

# CYANOBACTERIA

WRITTEN BY: Charles Crespi

The purpose of this article is to provide some information about cyanobacteria which were again observed in Great East Lake in August 2022. Further information can be found on the NH DES and ME DEP websites (linked below).

University of New Hampshire LLMP was performing routine water sampling on Friday, August 12th. They reported that the Second Basin contained the cyanobacteria Planktothrix, that ranged from 100,000 cells/ml to too numerous to count in the visible clumps of varying sizes. Planktothrix at these levels can be toxic and also cause mild skin irritations. Planktothrix look like green or yellow green flecks of paint either on the surface or in the water column. A picture is to the right.



Planktothrix look like green or yellow-green blobs and flecks of paint

Later in August, I received a report of a potential cyanobacteria bloom on the lakeshore along Canal Road. I took two samples and brought them to NH DES for analysis. They identified two cyanobacteria (Gloeotrichia and Doichospermum) as present in the samples at levels which were of concern. NH DES issued a Cyanobacteria Bloom Alert which GELIA posted on Facebook. Eventually, these samples will be tested for toxins. We will communicate the results when we get them.

Gloeotrichia appear like whitish puff balls in the water column. It is common to observe low levels of Gloeotrichia in Great East Lake (and other low nutrient lakes) in the late summer. The pictures below are of a “typical” late summer level (left) and the level which issued the Cyanobacteria Bloom Alert (right).



“Typical” late summer level of Gloeotrichia.



“High” level of Gloeotrichia which issued the Cyanobacteria Bloom Alert last summer

# CYANOBACTERIA Q&A

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Below are some questions and answers.

**What are cyanobacteria?** Cyanobacteria are ancient, ubiquitous organisms. They were the first photosynthetic organisms and started the process producing our oxygen rich atmosphere. Wikipedia has more information. <https://en.wikipedia.org/wiki/Cyanobacteria>



**Why are cyanobacteria of concern?** Cyanobacteria produce an array of chemicals (called cyanotoxins) which are harmful to multiple organ systems. They can cause illness and death. However, research into the hazards of cyanobacteria is not well-funded and there is much that we do not yet know. Recently, Health Canada issued Guidelines for Canadian Recreational Water Quality, CYANOBACTERIA AND THEIR TOXINS. <https://www.canada.ca/content/dam/hc-sc/documents/programs/consultation-cyanobacteria-toxins-recreational-water/consultation-cyanobacteria-toxins-recreational-water.pdf> This document provides a compilation of what is known and establishes safe levels for recreational water use (the accidental ingestion of a few ounces of water).



**What causes cyanobacterial blooms?** Cyanobacteria are everywhere, typically at low levels. An increase in nutrients (phosphorous and nitrogen) and warm water can cause a bloom. A heavy rain can erode nutrient-containing sediments into the lake. This is one of the reasons why all waterfront properties should control erosion.

**Do cyanobacteria “move around”?** Yes. They travel up and down through the water column and the wind can move them around a water body. It appears that the wind contributed to the accumulation of cyanobacteria for the Canal Road observation.

**If I see cyanobacteria what should I do?** Keep pets and humans out of that water. Dogs, because they tend to lick the cyanobacteria off of their fur, frequently die from cyanotoxin exposure. Human illnesses and deaths appear to be rare but many ER doctors are not all well-trained to recognize poisoning by cyanotoxins.

**If I see something of concern, can I get it tested?** Use a clean plastic container and collect water from where the cyanobacteria appear to be most concentrated (right off the surface if it is floating on the surface). After collection, keep the sample cool but DO NOT FREEZE. You will need to take it yourself to the New Hampshire DES lab in Concord. You can contact them at [HAB@des.nh.gov](mailto:HAB@des.nh.gov)



**Where can I get more information and who should I contact if I suspect there is a cyanobacteria bloom?** Both NH DES (<https://www.des.nh.gov/sites/g/files/ehbemt341/files/documents/2020-01/wmb-10.pdf>) and Maine DEP (<https://www.maine.gov/dep/water/lakes/cyanobacteria.html>) have published information on cyanobacteria and how to contact them about cyanobacteria.



**Can anything be done about this problem?** We don't know yet. GELIA has supported a robust water quality sampling program for many years. It is possible that there are some answers in these data. In this regard, we have initiated a discussion with a limnologist.