

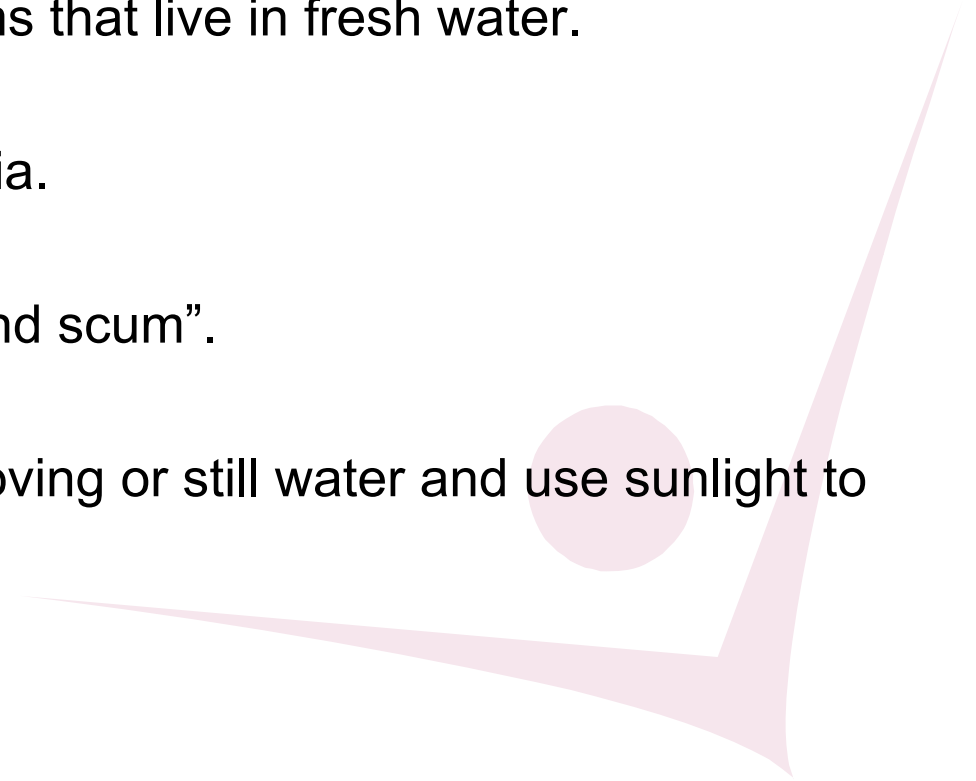
Blue-Green Algae in Sudbury and Districts

Ed Gardner
Al MacDougall
Environmental Health Division
Sudbury & District Health Unit
February 18, 2009

