

Filamentous Algae

What is the Issue?

Although not toxic, filamentous algae are regarded as a physical nuisance. They can plug water intake lines, entangle boat props and anchor lines, and affect the enjoyment of fishing, paddling, and swimming. When they die their decomposition can give off a bad odour.

Living plants produce oxygen, but the process of decomposition requires oxygen. The decomposition of excessive amounts of dead algae in the water can cause oxygen depletion, leading to fish kills in the summer.

Summer Village residents often complain when large mats of filamentous algae are present in the lake. Councillors should become aware of the biology of these plants, what they require for growth, and the best ways to minimize their numbers.



Photo credit: Richard Casey

Filamentous Green Algal Bloom

Background

Algae are a very diverse group of organisms. They form the base of most aquatic food chains and are very important to a healthy lake ecosystem. Green algae are common in lakes, but become a problem when certain types form stringy, slimy-feeling masses. Their numbers greatly increase when there are high levels of nutrients in the water. In nutrient-rich waters, filamentous algae may produce severe surface accumulations, or blooms, throughout the open water season.

What are Filamentous Algae?

Filamentous (green) algae, often called “moss” or “pond scum,” are characterized by long, hair-like strands, or filaments, of attached cells (often reaching two metres in length). Filamentous green algae respond to dissolved nutrients, especially nitrogen, with increased growth and reproduction.

Algae strands can form dense floating mats called blooms. This occurs when large subsurface masses become buoyant with oxygen generated by their own photosynthesis. As they grow, the algae give off oxygen that becomes trapped in the mat of strands. This gives the mat buoyancy and causes it to rise to the surface. Filamentous algae blooms generally occur near shore, in open bays, and at other offshore areas protected from wind and wave action.

Problems Caused by Filamentous Algae

Fortunately, filamentous green algae are not toxic, but they are a physical annoyance. Filamentous blooms are visually unattractive, produce unpleasant odours during their decay, and can deplete dissolved oxygen in the water, contributing to fish kills.

The Affect of Human Activities

The majority of Alberta's lakes are eutrophic, meaning they are naturally nutrient rich. Therefore, our lakes naturally support some degree of filamentous algae growth. Severe blooms form when excessive nutrients, especially nitrogen, enter the water. This is often the result of human activities within the watershed including municipal wastewater discharges, residential use of fertilizers, and agricultural practices.



Photo credit: Dave Trew

Filamentous Green Algal Bloom

What Should I Do?

Short-term Solutions

Mats of filamentous algae that wash up on shorelines can be removed. They must be taken well away from the shoreline. They can be composted and applied to gardens etc., as a natural alternative to chemical fertilizer.

Long-term Solutions

Alberta's eutrophic lakes are very nutrient rich and prone to algae growth. The only real solution to decreasing algae at a lake is to reduce the amount of nutrients in the lake. In particular, limiting human activities that add nutrients to the water.

For more information on management strategies that can help reduce nutrient inputs into the lake, see the **Fertilizer Use** chapter of this guide.

Who Can I Contact?

- For more information on filamentous algae, contact your local Alberta Environment office.
- For more information on nutrients in the water, contact your local office of Alberta Agriculture, Food and Rural Development.

Are There Any Resources Available?

- The Soil and Water Conservation Society of Metro Halifax, for information on phytoplankton in fresh-water lakes at:
<http://www.lakes.chebucto.org/phyto.html#Green>
- **Managing Phosphorus to Protect Water Quality** from Alberta Agriculture at:
[http://www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/agdex929](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex929)
- **Managing Nitrogen to Protect Water Quality** from Alberta Agriculture at:
[http://www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/agdex928](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex928)
- **A Primer on Water Quality: Pollutant Pathways** from Alberta Agriculture at:
[http://www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/wat3350](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/wat3350)