

  Answer: Harmful algal blooms are a complex issue no one state, local or federal agency can solve. The state is collaborating across agencies and with local government to find solutions, both short-term and long-term, that are feasible and do not lead to other environmental harms. It will take state, local and, in some cases, federal agencies working together to develop solutions. The Governor's Office and Regional Solutions are both actively involved in this work.

- **Question 17:** Why has the State of Oregon not begun a Region Solutions process to address these three specific areas with harmful algae blooms (each may require its own process because each has a different solution but all are solvable hydraulic issues).

  Answer: This did happen in 2017/2018, and Regional Solutions chose not to champion the process.

- **Question 18:** Thank you for addressing this concern; As a long time Watershed Council leader I ask broadly about impacts of HAB relative to salmonid migration and habitat. The little Skipanon River now runs orange in the summer months following annual HABs in Cullaby Lake. Do the fall rains dilute the algal impacts for spawning and migration?

Answer:

From OHA: Unknown at this time. The Healthy Fish Consumption Program at OHA is looking into cyanotoxin accumulation in fish tissue as it relates to human health risk, but this work is not intended to inform fisheries health. As with almost any toxin, "the dose makes the poison," so, yes, dilution from increased precipitation and flow is assumed to decrease toxin concentration, since concentration is based on volume.

From DEQ: We don't have any specific answers to your questions. We were not aware of reports of the Skipanon River appearing orange in the summer mouths. As for the Cullaby Lake blooms and rainfall, in general when the fall rains arrive, the North Coast does see significant changes in water quality. During a typical fall season, the rains reduce stream temperatures, raise DO levels and would generally dilute in-stream pollutant concentrations. These changes improve conditions for salmon and other aquatic life. However, the first flush fall rain events do bring increased bacteria and other pollution through short-term overland runoff. This is more of a concern for human use contact with streams and river. Cullaby Lake is on the 303d list for HABs and aquatic weeds, and the Skipanon River is listed as impaired for dissolved oxygen, temperature, and fecal coliform. Please feel free to contact DEQ for any follow-up questions.

- **Question 19:** I would the group to discuss treating HAB sampling like other sampling at Water system sources and distributions. While it was a great decision to perform the sampling of the states systems for a baseline, I feel we are wasting funding at this point sampling at systems for 6 months of the year, when many of these systems have never had a HAB detection. I believe sampling intervals should be reduced based on results history like other contaminants. The resources put into this program are great, but there is a lot of waste now that the baseline has been set, and due diligence completed. I feel this should be enough to allow systems with 300 connections or less to be exempt from this testing, or reduced based on testing results history. In almost two decades, Oregon has had just one cyanotoxin-related drinking water advisory in 2018.

  Answer: This is outside the scope of the recreational HAB program, but we can pass this feedback along to our colleagues at Drinking Water Services. I will say that part of the reason that there has only been one cyanotoxin based drinking water advisory since monitoring began is that the monitoring program has been effective in

informing operators when cyanotoxins are detected in their source water, which allows said operators to modify their treatment parameters to ensure that nothing breaks through into their finished water. In the last three years, there have been 170 microcystin detections (137 of which were over the HAL), and 48 cylindrospermopsin detections, in source water, representing approximately 8% of all samples collected for cyanotoxin analysis at PWS. The sites that are part of the cyanotoxin monitoring program are on the list specifically because the source of their drinking water comes from a waterbody that is on the DEQ 303(d) list due to impairment from HABs. DEQ does have a defined process from removing waterbodies from the impaired list, and we defer to them to explain it.

- **Question 20:** Will advisories be based on chlorophyll concentrations (including remotely sensed) or on algal toxin concentration?

  Answer: Exclusively toxin based. If an OHA advisory is issued based on the Option #1 process (sample collected for toxin analysis within one day of advisory going out), bloom density may be used in the decision process, but the advisory will ultimately be informed by the toxin concentration. If an RUV is exceeded, bloom density may be monitored as part of the decision process used to inform when additional resources should be allocated to collect a clearance sample in order to lift the advisory. If resource managers have a desire to conduct additional monitoring at shorter time intervals while a bloom is present, and if said monitoring includes toxin testing from an accredited lab, we will use those results to inform our decision to maintain or lift the advisory, but we want to avoid advisory bounce as much as possible, so this process won't ever be a "one size fits all," type of situation, and multiple factors will be taken into account, such as prevailing weather, recreational use, trend in toxin concentration, etc.