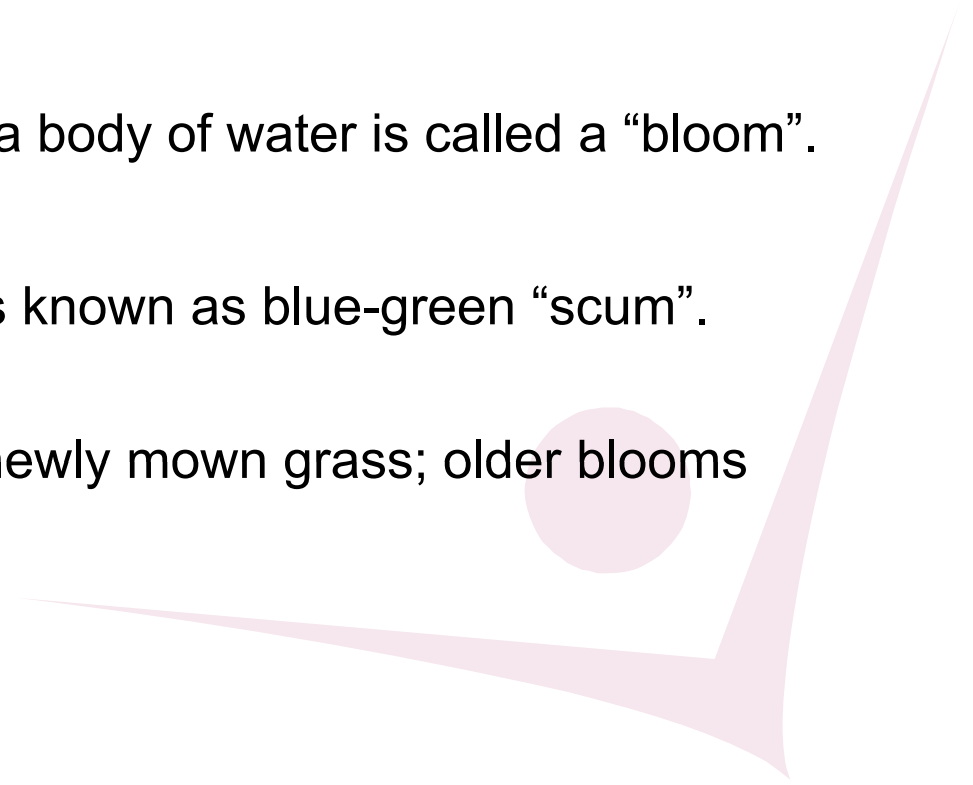


What Are Blue-Green Algae?

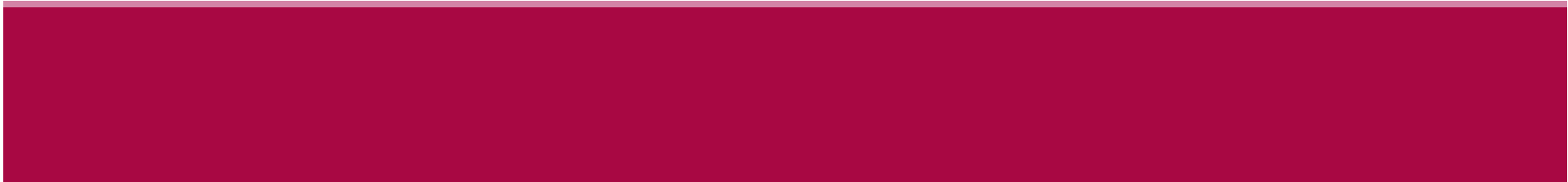
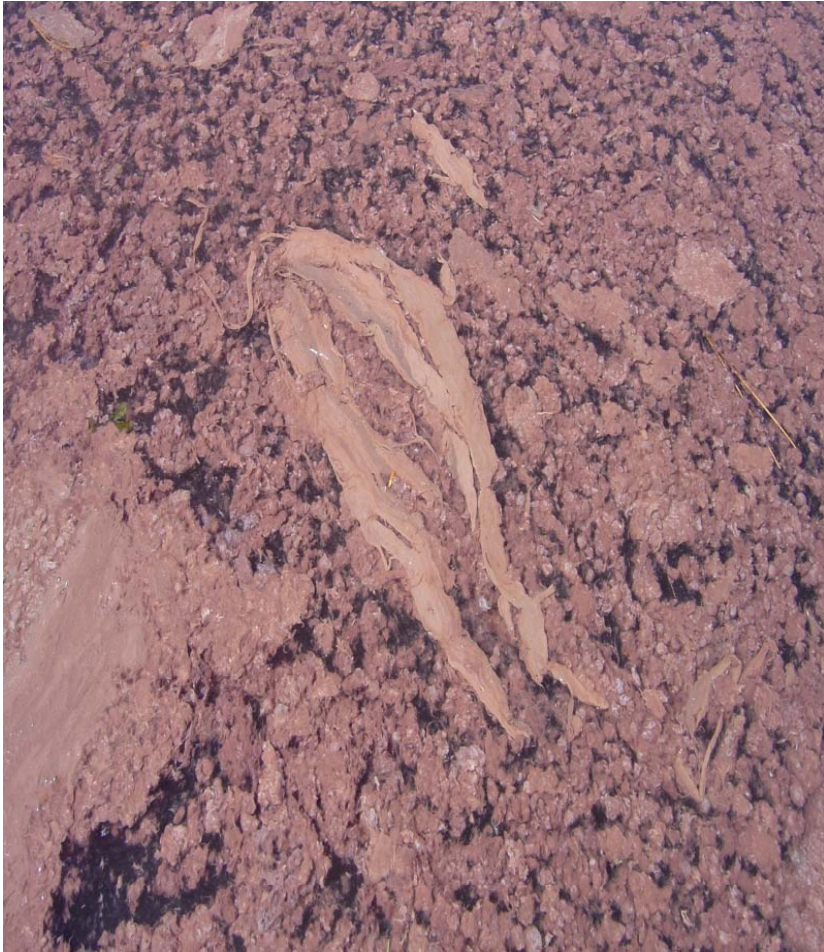
- Primitive microscopic organisms that live in fresh water.
- Scientific name is cyanobacteria.
- More commonly known as “pond scum”.
- Live in shallow, warm, slow-moving or still water and use sunlight to create food and support life.



