



**Bureau of
Environmental Health
Health Assessment Section**

“To protect and improve the health of all Ohioans”

Blue-Green Algae/Cyanobacteria Harmful Algal Bloom (HABs)

What are Blue-Green Algae?

Cyanobacteria, often called blue-green algae, are bacteria that are naturally found in Ohio lakes, ponds, and slow-moving streams. Although many species of algae do not produce toxins, some species of blue-green algae can cause Harmful Algal Blooms (HABs). HABs can produce neurotoxins (which affect the nervous system) and hepatotoxins (which affect the liver). These toxins can potentially impact the health of people who come into contact with water where HABs are present in high numbers.

Why does massive growth of Blue-Green Algae occur in the environment?

Under the right water conditions, which usually occur in the warmer months, the number of these blue-green algae can dramatically increase, or “bloom.” Some blooms can be visible as thick mats or scum on the surface of the water, while others can be present without visible surface scum. The mats or scum can vary in color and could be bluish-green to red in color.

It is important to note that not all “blooms” produce toxins. Scientists do not fully understand what causes the same species of algae to trigger toxin production during one bloom and not produce toxin during the next.

Blue-green algae need warm temperatures, sunlight, phosphorus, and nitrogen to reproduce. Phosphorus and nitrogen are commonly found in animal and human waste and in fertilizers. Some common ways for phosphorus and nitrogen to enter lakes and streams are from agricultural and residential lawn runoff, improperly functioning septic systems, and erosion of nutrient-rich soil.



Can you get sick from exposure to Blue-Green Algae (cyanobacteria toxins)?

Yes, you can get sick from exposure to cyanobacteria toxins. But getting sick will depend on the type of cyanobacteria, the levels in the water and the type of contact you had with this “algae.” Read more about this on the next page.

Can the cyanobacteria toxins be released to the outside air and pose a health hazard?

The chemical toxins produced by these blue-green algae do not volatilize (change from a liquid to a gas) and they are not released as vapors to the outside air. However, recreational activities like power boating, water-skiing, jet-skiing and tubing can whip up the surface of the water and create aerosols – toxin-containing water droplets – that can be inhaled or ingested, potentially resulting in negative health effects. Other activities that have the potential to aerosolize the lake water include using the lake water to irrigate (spray) lawns/gardens and golf courses.

Are the odors associated with Blue-Green Algae hazardous to my health?

Some of the blue-green algae produce an odor-generating byproduct, named geosmin. The human nose is extremely sensitive to geosmin and is able to detect it at concentrations at very low levels. These odors are not chemically toxic but do have a very unpleasant smell which can cause sensitive individuals to become nauseated (upset stomach, vomiting) and have headaches.

For more information about how odors can impact health, visit the ODH HAS program Web site at www.odh.ohio.gov/odhPrograms/eh/hlth_as/Hlth_As2.aspx and choose the menu item “Health Assessment Section Fact Sheets” and select the “Odors and your Health” fact sheet.

What is the safe level for algal toxins in water?

The World Health Organization set guidelines for microcystin toxin (a toxin produced by cyanobacteria) at 1 part per billion (ppb) in drinking water and 20 ppb for recreational waters. Currently, no similar guidance exists for the other toxins produced by cyanobacteria.

How do you come in contact with Blue-Green Algae and HABs?

- Ingestion (drinking) untreated water or incidentally swallowing water during recreational activities that comes from a lake or reservoir with HABs.
- Dermal (skin) contact by swimming and other recreational activities in HAB-contaminated waters.
- Inhaling aerosolized water droplets (misting) from water-related activities such as jet-skiing, power boating, tubing, or water skiing.
- The incidental swallowing or inhalation of aerosolized water droplets when watering lawns, gardens and golf courses with contaminated water.

What types of health problems can people and pets experience from exposure to HIGH concentrations of HABs?

- **Skin contact:** Contact with the skin may cause rashes, hives, or skin blisters (especially on the lips and under swimsuits).
- **Inhalation of (breathing) water droplets:** Breathing aerosolizing (suspended water droplets-mist) from the lake water-related recreational activities and/or lawn irrigation can cause runny eyes and noses, a sore throat, asthma-like symptoms, or allergic reactions.
- **Swallowing water:** Swallowing HAB-contaminated water can cause:
 - Acute (immediate), severe diarrhea and vomiting
 - Liver toxicity (abnormal liver function, abdominal pain, diarrhea and vomiting)
 - Kidney toxicity
 - Neurotoxicity (weakness, salivation, tingling fingers, numbness, dizziness,
 - Difficulties breathing, death

Is it safe to eat fish caught from HAB-contaminated water?

Some studies have shown that cyanotoxins can accumulate in fish in waters with high toxin levels. While there have been no confirmed reports of cyanotoxin-related human health effects related to fish consumption, there are few data on cyanotoxins on which to base judgments about health risk. Should you decide to consume fish, you would do so at your own risk, and should remove intestines, fat and skin, consuming only the fillet.

How to protect yourself, your family, and your pets from exposure to HABs:

- Don't swim, water-ski, or boat in areas where the blooms are occurring – avoid direct contact with the lake water or aerosolizing the water.
- Don't water lawns, gardens, or golf course with water from HAB-impacted lakes or ponds.
- Report unpleasant tastes or smells in your drinking water to your local water utility.
- Follow posted water body closures announced by state agencies or local public health authorities.

How to treat people or animals that have been exposed to HAB toxins:

- If you do come into contact with the HAB – contaminated water, rinse off with clean, fresh water as soon as possible.
- Pets that have been swimming in an area with an algae bloom may ingest significant amounts of toxins by licking their fur after leaving the water. Thoroughly rinse of your pets with clean, fresh water.
- Seek medical treatment ASAP if you think you, your pet, or your livestock might have been poisoned by toxic HABs.
- Remove people from the exposure and treat the symptoms.

For additional information:

This ODH fact sheet is intended to be a simplified and shorter version of the available information on HABs. For more in-depth analysis and documentation, visit the following information on the CDC and Wisconsin web sites listed in the below reference section.

References:

CDC Facts About Cyanobacteria and Cyanobacterial Harmful Algal Blooms (electronic July, 2010)

www.cdc.gov/hab/cyanobacteria/pdfs/facts.pdf

CDC, Environmental Hazards & Health Effects, Harmful Algal Blooms (HABs), (electronic July, 2010)

www.cdc.gov/hab/cyanobacteria/facts.htm#treat

Wisconsin Division of Public Health, Human Health Hazards, Algae Blooms: Blue-Green Algae/Cyanobacteria (PPH 45069 06/2004). Hazards, Algae Blooms: Blue-Green Algae/Cyanobacteria (PPH 45069 06/2004).

Wisconsin Department of Health Services, Blue-Green Algae (electronic July, 2010)

www.dhs.wisconsin.gov/eh/bluegreenalgae/