FREQUENTLY ASKED QUESTIONS

**WHAT ARE CYANOBACTERIAL BLOOMS AND CYANOTOXINS?**

Cyanobacteria, also referred to as blue-green algae, are found naturally in lakes, rivers, ponds and other surface waters. They can flourish and quickly multiply to form cyanobacterial blooms, or harmful algal blooms (HABs), especially in the presence of excess nutrients, sunlight, and warmer water temperatures. These blooms can last several weeks or longer and are considered harmful since they are capable of producing toxins, called cyanotoxins, which can harm humans and animals.

**WHAT ARE THE HEALTH EFFECTS FROM CYANOTOXINS?**

Cyanobacteria and cyanotoxins have been shown to cause acute inflammatory effects or illnesses. Exposure to cyanobacterial cells while in recreational waters may cause skin irritations, including rashes, hives, swelling or skin blisters. Ingestion of cyanotoxins can also cause more severe health effects such as liver or kidney damage, depending on the cyanotoxin and the magnitude, duration and frequency of the exposure. For example, short-term exposures to microcystins could cause liver damage, while kidney damage is a key health effect for cylindrospermopsin. Health effects from cyanotoxin exposure in pets, wildlife, and livestock can include vomiting, diarrhea, seizures, and death.

**HOW DOES CYANOTOXIN EXPOSURE OCCUR?**

Exposure to cyanobacteria and their toxins may occur by accidental ingestion or inhalation of toxin-contaminated water, or dermal contact during recreational activities (for example, swimming, waterskiing, or tubing). Animals such as pets, livestock, and wildlife may also be exposed to cyanotoxins if they drink water from toxin-contaminated water bodies, lick their fur after swimming in such waters, or consume toxin-containing algal scum or mats.

**IS ANY CYANOBACTERIAL BLOOM POTENTIALLY DANGEROUS?**

Yes. Any cyanobacterial bloom may potentially cause harm, and it is difficult to tell by looking at a bloom if it is producing toxins. That is, certain algae or plant growth, such as filamentous algae or duck weed, do not produce toxins. To determine if the bloom is producing toxins, it needs to be tested by trained personnel. If a bloom has developed near recreational areas or drinking water intakes, the bloom should be reported so testing can be conducted as soon as possible.

**WHAT TYPES OF ALGAE ARE ASSOCIATED WITH TOXINS?**

Cyanobacteria (also known as blue-green algae), are photosynthetic bacteria that are capable of producing toxins. These toxins can affect the skin, liver and neurological functions in humans, and can also affect pets and livestock. In estuaries and marine waters, other types of algae including diatoms, dinoflagellates, and golden algae can produce toxins that have been responsible for illnesses like Paralytic Shellfish Poisoning, Neurotoxic Shellfish Poisoning, Amnesic Shellfish Poisoning, Diarrheic Shellfish Poisoning, and Ciguatera Fish Poisoning.

**WHAT SHOULD THE PUBLIC DO IF THEY SEE A BLOOM?**

Members of the public, and their pets or livestock, should limit their contact with the water once a bloom is suspected or observed. Members of the public should also comply with relevant signage posted by local authorities or seek information from the waterbody manager, the local public health agency or their state program that responds to cyanobacterial bloom events if signage is not already posted. See [State Monitoring Programs and Information](https://www.epa.gov/nutrient-policy-data/states-monitoring-programs-and-information) for a list of state programs.

**WHAT ARE THE RECREATIONAL SWIMMING ADVISORIES FOR CYANOTOXINS?**

EPA developed draft values for two cyanotoxins, microcystins and cylindrospermopsin, for states to consider as the basis for public health protection in recreational waters (see Table 1). The draft values are recommended thresholds that are not to be exceeded on any day. States may use these same values as the basis of swimming advisories for public notification purposes at recreational water bodies. For more information about EPA’s recommended recreational water quality criteria which may also be used for swimming advisories, see: [Draft Recreational AWQC/Swimming Advisory for Cyanotoxins](https://www.epa.gov/wqc/draft-human-health-recreational-ambient-water-quality-criteria-andor-swimming-advisories).