What Is an Algae Bloom/Scum?

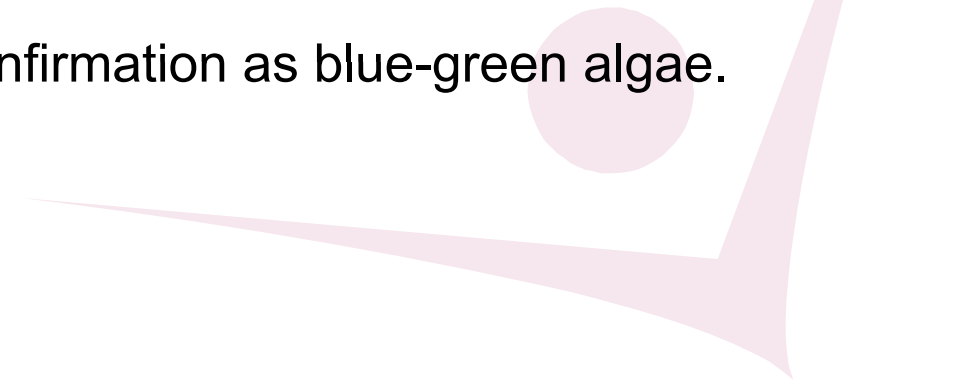
- A mass of blue-green algae in a body of water is called a “bloom”.
 - Concentration on the surface is known as blue-green “scum”.
 - Fresh blooms often smell like newly mown grass; older blooms smell like rotting garbage.
- 



