



Harmful Algal Blooms and Drinking Water Factsheet

What are Algae and Cyanobacteria?

Algae are microscopic plants which grow in lakes, rivers, and most other bodies of water. Most types of algae found in lakes and rivers are harmless to humans and are an essential part of the aquatic food chain. Cyanobacteria, also known as blue-green algae, are not actually algae but harmful bacteria that can grow in nutrient rich water. Under certain conditions, cyanobacteria can rapidly grow in large quantities in what's called a harmful algal bloom (HAB). The blooms can often be identified by their bright green discoloration of the water and unpleasant smell. The blooms can be thick like paint or cottage cheese and can be concentrated in a small area or spread out on the surface of the water body.

Why be Concerned with Cyanobacteria?

Cyanobacteria are particularly harmful because of the toxins they release, known as cyanotoxins. Cyanotoxins are released from blue-green algae as they go through their metabolic processes and when they decay.

Cyanotoxins can remain in the water for weeks after the algal bloom disappears. There are a variety of cyanotoxins that can affect different organs within the body including the liver, nervous system or skin and all are considered health hazards^{[1][5]}. Symptoms from ingestion can include nausea, vomiting, stomach pain and headache while skin contact can cause irritation or a rash. Cyanotoxins are also dangerous for the aquatic

Effects of Cyanotoxins ^{[1][5]}:

After coming in direct contact with cyanobacteria, one may experience:

- Skin rash
- Irritation of eyes
- Irritation of nose
- Irritation of throat

When cyanobacteria is ingested, common symptoms include:

- Diarrhea
- Stomach Ache
- Nausea
- Vomiting
- Liver Damage

Rarer symptoms include:

- Nervous System Damage
- Fever
- Headache

community and are known to cause fish kills and harm to other aquatic life ^[4] ^[5]. Recreational activities are negatively affected when an algae bloom occurs. For more information on recreational impacts, please

visit: http://www.ct.gov/dph/lib/dph/environmental_health/eoha/pdf/fact_sheet_for_recreational_use.pdf

What if a lake or pond has an algal bloom?

Waters with a green, blue or rust discoloration are potentially being affected by an algal bloom. It is important to avoid contact with the water. Do not allow children or pets to drink or make contact with affected water bodies. Wash any area that comes in contact with an algal bloom as soon as possible.

What Causes Harmful Algal Blooms ^[3]?

Algal blooms have been tied to the presence of excess nutrients in an aquatic system, particularly nitrogen and phosphorous. The surplus of nutrients generally comes from direct pollution into rivers or lakes or from runoff from urban areas such as parking lots, streets and lawns. Fertilizers and agricultural manure are often the sources of excess phosphorus and nitrogen in water bodies. Warm, slow moving waters are considered ideal conditions for the development of algal blooms as the slow water allows for a buildup of nutrients and the warmth accelerates cell growth.

How Does this Affect My Drinking Water?

Although ingesting the bacteria should be avoided and is considered a health hazard, it is possible to treat and filter out any harmful bacteria that may be in public water supplies. Water utilities are equipped to remove cyanotoxins from drinking water, however, the best solution is for the water company and town residents to take preventative measures to avoid algal blooms in the first place.

What Should I do About Harmful Algal Blooms ^[3]?

Algal blooms can be prevented by reducing pollution that ends up in water systems. Managing fertilizer use is a significant way you can help to prevent HABs in your community. Only apply the minimal amount of fertilizer to areas that require the nutrients and avoid fertilizing areas that see frequent runoff. Farms should take care to dispose of manure properly to avoid high levels of nutrients running into water bodies when it rains. Avoid the improper disposal or dumping of any pollutants that could end up in a body of water. If you suspect the presence of cyanobacteria in your water supply, you can call the CT Department of Public Health at (860) 509-7293, or CT

Department of Energy and Environmental Protection at (860) 424-3020. The earlier the bloom is detected, the sooner it can be addressed.

For more information visit any of the following sites. Anyone with medical questions or concerns should contact a local health official.

- [1] Water, Sanitation and Health Unit. "Cyanobacterial Toxins." Water Related Diseases. World Health Organization, 2001.
http://www.who.int/water_sanitation_health/diseases/cyanobacteria/en/index.html
- [2] Environmental Protection Agency. "Cyanobacterial Harmful Algal Blooms (CyanoHABs)." Nutrient Policy Data. Environmental Protection Agency, 2013.
<http://www2.epa.gov/nutrient-policy-data/cyanobacterial-harmful-algal-blooms-cyano-habs>
- [3] National Center for Environmental Health. "Harmful Algal Blooms (HABs)." Centers for Disease Control and Prevention. Centers for Disease Control and Prevention, 24 July 2012.
<http://www.cdc.gov/nceh/hsb/hab/default.htm>
- [4] Miller, Melissa A., Dave Crane, and Raphael M. Kudela. "Evidence for a Novel Marine Harmful Algal Bloom: Cyanotoxin (Microcystin) Transfer from Land to Sea Otters." PLOS ONE. California Division of Water Quality, 10 Sept. 2010.
<http://www.plosone.org/article/info:doi/10.1371/journal.pone.0012576>
- [5] Stewart, Ian. "Recreational and Occupational Field Exposure to Freshwater Cyanobacteria – a Review of Anecdotal and Case Reports, Epidemiological Studies and the Challenges for Epidemiologic Assessment." Environmental Health Journal. South East Queensland Water Corporation, 24 Mar. 2006. <http://www.ehjournal.net>