

What Are Cyanobacteria?

Cyanobacteria are a unique group of photosynthetic bacteria that live naturally in surface waters. Because of similarities in appearance and habitat to algae, they have long been known as blue-green algae. Alberta has more than 100 species of cyanobacteria, ranging from tiny cells invisible to the naked eye to large species that look like fine grass clippings, small shapeless clumps, or spheres several millimeters in diameter.

What Are Cyanobacterial Blooms?

Cyanobacteria are well adapted to growth and persistence in alkaline, nutrient-rich lakes, reservoirs and ponds. In these environments they out-grow algae, often growing profusely and forming dense populations. During calm conditions, cyanobacteria can congregate near the water's surface producing a slick or scum that appears like pea soup. This phenomenon is called a bloom. Surface accumulations intensify if waves concentrate cyanobacteria into bays, or along the shorelines and beaches.

Where or When Do Blooms Occur?

Cyanobacteria growth is natural. However, the more nutrient-rich the water, the more likely it will experience and sustain cyanobacterial blooms. Urban, agricultural and industrial activities and removal of natural vegetation along shorelines enhances the movement of nutrients to surface waters and increases the severity of blooms.

Chemical use to control cyanobacteria in natural lakes is not allowed in Alberta because they are toxic to fish and organisms they eat. A long-term solution for limiting cyanobacterial growth is reducing the volume of nutrients entering a lake by controlling sewage, fertilizers, industrial effluents and agricultural runoff.

Blooms are most common in lakes from early July to mid-September. Timing, intensity and duration will vary from year to year because of nutrient availability, air and water temperatures, sunlight and wind velocity. Blooms can occur during winter under ice, but this is rare.

Why Are Blooms Undesirable?

Blooms are unsightly and produce objectionable odors. When they decompose, odors intensify, often reminiscent of raw sewage. Rapid decomposition may deplete the water of oxygen and can produce high concentrations of ammonia that can kill fish and other aquatic animals.

Cyanobacteria are not only aesthetically displeasing as some common bloom-forming species can induce skin irritation, itchiness and severe rashes upon contact. This can restrict the recreational use of an impacted lake or reservoir.

Cyanobacterial Toxins

The most troublesome issue with cyanobacteria is the fact that many species produce potent toxins, the most common being liver toxins. Nerve toxins are rarer, but can cause periodic loss of wildlife. In Alberta, numerous cases of animal poisonings have occurred and reports of human illness linked to cyanobacteria also exist.

Not all cyanobacteria produce toxins although some species produce several types. Within a single

species, some strains are toxic while others are not. This makes prediction a difficult task. Toxic and non-toxic strains of a species usually occur simultaneously.

Toxin concentration depends on the density of toxin-producing species in the water. Cyanobacterial blooms vary in time and location in lakes, as will toxicity. Lakes can suddenly become toxic and, conversely, lakes that have shown toxicity in the past may not show it for several years. Some areas of a lake can be toxic, while other regions remain safe. Caution should be taken at lakes where blooms have occurred in the past.

Toxicity is temporary. About 90% of toxin will degrade naturally within two weeks after the collapse of a bloom.

Risks to Humans, Pets and Wildlife

Humans are as susceptible to cyanobacterial toxins as animals, but most of us will not voluntarily drink affected lake water because of its objectionable appearance and odor. Accidental swallowing of cyanobacteria can result in fever, headache, dizziness, stomach cramps, vomiting, diarrhea and sore throat.

Humans can also suffer skin and eye irritation and swelling, sore throat and swollen lips. These seldom persist for more than two or three days.

Children can be more intensely affected because they spend more time in the water than adults and have lower tolerances to the toxins.

To Protect Yourself From Possible Harmful Effects of Cyanobacteria:

- Treat all blooms with caution
 - Do not drink water from cyanobacteria laden or bloom-infested lakes and reservoirs. Do not drink any untreated surface waters
 - Do not swim or wade in water containing dense accumulations of cyanobacteria
 - Provide alternative sources of drinking water for domestic animals and pets
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Respect Our Lakes

Cyanobacterial (Blue-green Algae) Blooms

For More Information

If you suspect that cyanobacteria may be endangering swimming, contact your regional health authority. If symptoms related to cyanobacteria are experienced, contact a physician immediately and if your pet shows symptoms, contact a veterinarian immediately.

To report dead animals or wildlife near a lake, contact Alberta Environment and Sustainable Resource Development as outlined below.

For information on the impact to human health, contact Alberta HealthLink by calling toll-free 1-866-408-LINK (5465)

For more information about cyanobacteria, water quality, lake health, or lake stewardship:

Alberta Environment and Sustainable
Resource Development

www.esrd.alberta.ca (search 'Respect our Lakes')
ESRD.Info-Centre@gov.ab.ca

Or call: 310-ESRD

For environmental complaints/emergencies
call the 24-hour environmental hotline:

1-800-222-6514

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