

100 photos that can help prevent sickness, save lives

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Microcystis is one of the most common bloom-forming cyanobacteria, AKA, blue-green algae. Many strains of this species produce a family of potent liver toxins, the microcystins. Credit: NaraSouza/USGS

A series of 100 photos may reduce the risk of Native Americans and Alaska Natives being exposed to or consuming water or food containing harmful cyanobacteria.

The colorful images are part of a new field and laboratory guide developed by the U.S. Geological Survey to help Native American and Alaska Native communities develop an awareness of what harmful algal blooms look like in the field and be able to distinguish them from non-toxic blooms.

Harmful algal blooms that are dominated by certain cyanobacteria are known to produce a variety of toxins that can negatively affect fish, wildlife and people. Exposure to these toxins can cause a range of effects from simple skin rashes to liver and nerve damage and even death, although rarely in people.

The issue may be increasing in importance, as scientists indicate warming global temperatures may exacerbate the growth of [harmful algal blooms](#).

"We are likely to see more [cyanobacterial blooms](#) in the future as waters continue to warm," said Barry Rosen, a USGS biologist and author of the guide. "Cyanobacteria proliferate in warm water temperatures, generally about 25 degrees Celsius (77 F), and are more tolerant of these warmer conditions than their competitors, such as green algae. We expect numerous other physiological adaptations will give cyanobacteria an advantage as global climate changes occur."

While there are communities worldwide that may find the field and laboratory guide of use, those with people in direct contact with surface water or who consume fish and shellfish may find it particularly helpful.

"In the U.S., Native American and Alaska Native communities, especially those reliant on subsistence fishing or who have frequent contact with surface water, have an increased risk of exposure to cyanotoxins," said Monique Fordham, the USGS National Tribal Liaison. "This guide will give them a new resource to use to monitor the

waters they rely on and protect their people."

Algae serve as the base of the food web in aquatic habitats. When algae cause a "problem," typically a surface scum or accumulation on or near a shoreline, it is given the name "algae bloom" and many times is called a harmful algae bloom. An algae bloom forms under the correct environmental conditions, including nutrient abundance, stability of the water column, ample light, and optimal temperatures.

Although many different types of algae are responsible for harmful [algae blooms](#), cyanobacteria, which produce natural cyanotoxins, pose the greatest problem and are the focus of this guide. The guide includes photos of what cyanobacteria blooms look like in a waterbody as well as photos of cyanobacteria taken through the microscope, which is needed to determine the type of bloom that is present.

More information: The publication, "Field and Laboratory Guide to Freshwater Cyanobacteria Harmful Algal Blooms for Native American and Alaska Native Communities," by Barry H. Rosen and Ann St. Amand, is available [online](#).

Provided by United States Geological Survey

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