
ENVIRONMENTAL Fact Sheet



29 Hazen Drive, Concord, New Hampshire 03301 • (603) 271-3503 • www.des.nh.gov

WD-WMB-10

2009

Potential Dangers of Cyanobacteria in New Hampshire Waters

What are Cyanobacteria?

Cyanobacteria are bacteria that photosynthesize. Many species of cyanobacteria grow in colonies to form surface water “blooms.” Blooms are usually blue-green in color and consist of thousands of individual cells.

Cyanobacteria are some of the earliest inhabitants of our waters, and naturally occur in all of our lakes, often in relatively low numbers. However, research indicates that cyanobacteria abundance increases as lake nutrients increase. As part of the aquatic food web, they can be eaten by various grazers in the lake ecosystem, such as zooplankton and mussels.

Although most often seen when floating near the surface, many cyanobacteria species spend a portion of their life cycle on the lake bottom during the winter months. Increased water temperature and light in the spring promote the upward movement of cyanobacteria through the water column toward the surface where blooms or scums are formed. These scums are often observed in mid to late summer and sometimes well into the fall.

Why are Cyanobacteria a Concern?

Some cyanobacteria produce toxins that adversely affect livestock, domestic animals, and humans. According to the World Health Organization (WHO), toxic cyanobacteria are found worldwide in both inland and coastal waters. The first reports of toxic cyanobacteria in New Hampshire occurred in the 1960s and 1970s. During the summer of 1999, several dogs died after ingesting toxic cyanobacteria from a bloom in Lake Champlain. The WHO has documented acute impacts to humans from cyanobacteria from the US and around the world as far back as 1931. While most human health impacts have resulted from ingestion of contaminated drinking water, cases of illnesses have also been attributed to swimming in cyanobacteria infested waters.

The possible effects of cyanobacteria on the “health” of New Hampshire lakes and their natural inhabitants, such as fish and other aquatic life, are under study at this time. The Center for Freshwater Biology (CFB) at the University of New Hampshire is currently examining the potential impacts of these toxins upon the lake food web. The potential human health hazards via exposure through drinking water and/or during recreational water activities are also a concern to the CFB and the state.

Do Cyanobacteria Exist in New Hampshire Waters?

Yes, they occur in lakes world wide. Cyanobacteria have been found in a majority of lakes in New Hampshire, but most often cyanobacteria numbers present in our lakes are near the minimum level of detection. Four of the most common cyanobacteria found in New Hampshire are: Anabaena, Aphanizomenon, Oscillatoria, and Microcystis. Anabaena and Aphanizomenon produce neurotoxins (nerve toxins) that interfere with nerve function and have almost immediate effects when ingested. Microcystis and Oscillatoria are best known for producing hepatotoxins (liver toxins) known as microcystins. Oscillatoria and Lyngbya (another type of cyanobacteria) also produce dermatotoxins, which cause skin rashes.

Should You be Concerned about Swimming in or Drinking from a New Hampshire Lake?

Both DES and UNH have extensive lake monitoring programs. Generally, the water quality of New Hampshire's lakes is very good. However, the state strongly advises against using lake water for consumption, since neither in-home water treatment systems nor boiling the water will eliminate cyanobacteria toxins if present.

If you observe a well-established cyanobacteria bloom or scum in the water, please comply with the following:

- ✓ Do not wade or swim in the water!
- ✓ Do not drink the water or let children drink the water!
- ✓ Do not let pets or livestock into the water!

Exposure to toxic cyanobacteria scums may cause various symptoms, including nausea, vomiting, diarrhea, mild fever, skin rashes, eye and nose irritations, and general malaise. If anyone comes in contact with a cyanobacteria bloom or scum, they should rinse off with fresh water as soon as possible.

If you observe a cyanobacteria bloom or scum, please call DES at (603) 419-9229. DES will sample the scum and determine if it contains toxin-producing bacteria. An advisory will be posted on the immediate shoreline of a designated beach indicating that the area may not be suitable for swimming. If the affected area extends into water that is not part of a designated beach, DES will issue a warning for the entire lake. DES will continue to monitor the water and will notify the appropriate parties regarding the results of initial and subsequent testing. Public notification occurs through press releases and the DES website. When monitoring indicates that cyanobacteria are no longer present at levels that could harm humans or animals, the advisory or warning will be removed.

Please visit <http://des.nh.gov> and search term "Beach" to access the most current advisories and warnings.