  Path to issuing an **advisory**:

  There are two paths to **advisory** issuance for waterbodies with public recreational or occupational contact with water and partners are available and willing to post advisory signage on site.

1. **Visible scum:** Visible scum is indicated with supporting photographs or satellite imagery **and** sampling can be done within 1 business day; an advisory may be issued in advance of cyanotoxin results and will be confirmed or lifted based on cyanotoxin analysis.

2. **Toxin-based Monitoring:** Analysis showing cyanotoxin levels above OHA RUVs.

   When either of these two criteria are met and an **advisory** is issued, OHA will post the information to their website, publicize it in a news release, and ask waterbody mangers to post signs at public access points.
   Path to issue a **precaution**:

   Below is a summary of the path to issuing a **precaution** on a waterbody with public recreational or occupational contact with water and partners are available and willing to post advisory precaution signage on site.

   Photos submitted are deemed by OHA/DEQ to represent a possible cyanoHAB or satellite data indicate a possible cyanoHAB, but immediate (< 1 business day) water quality testing is unavailable due to resources limitations, remoteness, etc.

   When a **precaution** is issued, OHA will post the information to their website and ask waterbody mangers to post signs at public access points but will NOT publicize it through a press release.

- **Question 21:** Is there discussion of testing for algal toxins in flowing streams with benthic algal (periphytic) toxin production?

  Answer: On a case-by-case basis, DEQ does test for toxins in whole water samples from flowing systems. So far, we have not seen any consistent guidance from federal partners or other state's programs related to monitoring benthic mats for toxin production, and because there is not a standard for relating mat concentrations to exposure risk from contact recreation in the water column, we are not issuing advisories based on exposure risk to the mats themselves.

  OHA is currently leaning on education around the potential health risk of benthic mats. If OHA receives a report of an animal illness or death and can confirm a likely connection with exposure to a benthic (or planktonic) cyanoHAB, OHA will post a dog icon on our webmap and will ask the waterbody manager to keep a dog death/illness sign at the waterbody for the remainder of the cyanoHAB season.

- **Question 21: Current status and projections, with examples. Success stories, etc.**

Answer: Program Successes for DEQ and OHA Recreational CyanoHAB Program:

- Carrying out regular monitoring and response monitoring to select waterbodies
- Building partnerships with local public health authorities and waterbody managers
- Expanding capacity through coordination with local, state, and federal partners, including partners of shared waters in neighboring states
- Updated OHA advisory map and information – our advisory page had nearly 89,000 views in 2025 alone, with thousands more visits on our other webpages throughout the year.
- Collecting samples for Centers for Disease Control Biospecimen Pilot Program

- **Question 22:** Cost effective (and maybe not so cost effective) means of reducing nutrients in lakes.

  Answer: There are a variety of methods to reduce the effects of nutrients on bloom formation, including watershed-based approaches and in-lake treatments. These range in cost and efficacy, and depends on site-specific conditions. DEQ can not endorse one method over another. Please feel free to contact DEQ if you have any follow-up questions.

- **Question 23:** The Forest Service does not have the funding to conduct toxin testing for HABs. Does OHA or DEQ have the ability to conduct the toxin testing for suspected HABs on lakes that have heavy recreation usage like Diamond Lake?

  Answer: If OHA receives bloom reports from lakes with heavy recreational usage, regardless of management agency, DEQ has supported sampling and analysis, including waterbodies under the purview of USFS.

Comments

- **Comment 1:** Thank you for hearing us. As I shared with the OHA team before, I am highly concerned we are setting a false expectation for the public with this program. We are developing an expectation for the public that all Oregon waterbodies are

monitored, which they are not. We should be focusing on education, not testing. Post signs, educate the public on how to assess a waterbody for themselves as conditions can change rapidly… ie. when green, stay out. This is a problem that government should not be trying to solve, my opinion. That said, assuming we do, we need to speed up testing, every day an advisory is in place, park and waterbody managers lose business. These advisories cost outdoor recreation managers and tourism businesses money. While not a closure, the public fully sees these advisories as a closure. We need to realize that. Parks provide mental health benefits and societal connection. We need to consider these community benefits before acting.

