Ministry of Environment, Conservation and Parks

Responding to Reports of Harmful Algal Blooms

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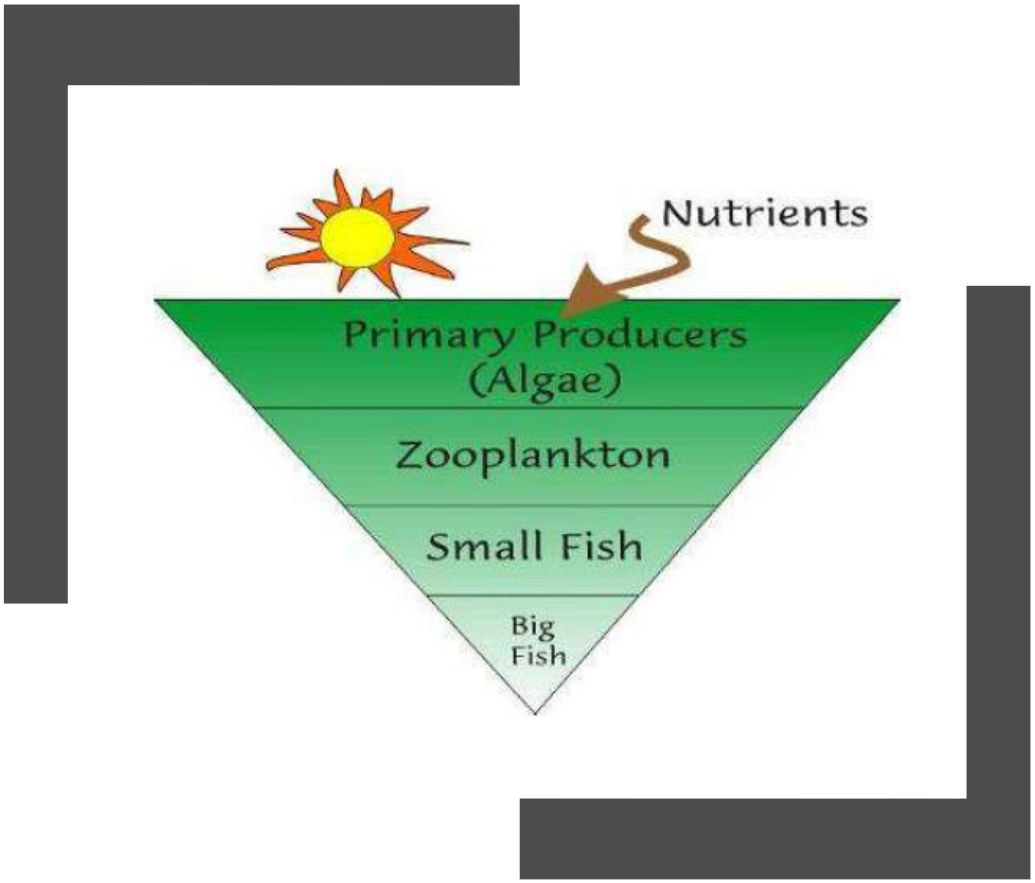
Ontario

Brief Outline

- Algae Facts
- Reporting Algae Blooms
- Strategies to protect the health of the lake and watershed

