

## Communicating the Risks of HABs: Vermont Department of Health

### Background and Health Department Activities

The Vermont Department of Health (VDH) is an umbrella agency with 12 state-run district offices to protect and promote the best health of all Vermonters. VDH began working with the Vermont Department of Environmental Conservation (DEC) and the University of Vermont in 2001 to monitor harmful algal blooms (HABs) after blooms were spotted on Lake Champlain and other water bodies throughout the state. VDH and partners conduct weekly monitoring for HABs from June through September. VDH [maintains](#) a web-based map to track the location of known blooms, but data for the map are provided by a network of volunteers trained and coordinated by the [Lake Champlain Committee](#), scientists from DEC and VDH. Volunteers submit weekly visual observations of cyanobacteria conditions from sites around Lake Champlain and certain inland lakes.

At select locations, the dedicated monitoring entity for the water body collects water samples on a weekly basis and analyzed for cyanobacteria taxonomy, cell counts, and toxins. Since 2015, VDH has also provided free testing for microcystin and cylindrospermopsin in public drinking water drawn from Lake Champlain. Funding to support these programs comes from CDC's Building Resilience Against Climate Effects, Public Health Emergency Preparedness, and Environmental Public Health Tracking grants, as well as the Lake Champlain Basin Program. During bloom season, VDH receives inquiries regarding possible blooms and their effects weekly or daily (as many as five a day). In the offseason, VDH gets almost no inquiries. Inquiries come in the form of both phone calls and emails to [BloomAlert@vermont.gov](mailto:BloomAlert@vermont.gov). Most questions are handled in-house, but some are sent to DEC if VDH staff cannot identify the species.

### Development of Health Advisories

Vermont has had drinking water advisories in place for select cyanotoxins since 2011. They cover anatoxin-a (0.5 ppb), microcystin (0.16 ppb), and cylindrospermopsin (0.5 ppb). Recreational advisories are also in place for anatoxin-a (10 ppb), microcystin (6 ppb), and cylindrospermopsin (10 ppb). These values are available in the [Cyanobacteria Guidance for Vermont Communities](#). This is not a regulatory guide, but rather a tool and reference guide for communities experiencing cyanobacteria blooms. Toxicologists at VDH first developed the reference doses through examining peer-reviewed literature. VDH worked with DEC on interpreting what a specific result means and how the values should be applied, but DEC didn't participate in setting the advisory levels. Vermont also looked at EPA materials (e.g., health effects support document for microcystin and anatoxin-a). The numbers have been updated over the years, and VDH has reviewed CDC, EPA, and other state values and materials to help inform its efforts.

### Rollout and Dissemination of Advisory and Relevant Resources

VDH typically issues a press release at the beginning of each season, but there is no official rollout of drinking water guidance numbers or recreational numbers. The agency tries to target its materials to a 6<sup>th</sup> grade reading level. The press releases give guidance on what cyanobacteria look like. They often start with a question: "Can you identify cyanobacteria?" As part of cyanobacteria education, VDH urges people to learn how to identify a bloom (similar to education for poison ivy). If a bloom is found, VDH suggests staying out of the water, taking a picture, and sending it to the BloomAlert email address so that VDH can add it to the tracker map and follow up with the town health officer. In addition to factsheets, FAQs (some are site-specific), and community guidance documents, VDH created an

informational video geared toward the general public and developed a veterinary factsheet. These resources are all available on the VDH website.

### **Key Messages for the Public**

- Learn what cyanobacteria look like by reading VDH guidance materials.
- Stay out of the water if a sign indicates there may be an issue with cyanobacteria in the water body.
- When in doubt, stay out.
- You can't tell if a bloom is producing toxins by looking at it. Some cyanobacteria blooms produce toxins, but not all are necessarily toxic.
- Never drink untreated surface water.

### **Gaps and Challenges**

VDH receives many questions from people concerned about living near water with active blooms for fear that they can produce potentially harmful bioaerosols that increase their risk of developing amyotrophic lateral sclerosis (ALS) or Lou Gehrig's disease, a group of rare neurological diseases that involve the nerve cells responsible for controlling voluntary muscle movement. There has been emerging research that beta-N-methylamino-L-alanine (BMAA)—a cyanobacterial neurotoxin found in contaminated seafood and shellfish, and possibly in cyanobacteria blooms—may be a major factor in neurological diseases.<sup>1</sup> Since the research is fairly new, it is hard to interpret the validity of the results. Consequently, VDH has a difficult time communicating with the public on the topic. While a recently published EPA review concluded that the hypothesis of a causal BMAA neurodegenerative disease relationship is not supported by existing data, it would be helpful to have continued guidance on this topic.<sup>2</sup>

When there is a cyanobacteria bloom, VDH urges beach managers to test the water once the bloom is cleared to determine if it is safe for swimming again. However, it would be helpful to have additional guidance on how to know when visibly clear water is safe. The current rule of thumb is 24 hours after the bloom is cleared, it is safe to swim. Additional federal guidance to support this rule would be useful. VDH is frequently asked if blooms are getting worse every year, but it is hard to answer this question with data from Vermont alone. Data can be skewed or altered by the monitoring schedule, use of supplemental reports, the bloom intensity, and effects of having different people submitting reports. The National Oceanic and Atmospheric Administration is capturing satellite data, but it can be hard to understand and interpret. VDH would like feedback on how to interpret the different data sources and better answer questions related to frequency and bloom trends. Finally, people still swim in beaches despite "Beach Closed" signs because there is no enforcement. Risk communication materials on how to gauge if VDH is reaching the public and how to more effectively tailor these messages would be helpful.

Vermont HABs Quick Facts	
Advisory	Drinking and recreational
Collaborators	DEC; the Department of Forests, Parks and Recreation; the Lake Champlain Committee, the Lake Champlain Basin Program
Languages for Materials	English
GIS Mapping	<a href="http://www.healthvermont.gov/tracking/cyanobacteria-tracker">www.healthvermont.gov/tracking/cyanobacteria-tracker</a>
Website	<a href="http://www.healthvermont.gov/cyanobacteria">www.healthvermont.gov/cyanobacteria</a>

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For more information, please contact:

Sarah Vose, Ph.D.  
 State Toxicologist  
 Vermont Department of Health  
[sarah.vose@vermont.gov](mailto:sarah.vose@vermont.gov)

<sup>1</sup> Holtcamp W. “The Emerging Science of BMAA: Do Cyanobacteria Contribute to Neurodegenerative Disease?” *Environmental Health Perspectives*. 2012. Mar. 120:a110–a116. Available at <https://ehp.niehs.nih.gov/120-a110/>. Accessed 6-1-2018.

<sup>2</sup> Chernoff N, Hill D, Diggs D, *et al.* “A critical review of the postulated role of the non-essential amino acid, β-N-methylamino-L-alanine, in neurodegenerative disease in humans.” *J Toxicol Environ Health B Crit Rev*. 2017. 20:183–229. Available at <https://doi.org/10.1080/10937404.2017.1297592>. Accessed 6-1-2018.