

MICROCYSTIN POISONING

1. The Disease Definition

Microcystin is a toxin that is released by blue-green algae or cyanobacteria. Cyanobacterial blooms occur when algae that are normally present grow exuberantly. Within a few days, a bloom can cause clear water to become cloudy. The blooms usually float to the surface and can be many inches thick, especially near the shoreline. Cyanobacterial blooms can form in warm, slow-moving waters that are rich in nutrients such as fertilizer runoff or septic tank overflows. Blooms can occur at any time, but most often occur in late summer or early fall. Exposure to microcystin at significant levels through ingestion, inhalation, and dermal exposure can lead to microcystin poisoning.

A. Clinical Description

Both humans and animals can get microcystin poisoning from exposure to contaminated water. People can get microcystin poisoning from being exposed to contaminated waters, either by intentionally or accidentally swallowing water, by having direct skin contact (as when swimming, wading, or showering), or by breathing airborne droplets containing microcystins, such as during boating or waterskiing. Microcystin poisoning cannot be spread from one person to another, or from an animal to a person.

Symptoms may take hours or days to show up in people, but normally show up within one week after exposure.

Symptoms of microcystin exposure/poisoning include

- Rash, hives, or skin blisters (especially on the lips and under swimsuits).
- Gastrointestinal symptoms such as stomach pain, nausea, vomiting, diarrhea, severe headaches, and fever.
- Runny eyes and nose, cough, and sore throat, pleuritic pain, asthma-like symptoms, or allergic reactions.
- Exposure to large amount of microcystin can cause liver damage (elevated gamma glutamyl transpeptidase).

B. Sources of Exposure

Microcystin poisoning is most likely to occur from exposure to surface water where cyanobacteria blooms are currently occurring or have occurred in the recent past. Exposure can occur from intentionally or accidentally swallowing water, by having direct skin contact, or by breathing airborne droplets. Another potential route of exposure could be from drinking water from a public water source that obtains its water from a surface water body that has elevated levels of microcystin toxin.

C. Population at Risk

People at greater risk are those who use recreational waters during and immediately after a cyanobacteria bloom is present. Populations whose drinking water supply is surface water that has experienced cyanobacteria blooms are also at risk. One of the populations to experience the greatest risk of adverse health impacts has been dialysis patients who were exposed to microcystin within the water used for dialysis and experienced liver and kidney damage and even death in some cases.

D. Diagnosis, Treatment, and Prognosis

Diagnosis of microcystin poisoning involves observation of the symptoms and exposure to water that is suspected of or tested to show evidence of elevated microcystin levels. Symptoms normally begin within 24 hours of exposure.

Treatment for both humans and animals is supportive. Patients are advised to not drink alcohol, not to use acetaminophen, or to use blue-green algal dietary supplements.

People exposed to small amounts of microcystin toxin experiencing gastrointestinal discomfort or headaches from oral exposure usually recover fully within 2 days of exposure. Symptoms including rash, skin irritation, or blisters from dermal exposure usually subside within 1 to 2 weeks after exposure.

E. Prevention of Exposure

People are advised to avoid contact with and exposure to recreational water where cyanobacteria blooms are currently occurring or have occurred in the recent past.

2. Reporting Criteria

A. Disease Reporting

Microcystin poisoning is reportable if:

Patients are experiencing:

- Gastrointestinal symptoms OR
- Respiratory symptoms OR
- Dermal symptoms OR
- Elevated serum GGT (gamma glutamyl transpeptidase)

- AND history of exposure to a body of surface water that is suspected to contain elevated levels of microcystin within the past 7 days.

Microcystin poisoning must be reported to the Iowa Department of Public Health by the physician or health practitioner attending any person having a reportable disease and by laboratories performing tests identifying reportable diseases. Microcystin poisonings must be reported within a week to the Iowa Department of Public Health Division of Environmental Health by the physician or health practitioner attending any person having a reportable disease and by laboratories performing tests identifying reportable diseases. Reporting can be through phone, fax, mail or through the IDPH web page at <https://idph.iowa.gov/ehs/algal-blooms> through the "Contact Us" link.

The reporting is to include:

- Health care provider's name
- Health care provider's number
- Patient name
- Patient phone number
- Patient address
- Caller's name and phone number

How to report to the Division of Environmental Health (Non IDSS Users)	
Phone (Mon-Fri 8 am-4:30 pm):	800-972-2026
Fax:	515-281-4529
Address:	Iowa Department of Public Health Division of Environmental Health Lucas State Office Building 321 E. 12th Street Des Moines, Iowa 50319-0075
24-hour Disease Reporting Hotline:	800-362-2736

B. Reference Sources

Centers for Disease Control, [Harmful Algal Blooms](#)
World Health Organization, [Toxic Cyanobacteria in Water: A Guide to Their Public Health Consequences, Monitoring, and Management](#)