Harmful Algal Blooms in Freshwater Bodies

ARE ALGAL BLOOMS HARMFUL?

Algal blooms can be harmful to people and animals. Cyanobacteria (sometimes called blue-green algae) occur naturally in freshwater. Under certain conditions, they can multiply quickly, creating a highly concentrated area known as a cyanobacterial harmful algal bloom, or cyanoHAB. Some HABs produce toxins (known as cyanotoxins). In 2021, HABs in the U.S. were reported to have caused:

- 117 cases of human illness
- 2,715 cases of animal illness
- 2,489* animal fatalities - *large mortality event affecting 2,000 bats

HABs in Massachusetts are most common in summer and early fall. They can last from several days to several months.

HOW DO I KNOW IF THERE IS A HARMFUL ALGAL BLOOM IN THE WATER?

Cyanobacteria can cause the water to appear slightly discolored, cloudy, or resemble pea soup or paint. Typically blue or green, HABs can also be brown or red and can give water a bad odor. In some blooms cyanobacteria are dispersed throughout the water, while in other blooms they are concentrated in a scum or mat, either on the surface of the water or in sediment along the shoreline.

WHAT CAUSES CYANOBACTERIA TO GROW?

Certain environmental conditions, such as warm weather, sunlight, excess nutrients, and stagnant/slow-moving waters help cyanobacteria grow faster. Specific factors behind each bloom vary because every waterbody is different. However, two of the most common factors are phosphorus and nitrogen, found in fertilizers and human/animal waste.

HOW ARE HUMANS AND ANIMALS EXPOSED TO CYANOBACTERIA?

People and animals can be exposed to cyanobacteria through direct skin contact, ingestion, or inhalation. Those using the water for active recreation (like swimmers or jet-skiers) or for drinking are most likely to be exposed. Children and pets, who are more likely to get these bacteria in their mouths, are of special concern. Dogs can become very ill and even die from licking cyanobacteria off their fur.

Cyanotoxins (if present) are usually contained within the cyanobacteria cell. When the cells die, the toxins are released into the water where they can be ingested. Cyanotoxins are not absorbed through the skin.

WHAT SHOULD I DO IF I SUSPECT A HARMFUL ALGAL BLOOM?

If you see a possible HAB, avoid contact with the water.

WHEN IN DOUBT, STAY OUT!

Contact your local health department if the bloom is at a recreational waterbody. If the suspected bloom is at a drinking water reservoir, contact the local water department and the Massachusetts Department of Environmental Protection.

WHAT ARE THE POSSIBLE HEALTH EFFECTS ASSOCIATED WITH CYANOBACTERIA?

Health effects associated with blooms vary depending on the type of cyanobacteria, the route of exposure, and the amount of toxins present.

- Ingestion is the primary concern. Ingesting small amounts of cyanobacteria or toxin can cause gastrointestinal symptoms. Ingesting large amounts of toxins may cause liver or neurological damage.
- Contact with cyanobacteria can cause skin or eye irritation.
- Inhaling water spray containing cyanobacteria can cause asthma-like symptoms.
- Small children and pets are more susceptible to the effects of toxins than adults.

WHAT SHOULD I DO IF I AM EXPOSED TO CYANOBACTERIA?

During a bloom, DPH recommends avoiding contact with the water.

If contact occurs, wash yourself and your pet with tap or bottled water. If you or your pet swallows water, call your doctor or veterinarian. If you believe you or your pet is experiencing adverse health effects, contact your doctor or veterinarian immediately.

WHAT ASSISTANCE CAN DPH PROVIDE?

DPH can provide guidance and technical assistance regarding reported blooms and health effects. DPH recommends that the managing entity (typically local health, or a local or state parks department) issue an advisory if any of the following criteria is met:

- A visible scum is present.
- The algal cell count exceeds 70,000 cells/milliliter of water.
- The level of the toxin microcystin is 8 parts per billion (ppb) or higher.
- The level of the toxin cylindrospermopsin is 15 parts per billion (ppb) or higher.

WHAT CAN BE DONE TO ELIMINATE AN ALGAL BLOOM?

Unfortunately, once a bloom appears there are few options besides letting it run its natural course. Blooms depend on available nutrients and optimal weather conditions. Chemical treatment methods (such as algaecides) are not recommended during a bloom.

WHAT CAN BE DONE TO PREVENT HARMFUL ALGAL BLOOMS?

There are a number of best management practices that can reduce bloom-promoting nutrients:

- Maintain septic systems and storm drains
- Reduce application of fertilizer
- Pick up pet waste
- Do not feed ducks or geese
- Plant or maintain native vegetation around the water's edge

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For more information contact:

Massachusetts Department of Public Health
Bureau of Climate & Environmental Health | Environmental Toxicology Program
250 Washington Street
Boston, MA 02108
Phone: 617-624-5757 | Fax: 617-624-5183 | TTY: 617-624-5286
www.mass.gov/dph/algae

Additional Resources:
MA Dept. of Env. Protection: https://www.mass.gov/guides/cyanobacterial-harmful-algal-blooms-cyanohabs-water
U.S. Centers for U.S. Centers for Disease Control and Prevention: https://www.cdc.gov/habs/index.html
U.S. Environmental Protection Agency: www.epa.gov/cyanohabs

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