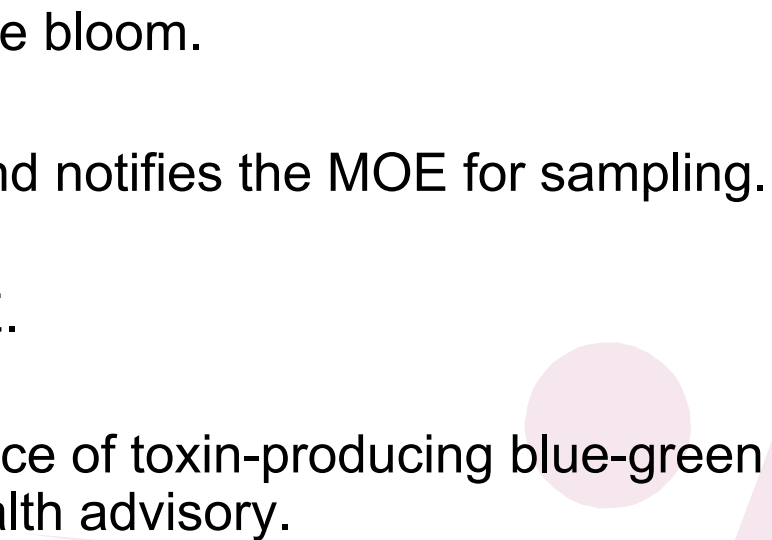


Ministry of the Environment Role

- The Ministry of the Environment (MOE) Laboratory is the only laboratory in Ontario capable of testing for blue-green algae toxins.
- The MOE :
 - Receives notification of a possible bloom and investigates to confirm its presence.
 - Samples the bloom for confirmation as blue-green algae.



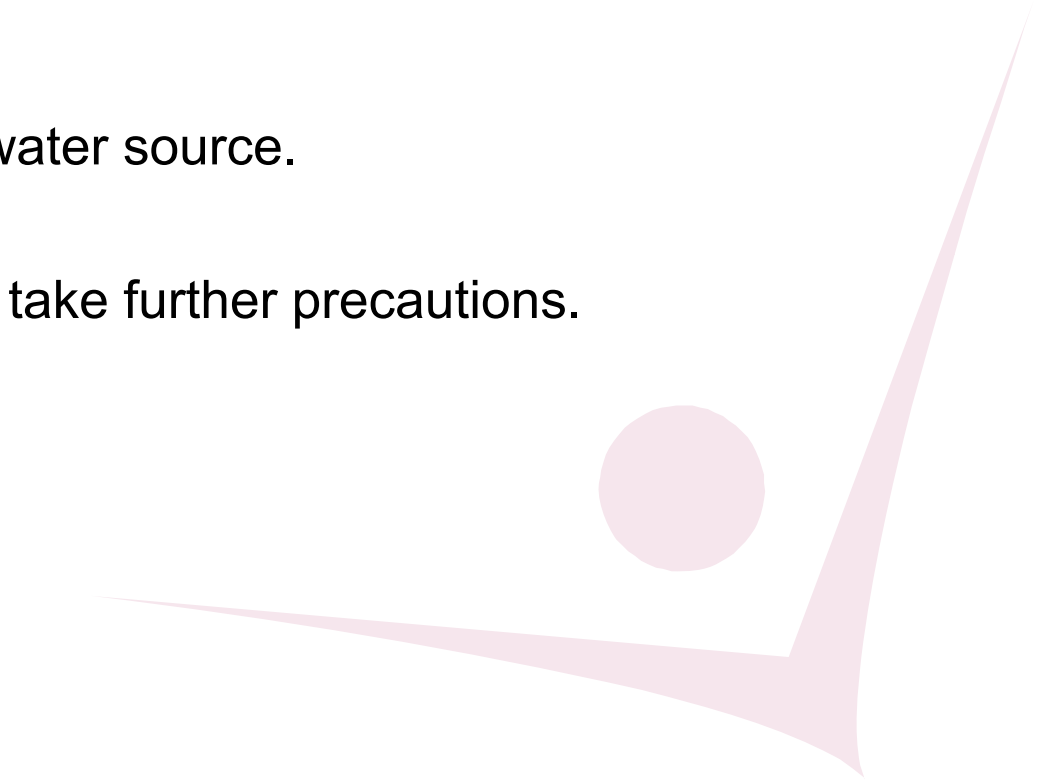
Health Unit Role

- Receives notification of possible bloom.
 - Confirms presence of bloom and notifies the MOE for sampling.
 - Receives lab results from MOE.
 - If MOE testing confirms presence of toxin-producing blue-green algae, Health Unit issues a health advisory.
- 



Health Unit Recommendations

- Seek an alternate drinking water source.
- During visible algal blooms, take further precautions.

