

Blue-green algae in New Brunswick lakes and rivers: Questions and Answers

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What are blue-green algae (cyanobacteria)?

- Cyanobacteria are bacteria that are similar in size to common algae and get their energy from the sun (through photosynthesis). They are commonly called blue-green algae because of these similarities as well as the fact they can appear blue-green in colour.
- They are a natural part of our environment and water ecosystems, and can be found in many ponds, lakes, rivers and wetlands in New Brunswick. They are not normally visible, but under certain conditions (warm, slow moving, shallow water and lots of sunlight) and when there is lots of food (nutrients such as phosphorus and nitrogen), they can clump together to form a “bloom.”
- Some types of blue-green algae are capable of producing toxins, called cyanobacterial toxins.

What is a blue-green algal bloom?

- When there is lots of food (nutrients such as phosphorus and nitrogen) in the water, blue-green algae can grow very quickly and clump together to form a bloom.
- A bloom will look like surface scum, foam or mat and often be blue-green in colour. Blooms can also look red, brown, green, or yellow in colour.
- Some blooms look like paint streaks on the water, while others may not affect the look of the water. Fresh blooms can smell like newly mown grass; older blooms can have a foul smell, sometimes like garbage.
- Blooms usually occur when it begins to get hot outside, typically in the late spring and early summer.
- Blue-green algal blooms can appear quickly or overnight. On windy days algae blooms may accumulate near the shore.
- Blooms can also be suspended at different depths in the water. This can make them more difficult to see. They can float up and down in the water and move to where there is more food (nutrients) and light. So even if a bloom is not floating on the surface of the water, it doesn't mean that one isn't present.
- While not all blue-green algae blooms are harmful to human health, some can produce toxins. The most commonly found toxin in North America is microcystin, which can cause skin, eye and throat irritation and more severe illness if consumed.
- For examples of algae blooms, please visit the cyanobacteria section of the New Brunswick Department of Environment's abbreviated identification guide to New Brunswick's aquatic curiosities: https://www2.gnb.ca/content/gnb/en/departments/elq/environment/content/water/content/lakes/whats_thats.html

Where do I report blue-green algae blooms?

- The Department of Health and the Department of Environment and Local Government are working together to evaluate reported or suspected blooms, and post advisories when necessary.
- If a bloom is observed, or suspected, please report it to the Department of Environment and Local Government regional office.
- For more information on how to report a bloom please visit this link: <https://www2.gnb.ca/content/gnb/en/departments/elq/environment/content/water/content/algae/how.html>

Is it safe for me to swim or boat in water containing blue-green algae?

- The Department of Health encourages the public to be active and enjoy the outdoors, but to be aware that algal blooms can appear in different locations and do not always look the same. It is recommended to always check the water before entering.
- While not all blue-green algae blooms are harmful to human health, some can produce toxins.
- If a bloom is present, as a precaution, you should avoid swimming or engaging in other activities (e.g., water-skiing, canoeing, paddle boarding, etc) that may involve contact with the water.
- When enjoying any recreational water, there are always things you can do to protect yourself:
 - Always supervise young children and pets. They may be more at risk of becoming ill.
 - Do not swallow lake or river water.
 - Bathe or shower shortly after swimming.
 - Do not enter the water with open cuts or sores.
 - Always wash your hands before eating.
- Toxins can sometimes remain in the water for several weeks after the bloom is no longer visible. As a precaution, it is recommended that recreational water use be avoided in areas where blue-green algae blooms have been seen or are suspected.

Can I drink or cook using water with blue-green algae in it?

- No. Always obtain drinking water from a clean and safe source. Residential water treatment systems may not remove blue-green algae toxins from your drinking water.
- Do not cook with or drink water that was obtained from areas with blue-green algal blooms. You cannot determine if the water is harmful by its taste, odour or appearance, so it should be assumed that toxins are present.
- Boiling water does not remove toxins from the water.
- If you are connected to a municipal water supply system, you can continue to use the water as normal unless notified otherwise by the system owner/ operator.
- If you have your own groundwater well supply, you can continue to drink the water as normal.

Can I use water containing blue-green algal toxins for washing?

- If a safe source of water is available, don't use water containing blue-green algae for washing clothes or dishes.
- If an alternative safe source of water is not available, use rubber gloves to avoid direct contact with the water.
- Bathing or showering in water containing blue-green algae should be avoided, as skin contact with the toxins can lead to skin irritation and rashes.

Can I eat fish from water containing blue-green algal toxins?

- Toxins can accumulate in the tissues of fish, particularly in the internal organs (liver, kidney, etc.). Levels in the tissues depend upon the severity of the bloom in the area where the fish are caught or collected.
- The internal organs of fish should be removed and disposed of. Fish should be rinsed well with clean drinking water before being cooked and eaten.

What are benthic algal mats?

- Benthic algae are a natural and essential part of our freshwater ecosystem.
- Benthic algae grow on the bottom of rivers and lakes where they can form large mats. These mats can grow quickly when the water is warm, there are stable flows and lots of food (nutrients).
- The algae mats look like clumps of vegetation, and can appear black, brown or dark green in the water.
- On the shoreline they may appear brown or grey once they have dried.
- The mats can contain a mixture of algae and cyanobacteria (blue-green algae).

What is the concern with benthic algal mats?

