CYANOBACTERIAL ("Blue-Green Algae") BLOOMS

What are cyanobacterial blooms?

Many Alberta lakes undergo visible changes during the summer months. Clear, transparent water may become soupy in appearance, often turquoise, bright blue, grey, tan or even red or purple in colour. In very rare instances this is due to excessive growth of microscopic plants called algae. In fact, the organisms responsible for these changes are photosynthetic bacteria called cyanobacteria. Cyanobacteria have long been known as blue-green algae, as they share many similarities in appearance and habitat with algae.

When cyanobacteria grow profusely and congregate, they make lake water look like pea soup. This phenomenon is called a bloom.

Bloom-forming cyanobacteria magnified 40X

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.

Why do blooms occur?

Cyanobacteria are well adapted to growth and persistence in nutrient-rich lakes, reservoirs and ponds. They out-compete algae for optimal levels of sunlight and nutrients required for photosynthesis, in part, by regulating their buoyancy in the water.

Unfortunately, cyanobacteria become over-buoyant and concentrate near the water's surface when calm conditions follow windy periods. These surface accumulations intensify if waves concentrate cyanobacteria into bays, or along the shorelines and beaches.

The results are surface blooms that appear as brightly colored slicks and scums.

Where and when do blooms occur?

The more nutrient-rich the water, the more likely it will experience and sustain surface blooms of cyanobacteria.

Most of Alberta's lakes are in basins made up of nutrient-rich rock and soils. Consequently, many Alberta lakes naturally support cyanobacterial blooms.

Urban, agricultural and industrial activities and removal of natural vegetation along shorelines can enhance the movement of nutrients to surface waters and increase the severity of blooms.

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.

Cyanobacterial bloom on a central Alberta lake

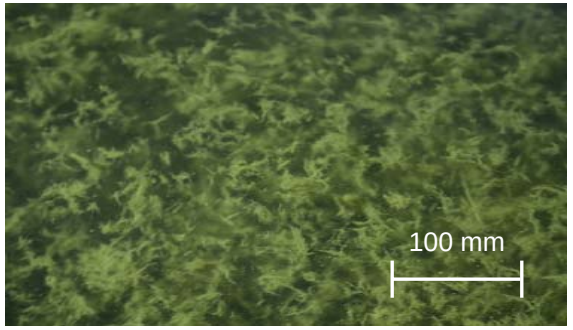
Why are blooms undesirable?

Sand and rocks along the shore may be coated with what looks like bright blue-green paint. Blooms decompose and 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.

Decomposing cyanobacterial bloom

Blooms also pose a serious health threat to humans and animals as some common cyanobacteria produce potent liver or nerve toxins.

Take special care during blooms. Treat any intense bloom with caution. People should not drink water from bloom-infested lakes and reservoirs or swim or wade in water containing concentrated cyanobacteria. Children should be supervised very closely around infested water. Take care to provide alternative water sources for domestic animals and pets.



Clumps of cyanobacteria near surface

Controlling blooms

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

Contacts

- 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
- If your pet shows symptoms, **contact a veterinarian** immediately
- If you have questions about water quality or to report dead animals or wildlife near a lake, contact a regional Alberta Environment office or the Environmental Monitoring and Evaluation Branch by calling **toll-free (310-0000)**

For more information

- On cyanobacterial blooms and toxicity: see *Problems and Issues* FAQs on Alberta Environment's Surface Water Quality webpage.
- Water quality characteristics, such as clarity, pH, alkalinity, and nutrients and summary data reports for many of Alberta's lakes, may be found on Alberta Environment's *Online Surface Water Quality Reports* webpage.

www.environment.alberta.ca

Cyanobacterial bloom at public beach, Pigeon Lake AB

ISBN: 978-0-7785-6303-7 (Printed)
ISBN: 978-0-7785-6304-4 (On-line)