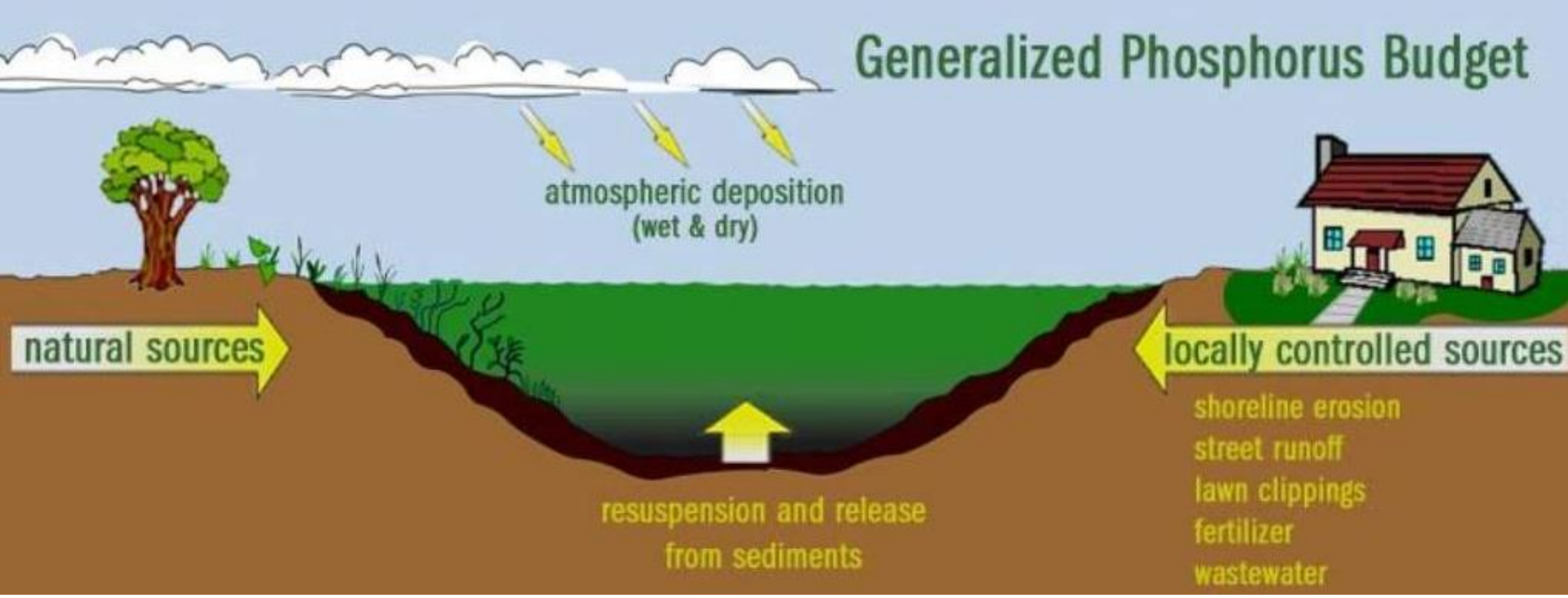
Algae 101



- Algae are important and critical for ecosystem health
- Small, mostly microscopic plants
- Live in virtually all water bodies
- Many different habitats
- Are the base of the food chain
- Converts nutrients to organic matter
- Influences our atmosphere by producing oxygen

Algal Blooms

- A “bloom” is the excessive growth of one or more species of algae
- Result of increased nutrients into lake (Phosphorus and Nitrogen – Natural or Human Activity)
- Bloom forming conditions include:
  - sufficiently high levels of nutrients in the water or sediments
  - calm weather
  - strong sunlight
  - high air and water temperatures
- These conditions usually occur from summer to fall
- After a bloom, algae cells can die and decompose
- Decomposition lowers dissolved oxygen levels and could kill fish



Nutrient Loadings

- Human and natural activities can increase phosphorus loadings into a lake
- Human sources are from septic fields, grey water (soap/detergents), stormwater runoff, fertilizers, shoreline soil erosion, dust, animal waste, construction activities, industry activities, etc.
- Natural sources are from vegetation decay, soil erosion, wildlife, etc.

Why are Harmful Algal Blooms (HABs) a concern?

Human Health Issues – "Blue-Green Algae"

- Algal toxins can impact humans (drinking water, skin)
- Toxins can also impact pets, livestock, waterfowl and other animals

Drinking Water & Industrial Water Use Issues

- Blooms can impact maintenance or treatment for water takings
- Taste and odour can affect public perception of drinking water safety
- Small systems with modest treatment facilities may not be able to effectively treat water during blooms

Aesthetic Issues

- Blooms can produce unpleasant tastes and odours
- Decomposing algae can cause shoreline fouling
- Blooms may impact recreational activities and property values

Algal groups that commonly form blooms

Green Algae

- Do not produce toxins
- Can cause beach fouling and odour issues
- May be associated with bacteria