- Since blue-green algae can be present in algal mats, it is possible that toxins may be present.
- The algal mats can break away from the bottom of a lake or river and wash up along the shoreline, making them accessible to pets and children. They can also be attached to rocks or aquatic plants or may be found floating in the water or along the surface.
- Children should not play with, and pets should be kept away from, algal mats or plants that are found floating near the shore or that may have washed up along the shoreline.
- Dogs can be attracted to the odour of algae mats and may want to eat them. Dogs should not eat vegetation or floating mats found along the shores of lakes or rivers.

Is it safe to let my dog swim in the water?

- Dogs should not swim in water if a bloom is present.
- Dogs should not eat algae mats or vegetation found near, or along, the shore of lakes or rivers because the mats or plants may contain toxins that can be fatal if eaten.
- Dogs are attracted to the odour of these algae and may want to eat them.
- The algae mats look like clumps of vegetation, and can appear black, brown or dark green in the water. They can also be attached to rocks or aquatic plants or may be floating in the water or along the surface. On the shoreline they may appear brown or grey once they have dried.

What are possible health effects from water containing blue-green algae toxins?

- If you swim in water containing blue-green algae toxins, your eyes and skin may get itchy and irritated. You may also get other hay fever-like allergy symptoms. Skin contact with blue-green algae toxins may cause result in hives, rashes, blisters, etc.
- If water containing blue-green algae toxins is swallowed or inhaled while swimming, or enjoying other recreational activities (water-skiing, canoeing paddle boarding, etc.), you may experience:
 - headaches;
 - fever;
 - sore throat;
 - dizziness;
 - stomach cramps;
 - nausea;
 - diarrhea and
 - vomiting.
- Symptoms can last for several days.
- Children and immuno-compromised individuals are at a higher risk for the more severe effects.

What should I do if I contact water that contains blue-green algal toxins?

- If you have swam in or contacted water containing blue-green algal toxins, as a precaution, you should remove any affected clothing and shower with clean water as soon as possible.
- Persons experiencing symptoms or health effects should seek medical advice.

How harmful are blue-green algal toxins?

- Very few incidents of human poisoning have been reported. People don't usually drink water containing blue-green algae because of the scum and smell; however, water containing blue- green algae could accidentally be swallowed during recreational activities (e.g., swimming).
- Extended exposure to low levels of toxins can potentially have long-term or chronic effects in humans.
- Children are at greater risk than adults of developing serious liver damage should they ingest high levels of toxins, mostly because of their comparatively lower body weight.

Why are Public Health Advisories issued for blue-green algae blooms in recreational waters?

- Since some blue-green algae species can produce toxins that are harmful to humans, blue- green algae blooms are considered a public health concern and advisories are issued.
- Advisories are issued to notify local recreational water users of the potential for blue-green algae blooms. This is so they are aware of the potential risk and to make informed decisions on water use in the affected area.
- Since water conditions can change, advisories also are a good reminder to check the water for algae blooms and scum (which pose the most risk) before entering.

How long will an Advisory remain in effect?

- Once an advisory has been posted, it will remain in effect for the rest of the recreational water season. Sampling will not be undertaken to rescind an advisory before the end of the recreational water season due to the unpredictability of blue-green algae blooms.
- Water bodies that have an established history of blue-green algae blooms will have an advisory posted at the start of the recreational water season (late spring/early summer).

Is there blue-green algae research taking place in New Brunswick?

- The Government of New Brunswick (GNB) supports various blue-green algae (cyanobacteria) research projects through the Environmental Trust Fund. These research projects are taking place within the Saint John River as well as in lakes across the province. The projects will help us to better understand the distribution of blue-green algae and their toxins in our recreational waters.
- These research projects use various methods or tools to assess whether cyanobacteria and/or their toxins are present in the water. These methods/ tools include:
 - Identification of cyanobacteria and counting of cyanobacteria cells using microscopes.
 - Testing the water for toxins, such as microcystins.
 - Testing the water for the presence of cyanobacteria genes responsible for producing the certain cyanobacteria toxins. The presence of the gene (a unit of DNA) responsible for producing toxins may or may not mean that that toxins are present.

What are other effects of algae blooms?

- Excessive levels of blue-green algae toxins can be extremely harmful to fish and wildlife. As algae die, they decompose using up the dissolved oxygen in the lake. This reduces the amount of dissolved oxygen available to fish and other aquatic life.
- Even seemingly benign algae blooms can impair the visual enjoyment of a lake, cause unpleasant odors, and may interfere with the safe use of the lake for diving and swimming by obscuring potential dangers that may lie beneath the water's surface.
- Blooms may also foul water supply intakes or render the water not suitable for uses by cottagers, industry, municipalities or others.

What can I do?

- Although nutrients are naturally occurring in a lake and are needed for plant and animal life, too much phosphorus and nitrogen can cause problems by offsetting the natural balance of the lake.
- These problems arise or are compounded when storm water, agricultural runoff, industrial and wastewater effluent, faulty septic systems and lawn fertilizers find their way into the lake.
- We can all play a key role in the prevention of algae blooms in lakes through helping to keep excess nutrients from entering the water. This can be done by:
 - Not removing shoreline vegetation and promoting the growth of natural plant species;
 - Not using fertilizers or herbicides, especially near water;
 - Ensuring your septic tank and field are well maintained and located far from the shore; and
 - Using only phosphate-free household and personal cleaning products.