Answer: Thanks for your comment. It is important for us to hear about the economic impacts and to understand ways that people use the advisory information when deciding where to recreate. We also agree that the recreational cyanoHAB program can't sample all of the 1400+ lakes across the state, which is why we developed the tagline, "When in doubt, stay out!" The intent of the program is to provide individuals, families, and communities with the tools and information that they need to make their own informed decisions regarding their recreation decisions. DEQ would be happy to help with education. A goal for this season's recreation network is to reach out to lake managers of the waterbodies covered by the network. DEQ would like to have HAB samplers meet with managers and/or staff at these locations so that the people actually interfacing with the public are more aware of what DEQ is trying to accomplish.

- **Comment 2 (a reply to Comment 1 above):** I agree that users need more information and communication as stated, but I disagree about reducing the amount of testing. Ultimately, we (collectively) need more info on where toxins are coming from and what conditions are causing them, to allow better restoration / mitigation in the future. Beyond that (IMO), waterbody or watershed managers have often gotten a free pass, previously, so these problems persist without any improvements. I'd like to see more efforts to increase testing and in some cases ownership of the problem.

  Answer: Thanks for your comment. It is helpful to hear that some people want additional sampling, beyond what the recreational cyanoHAB program is currently doing, at waterbodies in Oregon.

- **Comment 3:** Many recreational bodies of water have limited cell service therefore, QR Codes on signs are not very helpful. Love the additional information available and accessing technology but access to information can be a challenge.

  Answer: Thank you. This is a helpful reminder. OHA will take this into account when making educational materials. The recreational cyanoHAB program has also found that it is difficult and cost prohibitive to install large, durable, permanent signage, and are always looking for local resource management partners that can help with routine sign placement and maintenance at existing billboards and waterbody access locations.

- **Comment 4**: I have witnessed the public becoming complacent especially regarding recreational boating/watersports and pets during blooms weather an advisory or not. I think that if they public knew that there were X number of reported human or pet illnesses or deaths reported in the state (and status) they may pay more attention again.

  Answer: Thank you for this suggestion. For individual illness reports, this falls under protected health information. Individual illnesses, or small cohorts of illnesses, are also subject to the OHA Small Numbers Reporting Guidelines, which helps to ensure the confidentiality and reliability of data that is distributed to the public.

- **Comment 5:** Thank you, I would love to continue the discussion and hear more about techniques you've applied to managed patchy and transient blooms.
  Answer: When blooms cover parts but not the entire waterbody, OHA may be able to issue an advisory for a portion of the waterbody. OHA will often wait until a bloom has dissipated before we ask DEQ to resample, however, OHA welcomes being in closer contact with waterbody managers to get a more real-time understand if a bloom has dissipated.

- **Comment 6:** I want to echo Commissioner Simmelink concerns, could the advisories identify the population that is at risk. My concern is that an advisory may cause economic harm to the surrounding community, because the public does not have the information to understand the level of risk specific to themselves.
  Answer: Thanks for this suggestion; please see our response to Commissioner Simmelink above.

- **Comment 7:** The Economic Impact is SEVERE!!!!

Answer: Thank you for your comment. This is important for us to hear.

- **Comment 8:** Who would I talk to regarding technological barriers for measuring those cyanotoxin levels? I have some quirky ideas but would like to do a literature review before I bring my ideas to the table.

  Answer: Stuart Dyer, Healthy Waters Technical Lead, and Linda Novitski, CyanoHAB Program Lead, can be reached at hab.health@odhsoha.oregon.gov or 1-877-290-6767; Nathan Reetz, DEQ HAB coordinator at the lab, can be reached at: nathan.reetz@deq.oregon.gov.

- **Comment 9:** Multiple waterbodies don't have a "manager" including ones with record of HABs

  Answer: Thanks for bringing this to our attention. Are you able to send us a list of these waterbodies?

- **Comment 10:** Seasonal "blanket advisories" would be best practice for Recreational Lakes. Lakes untested SEEM safe to the public but more than likely are not. This does not lend to trust in this program. Just my two cents.

