

# The Facts about Harmful Algal Blooms

Algae are tiny, microscopic plants that live in our lakes, rivers, and oceans. They form the base of the aquatic food chain much as plants do on land. They can be green, blue, or red, and can often form slick, slimy layers of scum on the surface of the water, or coat the surface of submerged rocks and vegetation. Under the right conditions, especially when there are plenty of nutrients like nitrogen and phosphorus in the water, the algae can grow into massive colonies that can be easily seen as floating scum or water discoloration. These are known as algal “blooms.” When these blooms (also known as “red tides” or “brown tides”) pose a threat to people and the environment – for example, by releasing toxins into the water – we call them harmful algal blooms, or HABs. HABs can affect human and animal health, the environment, and our economy.



When species of algae that are red in color form massive blooms they are often referred to as “red tides” and can be dangerous for both humans and wildlife.

**Sources of HABs:** While HABs occur naturally, human activities are contributing to an increase in their frequency and severity. Nutrients from farms and yards, urban runoff, faulty septic systems, and the burning of fossil fuels provide a food source for algal blooms and, under the right conditions, can cause HABs or make them worse.

**Effects of HABs:** Harmful algal blooms can cause health problems, damage ecosystems, and take a heavy toll on the economy.

## Health Effects

Harmful algal blooms may release toxins or other chemicals that can be dangerous to humans, pets, livestock, and wildlife. Humans can come into direct contact with HABs while swimming or playing in oceans, rivers, and lakes. Direct skin contact can cause severe rashes, and ingestion can cause serious health effects. Airborne toxins from HABs can cause sore throats, headaches, and serious respiratory problems. Exposure to toxins from HABs can also occur when humans eat contaminated fish or shellfish. This type of exposure can result in serious stomach, liver, and neurological problems. HABs can also be present in drinking water sources. Pets are especially susceptible to HABs because of their small size and their likelihood of ingesting water while swimming in affected water bodies. During the summer of 2010 the Ohio Department of Health investigated 13 cases of illness and several dog deaths related to a severe HAB event in the popular recreational destination Grand Lake St. Mary’s in western Ohio.



Avoid direct contact with water having visible scum and keep pets out of the water.

## Environmental Effects

Harmful algal blooms can produce toxins that harm or kill mammals, fish, and birds. In addition to releasing toxins, harmful algal blooms can damage ecosystems by creating low-oxygen zones, suffocating fish, shellfish, and other aquatic life. Thick algal blooms can also block out sunlight needed by aquatic plants. In 2012 a large HAB in eastern Florida turned once crystal-clear Indian River Lagoon a murky brown color. The harmful algal bloom blocked sunlight from entering the lagoon, resulting in a massive die-off of the sea grasses that provide food and habitat for local aquatic species such as fish, sea turtles, manatees, and shrimp.



A HAB in a marina on the Caloosahatchee River near Cape Coral, Florida in 2005.

## Economic Effects

Harmful algal blooms can have a significant impact on the economy by harming recreational and commercial fisheries, tourism, and the seafood industry, and by imposing public health costs. Massive fish-kills caused by HABs can reduce yields for commercial and recreational fisheries. Beach closures due to dead fish and the strong odors of dead and decaying marine life can cost the tourism industry millions of dollars each year. HABs monitoring programs and the treatment of drinking water to remove algae also impose significant economic costs. The National Oceanic and Atmospheric Administration estimated that harmful algal blooms cost the US economy \$82 million a year. These economic impacts can be felt in many regions across the country. For example, one study estimated that a massive HAB off the coast of New England in 2005 imposed costs of about \$18 million for Massachusetts and Maine. In 2002 and 2003 closure of the razor clam fishery in Washington state imposed costs of \$10 to \$12 million.

## How is EPA Addressing HABs?

EPA is working with its many partners to address HABs across the country. Partners include federal and state agencies, academia, industry, and non-profit groups. EPA efforts include:

- ⦿ Awarding grants to states, watershed groups, and wastewater facilities to address HABs
- ⦿ Studying the potential effects of the toxins
- ⦿ Developing methods for detecting and analyzing some algal toxins
- ⦿ Developing appropriate health advisories for toxins that might be present in drinking water
- ⦿ Disseminating information to states, tribes, resource managers, and the general public about HABs
- ⦿ Estimating the economic impacts of nutrient pollution and HABs

## What Can You Do?

Harmful algal blooms occur naturally, but scientists believe that nutrient pollution is largely responsible for the increasing intensity of HABs. You can help reduce nutrient pollution by taking action at home and in your community.

- ⦿ Apply lawn fertilizer sparingly and according to label directions.
- ⦿ Clean up and properly dispose of your pet's waste.
- ⦿ Encourage your community to invest in effective wastewater management.
- ⦿ Get involved with local watershed protection efforts. Search EPA's Adopt Your Watershed database at [epa.gov/adopt](http://epa.gov/adopt) to find an active organization in your community.

### For More Information, Visit

#### EPA Nutrient Pollution website:

<http://epa.gov/nutrientpollution>

#### EPA CyanoHABs website:

<http://go.usa.gov/gYTH>

#### CDC HABs website:

<http://www.cdc.gov/nceh/hsb/hab/>