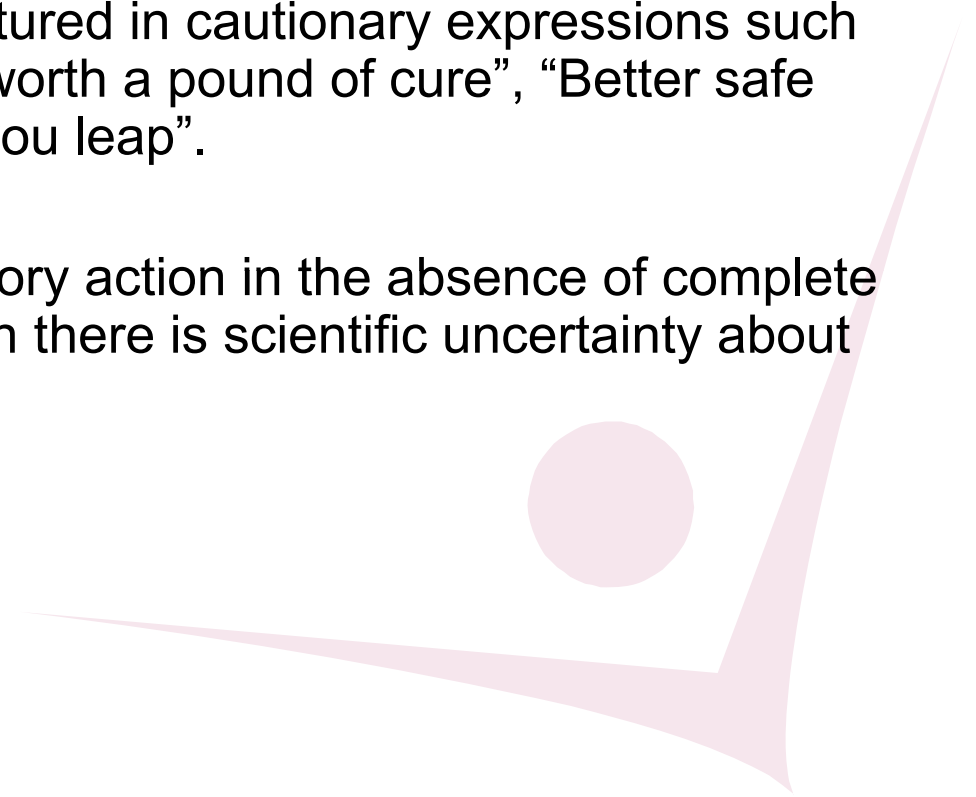


Exposure Routes

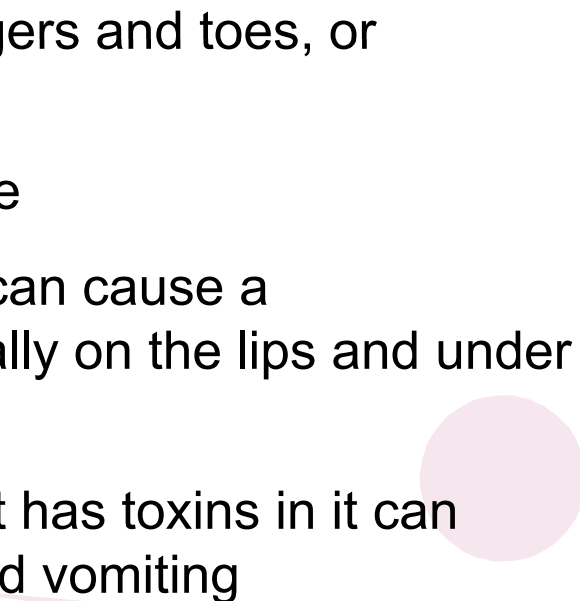
- Drinking Water
- Fish Consumption:
 - Do not eat the liver, kidneys and other organs of fish caught in the lake.
- Recreational Exposure:
 - Direct contact of exposed parts of the body, including sensitive areas such as the ears, eyes, mouth and throat, and the areas covered by a bathing suit (which may collect cell material)
 - Accidental uptake of water containing cells by swallowing
 - Uptake of water containing cells by inhalation

Precautionary Principle

- Essence of the principle is captured in cautionary expressions such as “An ounce of prevention is worth a pound of cure”, “Better safe than sorry”, and “Look before you leap”.
- The concept of taking anticipatory action in the absence of complete proof of harm, particularly when there is scientific uncertainty about causal links.