Types: Ulothrix, Scenedesmus, Oocystis, Cladophora and Spirogyra

Algal groups that commonly form blooms

Golden-Brown Algae

- Are generally found in lakes that have low nutrients
- Can cause taste and odour problems
- May be associated with bacteria

Types : Uroglena, Dinobryon, Synura, Mallomonas and Chrysophaerella

Cyanobacteria ("Blue-Green Algae")

- Photosynthetic bacteria; not actually algae
- Many species are relatively harmless
- Typical appearance is bluish-green, green pea soup, turquoise paint, brown
- When it is very dense, algae may form clumps or mats
- Some colonial species appear as free-floating colonies in the water column, or like grapes on the sediment
- Can cause taste and odour problems
- Some species produce toxins under the right conditions that can impair water quality and may affect the health of humans and animals

Cyanobacteria ("Blue-Green Algae")

Oscillatoriales

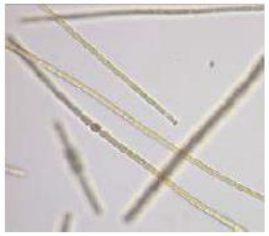
- *Oscillatoria, Planktothrix*

Microcystis

Gloeotrichia

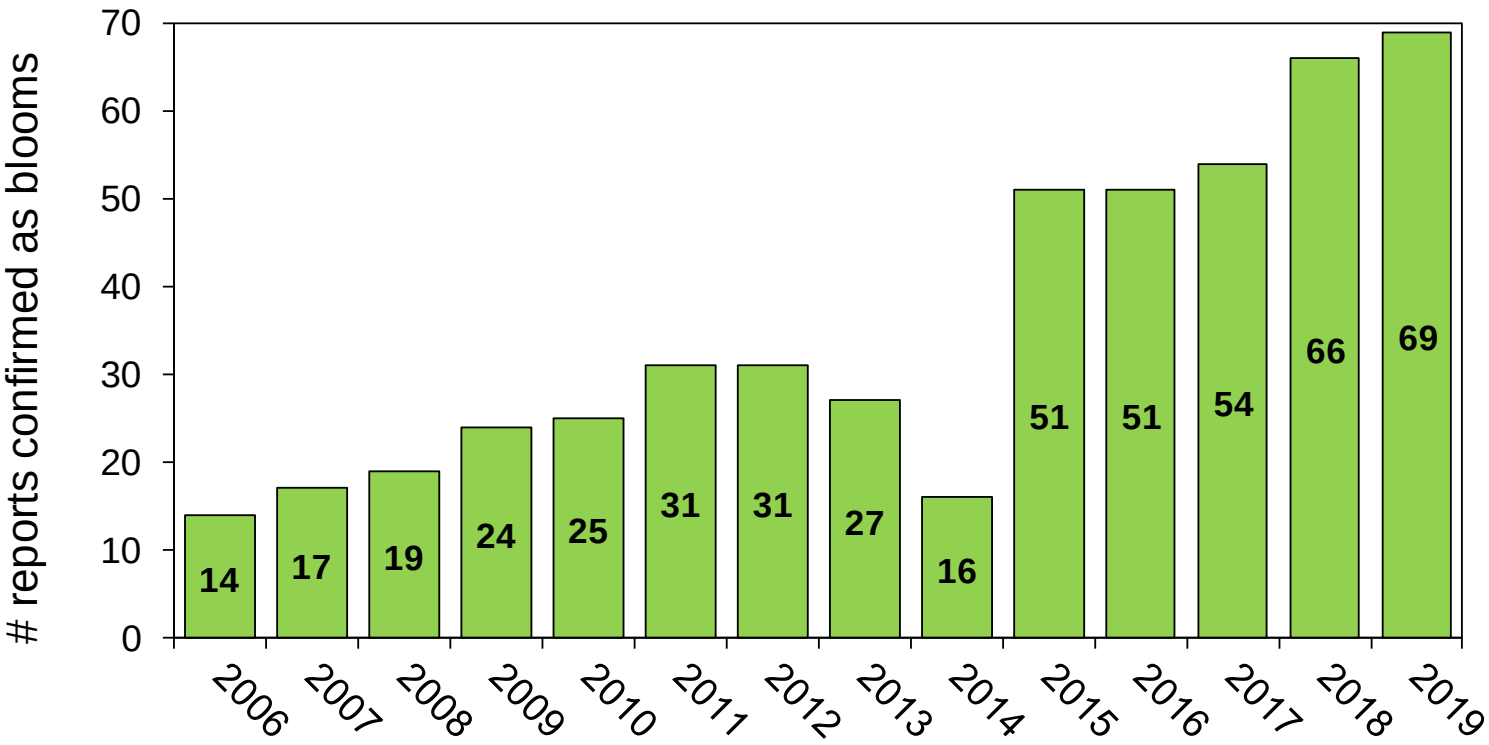
- Many species can produce toxins that can be released to the surrounding water when the algae cell is damaged or dies
- Toxins can affect the health of humans, livestock and pets
- Although there are relatively few reports of human illness, these toxins can induce symptoms if ingested such as fever, diarrhea, abdominal pain, nausea and vomiting
- External contact during recreational activities, such as swimming may result in itchy, irritated eyes and skin

