Cyanobacteria

Cyanobacteria blooms have been increasing in NH Lakes and have occurred in nearby lakes. They are not just a nuisance but can be a serious health hazard. You can help to decrease the chance that they occur in Conway Lake

What are they?

Cyanobacteria are single-celled, microscopic organisms (a type of bacteria) found naturally in all types of water (they've been identified in Conway Lake). Cyanobacteria become problematic when they quickly multiply and form a bloom. This occurs when there is an excess of nutrients (phosphorus and nitrogen) in the water.

Cyanobacteria Bloom *(photo courtesy of NH DES) - Cyanobacterial* ***blooms are usually green in color but can vary ranging all the way to blue, red, or brown****. When a bloom occurs, they can look like a thin film, foam, scum or mats (particularly when the wind blows them toward a shoreline). The stuff you see floating on the lake, however, might not be cyanobacteria! Here are a few tips: If you see leaves or roots, or distinguishable parts, it is likely a tiny (and harmless) aquatic plant like duckweed. If it is a stringy, silky substances that can be draped over a stick, it is probably harmless filamentous green algae. If it is yellow and almost "dusty" in texture, it might act like cyanobacteria, but it may instead be tree pollen. If you are not sure, then contact Maria Gross or Don Yurewicz.*

Why are they increasing in NH Lakes?

Cyanobacteria blooms have been increasing in NH Lakes, in part due to global warming which affects the duration of ice coverage in the winter, and increases the frequency and intensity of extreme weather events that produce heavy rainfalls. The runoff from these storms carries a heavy load of nutrients from the soil into lakes, and those nutrients fuel cyanobacteria growth. Outdated septic tanks on lakefront properties that are leeching into the groundwater and the use of lawn fertilizers, are also important contributors to the problem.

Why are they a concern to those who enjoy Conway Lake?

Cyanobacteria are a potential public health danger because they can produce toxins that target the liver, kidney, and central nervous system and can cause both acute and chronic illnesses, Exposure to the cyanobacteria neurotoxin BMAA, for example, may be an environmental cause of neurodegenerative diseases such as ALS, Parkinson's disease, and Alzheimer's disease[1]. A number of ALS cases, for example, have been diagnosed among residents of Enfield, NH, a town encompassing a lake with a history of cyanobacteria algal blooms. Acute effects, such as skin and mucous membrane irritations, can occur after short-term exposure with water containing cyanotoxins. Chronic effects, such as liver, kidney, and central nervous system damage, can occur over a long period of time from ingesting water containing toxins.

The amount and type of toxin produced by cyanobacteria varies over time and from lake to lake. A cyanobacterial bloom may produce very little to no toxin in one lake, and a later bloom in the same lake could produce a large toxin concentration.

What happens if there is a cyanobacteria bloom on Conway Lake?

If a suspected cyanobacteria bloom is spotted on Conway Lake, we will immediately notify and send a sample to the NH Dept of Environmental Sciences. If it is determined to be a health hazard and concentrations are elevated, a lake warning will be issued, and as needed DES will shut down the affected portions of the lake. NHDES will continue to monitor the water and will notify the appropriate parties regarding the results of initial and subsequent testing. When monitoring indicates that cyanobacteria are no longer present at levels that could harm humans or animals, the lake warning will be removed. If anyone comes in contact with a cyanobacteria bloom or scum (including pets), they should rinse off with fresh water as soon as possible.

- ✓ Do not wade, swim, float or ski in the water, especially near surface blooms. Blooms near the shoreline have the highest concentrations of toxins so be especially careful in those areas.
- ✓ Do not drink the water; avoid drawing lake water.
- ✓ Do not let pets or livestock into or near the water; dogs are especially vulnerable to toxic cyanobacteria.
- ✓ Call the AIS patrol leaders for a second opinion. As needed, we will call NHDES to report a cyanobacteria bloom sighting.

What you can do to help mitigate the danger of cyanobacteria blooms on Conway Lake:

- ✓ *Pump out your septic tank* -A fully functioning septic system is vital to keeping untreated effluent out of our groundwater and lakes. It also prevents high levels of nutrients like nitrogen and phosphorus from getting into the lake and causing toxic Cyanobacteria. Pump out your septic tank and have it and the leach field inspected and repaired if needed.

- ✓ *Plant a "buffer"* - If you live along the lake, plant a "buffer" of native plants along the shore to stabilize the shoreline, provide wildlife habitat, and soak up rainwater and polluted runoff water.
- ✓ Make your lawn lake-friendly - Natural lawns need minimal maintenance, stay green during drought, grows well in shade, provides pollinator habitat, eliminates use of algae-causing fertilizer, holds up to foot traffic, and increases water infiltration. *Avoid using fertilizers, and if you do make sure it is a zero phosphorous fertilizer.*

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1. Holtcamp, W. (2012). "The emerging science of BMAA: do cyanobacteria contribute to neurodegenerative disease?". *Environmental Health Perspectives*. **120** (3): a110–a116. doi:10.1289/ehp.120-a1