



# ALGAE

A NATURALLY OCCURRING PHENOMENON



MICHIGAN DEPARTMENT OF  
ENVIRONMENT, GREAT LAKES, AND ENERGY



The Michigan Department of Environment, Great Lakes, and Energy (EGLE) often receives complaints about the presence of scum on a lake, or that someone has dumped red, bright green, black, or bluish-green paint, oil, or even antifreeze into a lake, river, or stream. This phenomenon is often due to the presence of algae or cyanobacteria rather than the discharge of some type of substance.

Algae are simple plants that live in oceans, lakes, rivers, ponds, and moist soil. Algae grow in many forms. Some are microscopic and consist of just one cell and others are made up of many cells that form strands or colonies. Algae are more simple than aquatic plants as they lack a true root, leaf, and stem system. Some algae species drift or swim, while others are attached to stones or aquatic plants in the water. All algae contain chlorophyll (a green pigment). They help purify the air and water by the process of photosynthesis.

Some algae multiply rapidly in polluted lakes and rivers. Thick layers of algae, called algal blooms, may form when nutrients (mainly phosphorus and nitrogen) build up in the water in amounts in excess of naturally-occurring nutrients. Fertilizers, pet waste, improperly functioning septic tanks, grass clippings, leaves, and other yard wastes are all sources of nutrients.

In some cases, invasive zebra and/or quagga mussels can indirectly cause cyanobacteria blooms by selectively consuming diatoms and green algae, but not necessarily cyanobacteria. Cyanobacteria typically bloom on calm water surfaces when weather conditions are hot and sunny. The increased algae population sometimes upset the natural balance of life in water.

Algae are generally grouped according to color. The color is based upon the chlorophyll and other pigments found in the algae cells. Blooms of algae can give the water an unpleasant taste or odor, reduce clarity, and color the water body a vivid green, brown, yellow, or even red, depending on the species of algae.

## Blue-Green Algae

The cells of blue-green algae are different from the other algae. Most blue-green algae can be seen only with a microscope and often smell badly. Besides chlorophyll, they contain blue or red pigments. Although lakes with large numbers of blue-green algae usually appear blue-green in color, the combination of pigments can cause some blooms to appear reddish, brownish, purple, tan, white, or even black. Unlike other algae which use nitrogen available in the water, many blue-green algae species can use nitrogen from the air as a nutrient source. Due to this ability, blue-green algae blooms most often occur in late summer when the nitrogen in the water is often lower. A few species of blue-green algae form slippery, dark coatings on rocks along rivers and lakeshores. Some species of blue-green algae are toxic and can poison animals that drink water containing these organisms.



*(Above) Blue-green Algae (also known as Cyanobacteria) blooms*

## Green Algae

Green algae occur in fresh water in a free-floating form. Most species are microscopic and live in lakes, ponds, and streams. Large quantities of such algae may color an entire lake and appear like green paint. Green algae blooms are often found during early to mid-summer months. However, some lakes have been known to reflect a green color during a “whiting event” not related to an algae bloom. Some green algae grow attached to solid substrates such as sediment, rocks, or plants and can form dense mats. These mats may become dislodged from their substrate and end up washing up onto shorelines far from where it was originally growing.



*(Above) Green algae bloom on an inland lake*

**To report a suspected cyanobacteria bloom, send an email with pictures to [AlgaeBloom@Michigan.gov](mailto:AlgaeBloom@Michigan.gov).**

For more information, including tips to help reduce the amount of nutrients that can enter a lake from your home activities, please contact any EGLE district office or call the State of Michigan's Environmental Assistance Center at (800) 662-9278.

If you find pollution and believe it is human-induced, please report it to the State of Michigan's Pollution Emergency Alerting System (PEAS) hotline at (800) 292-4706.



**[Michigan.gov/EGLE](https://Michigan.gov/EGLE) | 800-662-9278**

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