  Answer: Thanks for this perspective. We currently tell people, "When in doubt, stay out" meaning that whenever they see a bloom or possible bloom, we recommend that they weigh their risk, and consider if swimming or activities that cause them to inhale/ingest spray are safe. This goes for all freshwater lakes and rivers in Oregon. While we don't have the resources to test all lakes and rivers in the state, there is still a value in testing those that have been identified as having a higher risk to the public, and which have a history of toxin-producing blooms.

  DEQ has developed a web-based cyanoHAB report that uses satellite imagery to provide early warning of potential cyanobacterial blooms in large waterbodies. Currently, the report includes 49 large lakes and reservoirs. DEQ continues to expand this effort to include smaller waterbodies across Oregon in order to provide timely information to the public. However, satellite imagery cannot replace field sampling or toxin testing. It is a valuable screening tool for identifying potential blooms, informing follow-up monitoring, and making the most effective use of limited monitoring resources. Here is the website for the report, which will be

updated weekly during the cyanoHABs season.
https://rstudioconnect.deq.state.or.us/Oregon-cyanobacteria-satellite-report/

- **Comment 11:** Strong need to better explain 'advisories' ON THE ADVISORY (not just on the website) as visitors just see a generic advisory without this info and we experience all sorts of challenges. Visitors are consistently not understanding WHAT and advisory (or lack thereof) actually means as far as health implications, and that's a clear indicator the messaging needs to be adjusted so the target audience actually understands the target message. Currently this is not happening.
  Answer: Great feedback, what type of information do you think would be most useful to provide meaningful guidance in the case of advisory signage? If we provide files for larger format signs, are partners able to print and post said materials?

Contacts for panelists:

- Linda Novitski: hab.health@odhsoha.oregon.gov or 1-877-290-6767
- Stuart Dyer: hab.health@odhsoha.oregon.gov or 1-877-290-6767
- Nathan Reetz: Nathan.Reetz@deq.oregon.gov
- Yuan Grund: Yuan.GRUND@deq.oregon.gov

Resource Links:

- DEQ website for satellite-estimated cyanobacteria?
  https://rstudioconnect.deq.state.or.us/Oregon-cyanobacteria-satellite-report/
- Bloom reporting link:
  https://survey123.arcgis.com/share/b1b485995dcf4d54934d2abdb4345390
- DEQ video showing the DEQ sampling procedure, and results:
  https://youtu.be/o_wyklZkZqc?si=X73MtYtX74y5ys3B
- OHA's Advisory Guidance Document
  https://www.oregon.gov/oha/PH/HEALTHYENVIRONMENTS/RECREATION/HARMFULALGAEBLOOMS/Documents/Advisory%20Guidelines%20for%20Harmful%20Cyanobacteria%20Blooms%20in%20Recreational%20Waters.2024_Final.pdf
- OHA's Recreational CyanoHAB Program homepage:
  https://www.oregon.gov/oha/ph/healthyenvironments/recreation/harmfulalgaeblooms/pages/index.aspx
- OHA's cyanoHAB advisory table:
  https://www.oregon.gov/oha/PH/HEALTHYENVIRONMENTS/RECREATION/HARMFULALGAEBLOOMS/Pages/Blue-GreenAlgaeAdvisories.aspx
- OHA's education and outreach page:

https://www.oregon.gov/oha/PH/HEALTHYENVIRONMENTS/RECREATION/HARMFULALGAEBLOOMS/Pages/EducationandOutreach.aspx

- OHA's Communications Toolkit: https://sharedsystems.dhsoha.state.or.us/DHSForms/Served/le4095.pdf
- OHA website with general information about cyanoHABs and a map to DEQ's regular sampling sites: https://www.oregon.gov/oha/PH/HEALTHYENVIRONMENTS/RECREATION/HARMFULALGAEBLOOMS/Pages/AboutAlgaeSeason.aspx
- Ambient site list and sampling dates from 2025 https://www.oregon.gov/oha/PH/HEALTHYENVIRONMENTS/RECREATION/HARMFULALGAEBLOOMS/Documents/DEQ_HAB_Ambient_Route_Date_2025.pdf
- Link to sign up for cyanoHAB advisories from OHA: https://public.govdelivery.com/accounts/ORHA/subscriber/new?topic_id=ORHA_197