PRIVATE WATERBODY MANAGER TOOLKIT

VDH – OEHS – Waterborne Hazards

Resources and recommendations for Harmful Bloom Management
for use by private waterbody managers in Virginia

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www.SwimHealthyVa.com

HAB Resource List for Private Waterbody Owners

Purpose of this document: ***The document provides information to assist private lake owners in determining health risks for community engagement, notification, and education. It is not intended to be a comprehensive resource. This document contains basic common-sense recommendations to support waterbody owners as they are beginning to assess and make plans when they suspect or confirm potentially toxigenic HABs are occurring within their waterbody.*** **This document is for those who are organizing themselves to prepare for responding to a potential HAB event for the first time.**

Those who have established they do have a HAB in their waterbody, and are considering implementing a monitoring and/or notification program to respond to HABs, would find the resources section most useful.

Table of Contents:

Acronyms

HAB – Harmful Algae Bloom
DEQ – Department of Environmental Quality
VDH – Virginia Department of Health
DWR – Division of Wildlife Resources
FAQ – Frequently Asked Questions
PTOX – Potentially Toxigenic
EPA – Environmental Protection Agency
BMP – Best Management Practice
CDC – Centers for Disease Control and Prevention
PPE – Personal Protective Equipment
LCMS – Liquid Chromatography Mass Spectroscopy
LCMS/MS – Liquid Chromatography Mass Spectroscopy / Mass Spectroscopy (dual MS detectors)
HPLC – High Performance Liquid Chromatography
ELISA – Enzyme Linked Immunosorbent Assay

Frequently Asked Questions and Answers:

FAQ: *Is this a HAB? My waterbody is discolored (blue-green paint, glops, mats) are present, smells funny, or dead fish/animals are present - could there be a harmful algal bloom (HAB)present?*

Answer: *California Visual Guide to Observing Blooms* contains photos on common non-HAB features (duckweed, cladophora, filamentous green algae, etc.) seen in the water in addition to photos of a variety of different types of cyanobacteria blooms and scum photos. https://mywaterquality.ca.gov/habs/resources/field.html#visual_guide

FAQ: *Is my waterbody "private" or "public"?*

Answer: "Public" waterbodies are those which have unrestricted public access, meaning there is a public boat ramp or other access point along the waterbody maintained by the locality or state agency (Department of Wildlife Resources boat ramp, State/National Park ramp/fishing access or similar access at a park owned by a locality).

If your waterbody is located in a subdivision where public access is not likely or is restricted to property owners, the waterbody is considered "private". If the waterbody is on privately owned property, the waterbody is considered "private". If public access is not restricted but is not likely to occur because the access is surrounded by private property, the waterbody is considered "private".

FAQ: What types of waterbody uses are exposures to HABs most likely to result in health-effects?

Answer: Waterbodies which support swimming uses or activities where the head is likely to be submerged underwater (and water may be ingested as a result) are the activities which present the highest exposure risk. If ingested, HAB toxins may cause a range of gastro-intestinal or neurological symptoms, including fatalities to pets, livestock, and wildlife depending on the quantity of water ingested and amount of toxin the HAB is producing. For this reason, high-recreational use swimming areas such as beaches should be considered for advisories when a HAB is suspected. Other waterbody uses that are not likely to result in accidental ingestion can be advised as well, but users may opt to continue using the waterbody with proper caution. For example, boat ramps, fishing docks, and use of the waterbody for boating and flatwater kayaking are generally low-risk activities. Pets and children are more likely to purposely ingest water from a HAB waterbody, therefore, preventing pet and child access to a HAB waterbody is always recommended. Clear communication within the community using newsletters, emails, etc. along with and signage at the waterbody to indicate which activities are high-risk and low-risk is important to protect human health, pet health, children's health, while allowing low-risk activities to continue.

FAQ: *Can the Virginia HAB Task Force respond and investigate a HAB on my waterbody?*

Answer: The HAB Task Force conserves its limited resources for investigation and HAB response on inland waterbodies to events occurring on public waterbodies. Private waterbody owners and HOA groups may utilize the resources below for managing HABs and providing outreach to private landowners.