Cyanotoxins

- Neurotoxins: numb lips, tingling fingers and toes, or dizziness
 - Hepatotoxins: can cause liver failure
 - Dermatotoxins: getting it on the skin can cause a rash, hives, or skin blisters (especially on the lips and under swimsuits)
 - Irritant toxins: swallowing water that has toxins in it can cause abdominal pain, diarrhea, and vomiting
- 

Hepatotoxins

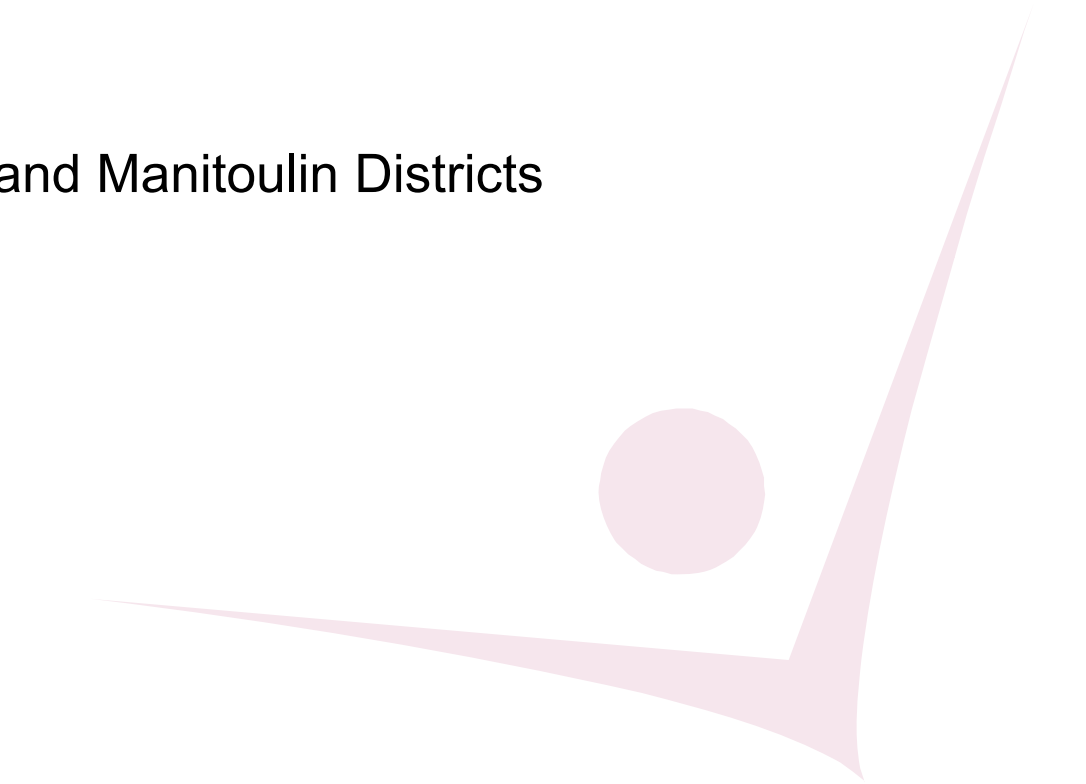
- Only one variant, microcystin-LR has its chemical and toxicological properties fully described and a provisional guideline for microcystins in drinking water was adopted by World Health Organization and several countries.

Ontario Standard

- The current Ontario Drinking Water Quality Standard for microcystin-LR is a concentration of 0.0015 mg/L (which is the same as 1.5 µg/L or 1.5 parts per billion).

