

Fact Sheet: Draft Human Health Recreational Ambient Water Quality Criteria/Swimming Advisories for Microcystins and Cylindrospermopsin

Summary

EPA has issued for public comment draft *Human Health Recreational Ambient Water Quality Criteria (AWQC) and/or Swimming Advisories for Microcystins and Cylindrospermopsin*. These are the draft recommended concentrations of microcystins and cylindrospermopsin in recreational water at or below which people will be protected while swimming or participating in other activities on the water.

EPA will accept comments on the 2016 draft criteria document for 60 days. Once final, states can consider adopting these criteria into their water quality standards and using them for Clean Water Act purposes, once the standards are approved by EPA. Alternatively, states can use these same values as the basis of swimming advisories for public notification purposes at beaches.

Background

Cyanobacteria are naturally-occurring photosynthetic bacteria found in many diverse habitats including surface waters and are commonly referred to as blue-green algae. Certain environmental conditions, such as elevated levels of nutrients, warmer temperatures, still water, and plentiful sunlight can promote the growth of cyanobacteria to higher densities, forming what are called harmful algal blooms (HABs). They are called harmful because exposure to these blooms can result in adverse health effects to humans and animals. Cyanotoxins, such as microcystins or cylindrospermopsin, are produced by cyanobacteria. Under HAB conditions, the concentrations of toxins

in the water can increase substantially. Elevated cyanotoxin concentrations in surface waters can persist after the bloom fades, so human exposures can occur even after the visible signs of a bloom are gone or have moved downstream.

What are the Health Effects from Exposure to Cyanotoxins in Recreational Waters?

Different cyanotoxins have different health effects associated with exposure. For example, microcystins are primarily associated with liver toxicity, while kidney toxicity is a key health effect for cylindrospermopsin. Other toxins have been shown to affect the skin, gastrointestinal or nervous systems. EPA is including only microcystins and cylindrospermopsin in the draft recreational criteria/swimming advisories.

How Can I Be Exposed to Cyanotoxins?

Cyanotoxins are released into the water as cyanobacteria grow and die. Toxin concentrations can become elevated, particularly during a bloom event, and can persist in the environment after a bloom is over. You can be exposed to elevated levels of cyanotoxins if you swim, play in, or recreate on or in a waterbody where cyanobacteria may reproduce rapidly. Toxins can be ingested, inhaled or absorbed through the skin. The toxins' persistence in the environment can potentially affect downstream users, such as drinking water utilities and recreators, where the bloom may not be directly observed. EPA previously published health advisories for

microcystins and cylindrospermopsin in drinking water that can be found [here](#).

Are Pets Susceptible to Adverse Health Effects from Cyanotoxins?

Yes. Health effects from cyanotoxin exposure in pets can include vomiting, diarrhea, seizures, and skin rashes. Pets may be exposed to cyanotoxins if they drink water from a lake contaminated by cyanobacteria, lick their fur after swimming in contaminated water, or consume toxin containing algal scum or mats. Pets can also be exposed if they drink tap water contaminated with cyanotoxins. The criteria were developed to be protective of human health; however, the document does describe reports of adverse health effects on animals, including pets.

What are EPA's Recommended AWQC for Microcystins and Cylindrospermopsin?

Table 1 contains the draft nationally-recommended AWQC for microcystins and cylindrospermopsin considered protective in recreational waters. These values were derived using the existing peer-reviewed and published science on the adverse human health effects of these toxins, established criteria methodologies, and recreation-specific exposure parameters from EPA's Exposure Factors Handbook. Because children spend more time in the water and ingest more water per body weight while recreating, EPA derived these recommended criteria based on children's recreational exposures.

The toxins that are produced by cyanobacteria growing in fresh waters can enter estuarine and marine waters as waters containing the toxins flow downstream. Therefore, the recommended values in Table 1 apply in either fresh or marine recreational waters.

How to View the Criteria Document and Supporting Information:

EPA has established an official public docket for this action under Docket ID No. EPA-HQ-OW-2016-0715, accessed at www.regulations.gov. You may also download the document and supporting information from EPA's recreational criteria website at: <https://www.epa.gov/wqc/microbial-pathogenrecreational-water-quality-criteria>

Where can I find more information?

Please contact John Ravenscroft by email at Ravenscroft.John@epa.gov.

Table 1. Draft Recreational AWQC for Cyanotoxins

Microcystins	Cylindrospermopsin
4 µg/L ^{a, b}	8 µg/L ^{a, b}

a) Swimming Advisory: not to be exceeded on any day

b) Recreational Criteria for Waterbody Impairment: not exceeded more than 10 percent of days per recreational season up to one calendar year.