

### **What Is Blue-Green Algae?**

Blue - green alga is a common name for a bacterial phylum classified as cyanobacteria. These bacteria are photosynthetic, meaning they produce metabolic food and release oxygen in the presence of light, and thrive in an aquatic environment. Typical growth of cyanobacteria is colonial and found on the surface of freshwater sources. A full cyanobacterial bloom will consist of a film layer with a bright blue or green hue. Such blooms have milky, paint-like texture to them, lofted on the surface as a floating mat.

### **What Causes Cyanobacterial (Blue-Green algae) Blooms?**

Harmful algal blooms (HABs) do not occur everywhere, nor all the time. There are three main factors that have shown to increase the likelihood for a bloom on a body of water. First, since these bacteria are photosynthetic, they need direct access to sunlight for any significant growth. Warmer temperatures have also been associated with increased growth. Second, the nutrient enrichment of the water source is essential for a bloom. Most notably, a sufficient concentration of nitrogen and phosphorous is needed. Lastly, poor water circulation can facilitate growth of cyanobacteria. When accompanied by mild winds or currents, large colonies of cyanobacteria will accumulate in a region by the leeward shore, and expand rapidly when the water becomes stagnant. For these reasons, HABs have been seen in rising frequencies on some of the county lakes and throughout New York State.

### **Are There Any Health Concerns Associated With Cyanobacterial Blooms?**

There is an abundance of varied toxins released by cyanobacteria, known as cyanotoxins, either during their life cycle or upon rupture of the cells. Upon release of the cyanotoxins they become readily dissolved in the water and can remain there for up to eight weeks or possibly longer. The overall health risk of exposure to these toxins is low, but at high concentrations they can cause harm. The most immediate concern is ingestion, which may cause acute gastrointestinal distress such as cramps and aches. Skin irritation may also result from contact with contaminated water. In elevated doses when ingested, the cyanotoxins may cause liver damage and impairment to neural synapses.

### **Is There Any Risk of Contaminated Drinking Water?**

If the source of drinking water is from a lake or pond experiencing a HAB, there is a potential for contamination from cyanotoxins IF the water is not treated properly. The EPA has performed a study supporting the effectiveness of water treatment such as chemical disinfection (i.e. chlorination), filtration, granular activated carbon, powder activated carbon, ozonation, and UV radiation in eliminating cyanotoxins. Water treatment is especially effective when multiple methods are used in combination with each other. An example of this would be to have a chlorinated well that is secondarily purified by a pitcher or faucet filter.

### **Local Response**

It has become a matter of importance to Chautauqua County Department of Environmental Health, to document, mitigate, and prevent cyanobacterial blooms in the region.

### **Documentation:**

In order to better understand the risks from a local bloom, information on occurring blooms needs to be gathered and processed. Please contact the Chautauqua County Department of Health

with information about the location and timing of suspicious algal blooms in your area.

### **Mitigation:**

In order to reduce the health effect of any cyanobacterial bloom, every individual can take steps to protect themselves. The Department of Health and others are collecting samples of significant blooms for testing, but it should be assumed that bloom areas contain toxins. It is advised that the following actions be taken:

- Do not drink lake or pond water unless properly treated.
- Stay out of the water where significant blooms are occurring.
- Keep pets away from the water where blooms are occurring.
- Wash after swimming or contacting lake or pond water.
- Closely supervise children near ponds or lakes water, and do not let them enter water where blooms are present.

### **Prevention:**

The only way to prevent HABs is to reduce nitrogen and phosphorous in the water. Implementing lake and watershed management plans. A recent [county law](#) has required that all fertilizers containing any phosphorous be banned from use or sale within Chautauqua County. Phosphorous is often a limiting agent in the diet of cyanobacteria, the removal of which can greatly reduce the presence of these blooms. However, there are currently no accepted methods available to eliminate HABs by mechanical or chemical means.

### **Resources**

Chautauqua County Fertilizer Law

[http://www.planningchautauqua.com/?q=watershed/Phosphorus\\_Law.htm](http://www.planningchautauqua.com/?q=watershed/Phosphorus_Law.htm)

Information on Algal Biotoxins

[http://www.epa.gov/safewater/ucmr/ucmr1/pdfs/meeting\\_ucmr1\\_may2001.pdf](http://www.epa.gov/safewater/ucmr/ucmr1/pdfs/meeting_ucmr1_may2001.pdf)

Chautauqua Watershed Conservancy

<http://gis.bergmannpc.com/ChautauquaLakeWatershed/default.html>

Chautauqua Lake Association

<http://www.chautauqualake.org/>

NYS Department of Health Information

<http://www.nyhealth.gov/environmental/water/drinking/bluegreenalgae.htm>

World Health Organization Guide to Cyanobacteria

[http://www.who.int/water\\_sanitation\\_health/resourcesquality/toxicyanbact/en/](http://www.who.int/water_sanitation_health/resourcesquality/toxicyanbact/en/)

Findley Lake Watershed Management Plan

<http://www.flwf.org/>