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Is Green Scum coming to a Favorite Lake near You? Part I: What is a Harmful Algal Bloom (HAB)?

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The sudden unexpected appearance of greenish, stagnant water at a preferred swimming spot is becoming a disturbing summertime experience for more New Hampshire beachgoers.

Indeed, the regulatory staff in the water division at the New Hampshire Department of Environmental Services (NHDES) confirm that reports of sightings are on the rise.

I encountered this issue for the first time about four years ago while visiting family who live on Cape Cod. Preferring to stay away from overcrowded ocean beaches, I ventured out one summer day to a pristine freshwater pond for a swim. I got there to find a sign posted directing swimmers to stay out of the water due to "cyanobacteria". Just the sight and smell of the pea-soup water was enough to keep me beached that day!

I found out that cyanobacteria consist of a large group of naturally occurring algae species that live in both fresh and sea water. The population of these organisms can overmultiply when conditions are right, producing toxins harmful to humans and animals and causing what is known as a "harmful algal bloom" or HAB.

I learned that the testing for town HAB health advisories is done by a nonprofit organization called the Association to Preserve Cape Cod (APCC). With the help of volunteers, APCC now tests 130 ponds on a biweekly basis throughout the summer to provide an early HAB warning system for residents and visitors. The data from that robust testing program is being used to investigate the spread of harmful algal blooms and find out what factors contribute to it. <https://apcc.org/our-work/science/communityscience/cyanobacteria/>

Despite my awareness about the spread of cyanobacteria on Cape Cod, I was in denial that this could happen here in NH. In fact, it was a bit of a shock two summers ago when friends who live on Lake Winona told me that we'd have to cancel plans to go swimming from their dock because of an HAB warning.

Residents at Stinson Lake in Rumney were similarly shocked by the sudden appearance of what turned out to be a dangerous cyanobacteria bloom last summer. That HAB incident took place during the 4th of July weekend causing some anxiety around holiday celebrations. Lake residents were alarmed, describing the incident as "unprecedented".

The coordinated response around that incident by Stinson Lake homeowners and NHDES staff was exemplary. A kayaker noticed and immediately reported the unusual scum to NHDES. Within three hours NHDES confirmed the presence of harmful cyanobacteria and posted a public health advisory. A Stinson Lake Association (SLA) director, Janine Mori, promptly initiated an email alert system to warn members about the problem.

Gratefully, that situation did not last long, and the advisory was lifted within seven days after testing showed that the organisms had returned to a safe level. However, SLA members express fear that the problem will return.

These experiences prompt some questions that I will attempt to answer here:

What kinds of illnesses are related to HAB exposure? Symptoms can vary greatly ranging from skin rash, abdominal pain, vomiting, and headache to neurological reactions such as numbness, tingling and speech disturbances. For a comprehensive list, see the Centers for Disease Control website. <https://www.cdc.gov/habs/index.html>.

Other illnesses that could be related are still under study. A well-known University of New Hampshire professor and cyanobacteria expert, Dr. Jim Haney, found that HAB toxins can emerge from a lake into the air and be transported to other locations, a discovery that could have community-wide health implications.

Why is this happening more often? The rise in HABs is likely related to many factors. Better water monitoring, increased public awareness leading to more reporting, increasing land development near bodies of water, as well as climate warming may all play a role.

The fact is that the warm season has extended in central NH, with frost-free days lasting up to three weeks longer allowing more time for water bodies to warm up and create optimal conditions for algal blooms.

Changing weather patterns may contribute in another way. As [NH Lakes](#) President Andrea LaMoreaux told NHPR, “What’s happening in New Hampshire is getting wetter. We’re getting more rain, but we’re getting fewer storms, which means our storms are bigger. And when we have bigger storms, we have more pollution running off the landscape.” This polluted runoff into lakes can feed algal growth.

Why do some lakes and ponds experience blooms while others do not? According to NHDES water division assistant manager Ted Diers, it’s complicated. A bloom can be triggered by a variety of factors including surface conditions, wind, and lake water temperature making it difficult to predict when and where one will occur.

Other causes are being investigated through water testing. The APCC data shows some correlation with lawn fertilizers and waste from faulty septic systems that enter Cape Cod waters through storm runoff. This type of pollution which contains phosphorus is trending upwards in many ponds. Cyanobacteria thrive on phosphorus which is increasing in Cape ponds probably due to runoff from more intense storms related to climate disruption.

At Stinson Lake the situation is less certain. The SLA is utilizing the ongoing NHDES Volunteer Lake Assessment Program water quality testing to explore reasons for last summer’s bloom. Unlike Cape Cod, the Stinson Lake testing shows low levels of phosphorus suggesting that pollution from septic and lawns is not the source of the problem.

Paul Giannasca, a Stinson Lake resident who oversees the NHDES water testing program for SLA, says that test results indicate that chloride levels have increased during the past five years. While this increasing chloride, which is probably related to road salt runoff, could have contributed to last summer’s HAB, Paul is expanding the SLA testing program to assess all possible factors.

There is still much to learn about what triggers a harmful bloom. Next month’s Conservation Matters column will focus on how to recognize cyanobacteria, and what can be done to protect our NH water bodies.



Photo credit: NHDES