**Table 1. Draft Recreational AWQC for Cyanotoxins**

|  |  |
| --- | --- |
| Microcystins | Cylindrospermopsin |
| 4 µg/L a, b | 1. µg/L a, b
 |

1. Swimming Advisory: not to be exceeded on any day
2. Recreational Criteria for Waterbody Impairment: not exceeded more than 10 percent of days per recreational season up to one calendar year.

Some local or state governments have already implemented response guidelines in the event of a cyanobacterial bloom in recreational waters. These include specific criteria (cyanotoxin concentrations or cyanobacteria cell counts) for evaluating the severity of a bloom and triggering actions (e.g., advisories, warnings, closures, management techniques) when a bloom exceeds a state-designated guidance value. For a summary of the U.S. states with health advisory values, see [Guidelines for Cyanobacteria and Cyanotoxins in Recreational Water](https://www.epa.gov/nutrient-policy-data/guidelines-and-recommendations#what3).

**WHAT ABOUT ANIMALS EXPOSED TO CYANOTOXINS AT RECREATIONAL WATERS?**

Keep animals away from water that is experiencing a cyanobacterial bloom. Do not allow animals to drink the water, groom fur after contact with the water, or eat algal scums. Immediately wash animals if they come into contact with the water. Contact a veterinarian immediately if pets or livestock show signs of illness. The CDC has produced a [Veterinarian Reference](https://www.cdc.gov/nceh/hsb/hab/HABSveterinarian_card.pdf) document about health effects to animals from exposure to cyanobacteria and toxins.

**WHERE CAN I FIND MORE INFORMATION ABOUT HARMFUL BLOOMS AND CYANOTOXINS?**

* For general information, please visit EPA’s [CyanoHABs website](http://www.epa.gov/cyanohabs) or contact your local health department. The [State Resources tab](https://www.epa.gov/nutrient-policy-data/states-monitoring-programs-and-information) on the CyanoHABs website contains information about state monitoring programs.
* For information about bloom-associated illnesses, please visit the CDC’s [HAB-Associated Illnesses webpage](http://www.cdc.gov/habs).

**WHAT ARE STATES DOING TO PROTECT THE PUBLIC**

Some local and state governments have already implemented response guidelines in the event of a cyanobacterial bloom in recreational waters. These include: (1) identifying state-designated recreational water health advisory levels for analyzing the severity of a bloom (as measured by cyanotoxin concentrations or cyanobacteria cell counts); and, (2) taking specific actions, such as issuing public advisories, posting warnings, and closing waterbodies that exceed a predetermined threshold. For example, Ohio takes different actions based on increasing levels of the toxin concentration, such as posting information about HABs, issuing a recreational advisory, or temporarily closing recreational waters. For a summary of the U.S. states with health advisory values, see [Guidelines for Cyanobacteria and Cyanotoxins in Recreational Water](https://www.epa.gov/nutrient-policy-data/guidelines-and-recommendations#what3).

**WHAT CAN THE PUBLIC DO TO HELP PREVENT CYANOBACTERIAL BLOOMS FROM OCCURRING?**

Addressing nutrient pollution, such as excess nitrogen and phosphorus, can help to reduce or prevent the occurrence of cyanobacterial blooms in recreational waters. Excess nutrients may originate from agricultural, industrial and urban sources as well as from atmospheric deposition. In some areas, members of the public participate in monitoring programs that sample and assess local waters for the presence of HABs. The broader public can help address HABs by taking simple actions that reduce nutrients contributing to our water:

* use phosphate-free detergents,
* dispose of your pet waste properly,
* apply fertilizers only when necessary and at the recommended amount, and
* volunteer in local watershed protection efforts.

Additional prevention activities can be found at [Nutrient Pollution - What You Can Do](https://www.epa.gov/nutrientpollution/what-you-can-do).