FAQ: *What if my livestock or pet is exposed to a HAB and symptoms are occurring?*
Answer: If animals or pets (livestock or dogs for example) are suspected of exposure to a HAB and/or is displaying exposure symptoms (see the CDC Veterinary links below), immediately notify your veterinarian/emergency veterinary care clinic, and you or the veterinarian may contact the Virginia poison control center. Suspected HAB-related animal health complaints may be reported to the Virginia HAB Hotline at 888-238-6154 for documenting the illness and reporting it to the CDC. Please note staff at this number cannot provide medical treatment.

FAQ: *What if a person is exposed to a HAB and symptoms are occurring?*
Answer: If people are suspected of exposure to a HAB and/or are displaying exposure symptoms (see the CDC Information for Healthcare Providers below), immediately seek care of your health care provider or emergency care facility, and you or the practitioner may contact the Virginia Poison Control Center (linked below) for additional support. Suspected HAB-related human health complaints should be reported to the local health department epidemiologist (in the county or city where the person lives) and/or to the Virginia HAB Hotline at 888-238-6154 for documenting the illness and reporting it to the CDC. Please note staff at this number cannot provide advice on medical treatment, however, notifying VDH and CDC can help us better document and understand HAB-related illnesses.

FAQ: *How can we stop the HAB from occurring again on the waterbody?*
Answer: VDH as an agency does not have the expertise or authority for HAB mitigation, rather, our mission is to protect human health (specifically public health) from HAB toxin exposures and illness. Our goal is to help you manage your private HAB event following the most current guidelines based on the resources you have available. This may include actions as simple as you or your HOA notifying those who use the waterbody that a HAB is ongoing with signage and correspondence (i.e. small waterbodies where there are few resources),up to sampling and analyzing samples throughout the swimming season and issuing and lifting advisories on the waterbody (i.e. large waterbodies where resources are available). There may be resources and recommendations on HAB mitigation which may be available via local extension agencies, Soil and Water Conservation Districts, as well as some state partners and federal agencies (to contact these agencies, find your local agencies using the links in the resources below). For some basic information on HAB mitigation and what you can do to reduce the impacts of HABs in your watershed, see the EPA Control Measures for Cyanobacterial HABs in Surface Water, linked in the resources below.

FAQ: *How do I communicate the potential HAB or confirmed within my community?*
Answer: Private waterbody owners and managers may want to consider having a communications plan handy in order to warn residents of potential health risks as soon as they HABs are suspected or confirmed. *Transparency and maintaining trust is vital if you are a waterbody manager.* If you know a cyanobacteria bloom is present - lead with the information and potential risks which are known and not known. Residents should first and foremost be made aware of the facts regarding the issue, as well as the possible health risks should exposure occur (that they may produce toxins, etc. It is also helpful to set expectations on when updates regarding the HAB, if investigations are ongoing. For example, “A private consultant is

collecting samples this week, we will have results regarding whether or not cyanobacteria are present and if they are producing toxins by next week and will send an update at that time. Until more information is known, swimming and contact with the waterbody is not recommended. Keep children and pets away." If there are no resources to conduct HAB investigations, it is recommended to err on the side of caution when a HAB is expected by posting signs regarding the potential presence of HABs in the waterbody to raise awareness of residents of the potential risk so they may prevent access of the waterbody for their children and pets. Signage and communication recommendations are available on the VDH webpage and EPA features a toolkit for communicating health risks in communities which may be helpful to waterbody managers.

Steps private waterbody owners should take if they suspect a harmful algal bloom (HAB) in their waterbody:

1) Notify your local health department that your waterbody is experiencing a bloom event. https://www.vdh.virginia.gov/local-health-districts/. Notification provides awareness to the local public health staff should human or animal related health complaints following exposure to the HAB occur and facilitates local coordination and support during large private waterbody bloom events.