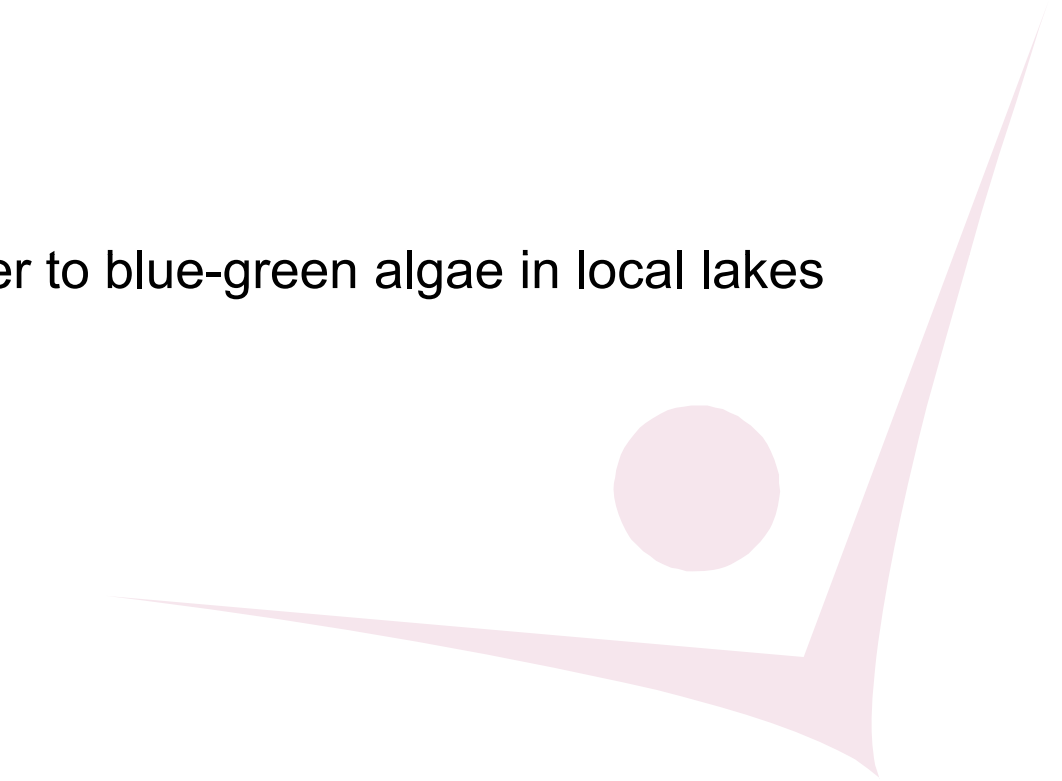
Distribution of Blue-Green Algae

- Worldwide
- Found throughout Sudbury and Manitoulin Districts
 - Chapleau
 - Manitoulin Island
 - Sudbury East
 - City of Greater Sudbury



Distribution of Blue-Green Algae

- Not isolated incidents
- Studies from the 1970s refer to blue-green algae in local lakes



Blue-Green Algae

Sudbury Area Lakes and Rivers

- * French River
- * Nepewassi Lake
- * Lake Panache
- * Ramsey Lake
- * Windy Lake
- * McFarlane Lake

- * Grant Lake
- * Nelson Lake
- * Ice Lake
- * Clear Lake
- * Hannah Lake

SDHU Advisories on Blue-Green

2008

13 advisories issued

2007

3 advisories issued

2006

2 advisories issued

Visible Signs of Potential Blue-Green Algal Bloom



Shore build-up



Scum layer



Discoloration



Paint spill appearance

This presentation was prepared by staff at the Sudbury & District Health Unit.

This resource may be reproduced, for educational purposes, on the condition that full credit is given to the Sudbury & District Health Unit.

This resource may not be reproduced or used for revenue generation purposes.

© Sudbury & District Health Unit, 2009

