What is a blue-green algal bloom, and what causes it?

Blue-green algae are bacteria that use any part of their cell to convert sunlight into energy compared to true algae, which have chloroplasts within their cells that transforms sunlight into energy. There are many different species of blue-green algae, which are microscopic and are found all over the planet including in deserts, mountains, oceans and freshwater. Some species can produce toxins that can be harmful to animals, including humans.

An algal bloom occurs when there is a rapid increase in the amount of algae in the water. Specific environmental conditions are needed to produce a blue-green algal bloom. Blue-green algae need nutrients, sunlight and carbon dioxide to live, and they thrive when the water is warm and salinity is low. Blooms can last as long as the optimal conditions remain for the blooming species. When a species that can produce toxins blooms, it is known as a “harmful algal bloom” or HAB.

The Mississippi Sound generally does not have blue-green algal blooms because its typical salinity range is too high to provide optimal growing conditions. However, the salinity in the sound dropped in 2019 as large volumes of freshwater entered the coastal area beginning in late spring with the opening of the Bonnet Carré spillway, and salinity remained low for a prolonged period.

Are toxins in the water?

Unlike some other types of harmful algal blooms, the presence of a blue-green algal bloom does not necessarily mean that toxins are present. State agencies regularly monitor for multiple types of harmful algal blooms. If they detect a blue-green algal bloom, they will send water samples to specialized laboratories to test for toxins. A state agency may issue warnings or advisories if blue-green algae are present, even if the toxins are not found or are below levels of concern. This is done for precautionary reasons because the bloom can suddenly release the toxin without clear warning signs.

What are the health concerns?

For swimming

During a blue-green algal bloom, people and pets should avoid contact with the water (or wet sand) in case toxins are present. Direct contact with toxins can cause rashes. If you or someone you know comes in contact with water or wet sand near a bloom, the exposed body part should be washed with soap and water immediately. Swallowing water with the toxin, even accidentally, can cause serious health conditions. For example, potential health impacts could affect the digestive and neurological systems. The toxins can also be breathed in if water droplets with the toxin become airborne. People should not allow their children or pets near the water to prevent them from touching, breathing or swallowing the toxin.

For eating fish and shellfish

You should not eat seafood harvested from waters closed to fishing because of human health concerns. People can experience a wide range of symptoms from eating contaminated seafood. Toxins produced by blue-green algae cannot be eliminated through cooking or

This photo shows a green-blue algal bloom in the western Mississippi Sound.
freezing. Symptoms depend on the amount and type of toxin(s) and can include abdominal pain, diarrhea, pneumonia, vomiting, fever, numbness and death.

The Mississippi Department of Marine Resource (https://dmr.ms.gov/marine-fisheries), the Alabama Department of Public Health’s Seafood Division and the Alabama Department of Conservation and Natural Resources’ Marine Resources Division (https://www.outdooralabama.com/fishing/saltwater-fishing) are responsible for testing seafood and closing and opening waters to fishing in their state waters to protect consumers.

Seafood sold at markets and in restaurants is safe to eat during a HAB event because seafood must be harvested from waters open to fishing in order to be sold.

How do I find out if water contact warnings are in effect?

Mississippi
Visit https://opcgis.deq.state.ms.us/beaches for the latest information on water contact warnings along Mississippi beaches. Although the information is shared through the Mississippi Beach Monitoring Program, the warnings only apply to contact with the water, and the beaches remain open.

You also can receive automatic beach advisory updates including water contact warnings from the Mississippi Department of Environmental Quality (MDEQ) by email (register here: http://opcgis.deq.state.ms.us/beaches/contact.html) and by text message (text “MDEQbeach” to 95577).

MDEQ makes water contact warning decisions regarding HAB events. Twenty-one sites are monitored in Mississippi, and signs are placed on beaches when there is an advisory.

Alabama
Visit http://www.adem.state.al.us/programs/coastal/beachMonitoring.cnt for the latest information on Alabama beach advisories.

The Alabama Department of Environmental Management makes beach advisory decisions. If you are at the beach, look for signage indicating if the waters at that beach are closed. Twenty-six sites are monitored in Alabama.

Gulf Islands National Seashore
Visit https://www.nps.gov/guis/planyourvisit/conditions.htm for alerts and conditions at the Gulf Islands National Seashore.

What should I do if my pet or I are showing signs of exposure?
If you believe that you have been exposed to blue-green algae toxin(s) and are experiencing symptoms, seek treatment from a healthcare provider. If you believe that a pet has been exposed, seek a veterinarian immediately because symptoms in pets can become severe quickly.

What can happen when a bloom ends?
Blue-green algae produce oxygen. However, when a bloom dies, the blue-green algae quickly decay. Decomposition of the blue-green algae uses oxygen and can lower oxygen levels enough to cause fish and shellfish kills. A bloom die-off may occur over very large areas or in patches. If the bloom does not die rapidly, fish and shellfish kills are unlikely.

Where can I get more information?
- U.S. Environmental Protection Agency’s Learn about Cyanobacteria and Cyanotoxins webpage: https://www.epa.gov/cyanohabs/learn-about-cyanobacteria-and-cyanotoxins.

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