2) Waterbody owner determines whether sampling and analysis will be done based on the available resources.

    a) **NO SAMPLING** - If resources do not allow for sampling/analysis, but a HAB is suspected as present, the waterbody owner may alert neighbors through signage, newsletters, emails, text messages, etc. Signage is most effective when placed at waterbody access points - even if there is not a visible bloom at the access point. It is advisable to maintain the advisory for at least two weeks after the bloom and until scum is no longer visible, then make observations weekly until the end of the recreational season to evaluate whether the bloom may return. When HABs occur annually on a waterbody and it is known to be a HAB (verses non-harmful algae), this approach may be preferred, especially if prior sampling has confirmed a HAB with visual assessments.

    Stormwater BMPs are not considered "natural waters" as these are designed to retain rainwater runoff in order to allow pollutants in the runoff to settle out. Because these they are designed with the expectation they contain pollutants, VDH does not recommend the use of stormwater BMPs for swimming.

    b) **SAMPLING** - If resources allow for sampling to determine if a bloom is present, evaluate the waterbody to determine where the bloom is present. Visible blooms and scums are most likely to contain toxins (*but not always, this is a general rule of thumb*). Sampling at high recreational use areas is advised and if scum is present in the waterbody, collect a sample at that location as this is where toxins are most likely to be present. Within the VDH HAB Toolkit (linked below) are the

following resources which will be most useful if opting to sample and analyze the bloom. Please note – once a community decides to sample, the expectation by the community to continue sampling may be established. Thoroughly consider the resources available to embark on an annual sampling program for HABs. If it does not exist to sample throughout the season, communicate the information with residents up front to prevent creating unreasonable expectations on investigations/sampling. After determining cyanobacteria/toxin producers are present with a first sampling event, it is very likely that the bloom will return in subsequent years if the environmental conditions to support it continue to be present. Therefore, it is reasonable that once a waterbody has been confirmed to have a HAB present, that it will return in subsequent years – and visual observations may suffice should resources not be available to continue to support sampling and communication/signage to notify residents of the blooms could be used in lieu of sampling.

i) See the *VDH Guidance for Cyanobacteria Recreational Advisory Management* linked below to review recommended advisory thresholds for comparison of your sample results in order to issue and lift recreational advisories.

ii) If you prefer to contract with a consultant to develop a sampling and analysis plan (in addition to other services) please review the Department of Wildlife Resources Private Waterbody Management List, linked in the resources below.

iii) **Before sampling, ensure that your field staff have the appropriate personal protective equipment (PPE) which may include wrist or elbow-length gloves, N95 masks, sampling poles, clean water for rinsing exposed skin) sample containers, coolers, labels, field sheets, collection procedures prepared and at least a general idea of how many samples will be collected.**

People with existing respiratory conditions (asthma, COPD, severe allergies, etc.) should not be considered for collecting samples because HABs producing toxins may be aerosolized or off gassed to the environment, especially when surface scums are present. These folks may be predisposed or more sensitive to toxins which may be aerosolized.

Be prepared with extra collection containers, labels, Ziplock’s, and sharpies/pencils for recording information and for making labels.

Review the *EPA List of Laboratories that Analyze for Cyanobacteria and Cyanotoxins* linked below to secure a lab to send your samples to for analysis. Contact labs ahead of time, in order to coordinate collections

with shipping and arrival of packages. Some labs have specific protocols, reagents, and field sheets they require (and pricing information).

The following are some best practices and logistics to consider when developing and managing a sample-based strategy:

(1) It is recommended to collect a sample at a location roughly elbow deep. If there is scum present, a surface scum sample should also be collected at that site. Be sure to follow lab recommendations for labeling sample containers and documenting samples on the field sheet they provide, to ensure sample integrity.
(2) It is recommended to have potentially toxigenic taxa (PTOX) identified, enumerated, and reported in cells/mL at a minimum. A list of the VDH PTOX taxa is contained in the For toxin assays in Appendix B (page 12) of the *VDH Guidance for Cyanobacteria Recreational Advisory Management.* The lab should highlight the VDH PTOX taxa in the results they provide.
(3) Toxin assays (if funding is available) include the four major cyanotoxins; microcystin, cylindrospermopsin, anatoxin-a, and saxitoxin via ELISA analysis, and should be reported in ppb or ug/l (units are equivalent) by the lab. If mass spec methods of analysis are ultimately cheaper or more convenient (LCMS, LCMS/MS, HPLC, etc.), these might be preferred based on available resources as many toxins can often be analyzed in a single sample which may save on shipping costs. Please discuss these questions and options for sample collections with the lab you contract, to determine the most efficient/economical plan forward.
(4) If an advisory is in place, lifting an advisory is recommended when two consecutive samples at least 10 days apart yield cyanobacteria concentrations (cells/ml) and cyanotoxins (ppb or ug/l) below the VDH recreational advisory thresholds during the recreational season (May - October).
(5) Re-sampling should be coordinated between field staff collecting and the lab receiving the sample in order to select appropriate collection dates and shipping options. These logistics are important (i.e. - does the lab accept samples arriving on Sat/Sun vs M-F only).
(6) Blooms may persist from a few hours, to several weeks, to months. Consider your sample and analysis budget and the duration of which it can sustain monitoring, before deciding to sample for advisory management.
(7) For assistance with interpreting lab results or general questions or recommendations, please use the Waterborne Hazards Contact us page.

Resource List:

(VDH) HAB Toolkit - *contains downloadable advisory guidance, signage, cyanotoxin and symptoms information, and other outreach information*

https://www.vdh.virginia.gov/waterborne-hazards-control/resources

VDH Local Health District Contacts – when you suspect a HAB may be occuring on your body, please notify your local health district (ask for the Environmental Health Department) so that there is knowledge of the bloom at the local level. Should there be health complaints, you may contact the epidemiologist at that location to report the exposures and symptoms, AFTER seeking medical care.

https://www.vdh.virginia.gov/local-health-districts/

(DWR) Private Consultants for Pond/Lake Management

https://dwr.virginia.gov/fishing/private-pond-management/private-consultants/

Virginia Poison Control Center:

https://poison.vcu.edu/

Virginia Soil and Water Conservation Districts - *some districts can provide homeowners with residential based nutrient reduction strategies which may over time reduce HAB events and improve water quality*

https://www.dcr.virginia.gov/soil-and-water/swcdlist

Virginia Extension Agency Service - *some extension offices can provide homeowners with residential based nutrient reduction strategies which may over time reduce HAB events and improve water quality*

https://ext.vt.edu/offices.html

(EPA) Preparedness and Response Toolkit https://www.epa.gov/sites/default/files/2021-05/documents/cyanotoxins-preparedeness-response-toolkit-2021.pdf

(EPA) - List of Laboratories that Analyze for Cyanobacteria and Cyanotoxins

https://www.epa.gov/cyanohabs/laboratories-analyze-cyanobacteria-and-cyanotoxins

(EPA) - Recommendations for Cyanobacteria and Cyanotoxin Monitoring in Recreational Waters

https://www.epa.gov/sites/default/files/2019-09/documents/recommend-cyano-rec-water-2019-update.pdf

(EPA) Communicating about Cyanobacterial Blooms and Toxins in Recreational Waters

https://www.epa.gov/cyanohabs/communicating-about-cyanobacterial-blooms-and-toxins-recreational-waters

(EPA) Control Measures for Cyanobacterial HABs in Surface Water

https://www.epa.gov/cyanohabs/control-measures-cyanobacterial-habs-surface-water

(CDC) Cyanobacteria Blooms: Information for Veterinarians

https://www.cdc.gov/habs/specific-groups/veterinarians-cyanobacteria.html

(CDC) Veterinarian Reference Card for Cyanobacteria Blooms

https://www.vdh.virginia.gov/content/uploads/sites/178/2021/07/habsveterinarian_card.pdf

(CDC) Information for Healthcare Providers

https://www.cdc.gov/habs/specific-groups/healthcare_providers.html