Aphanizomenon



Anabaena

Blue-green algae (cyanobacteria) bloom reports



The number of reported blooms confirmed each year depends on a number of variables (e.g., weather, nutrient loading, public interest and awareness).

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Algal Bloom Response

- The Ministry has a comprehensive procedure in place for responding to complaints of algal blooms
- The response to reports of blooms involves communication and collaboration among the various stakeholders
- **MECP's role is to gather, assess and provide basic scientific & technical information**
- The local Health Unit makes decisions as to whether notification of the public is required, and what actions should be taken

Reporting Algal Blooms

If you suspect a blue-green algal bloom is present:

- Assume toxins are present
- Avoid using, drinking, bathing or swimming in the water
- Restrict pet and livestock access to the water
- Contact your local health unit for information on health risks associated with blue-green algal blooms.

If you suspect a blue-green algal bloom, call the MECP's

- Spills Action Centre (SAC)
- 416-325-3000 or 1-800-268-6060
- TTY: 1-855-889-5775

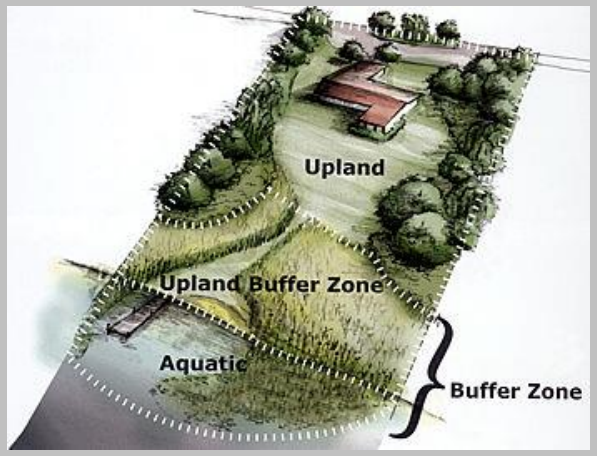
Protection of Water Quality

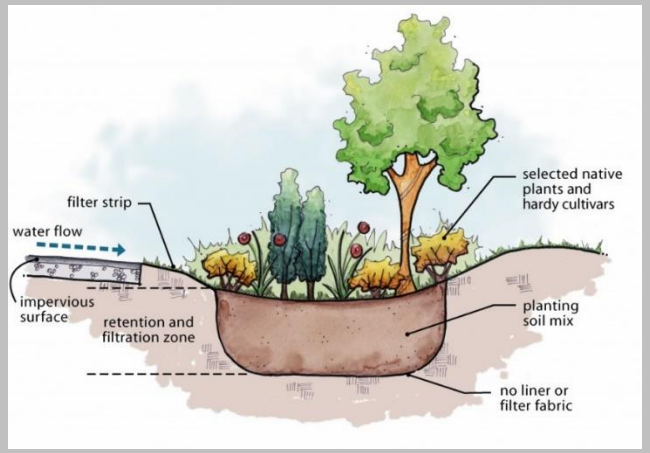
&

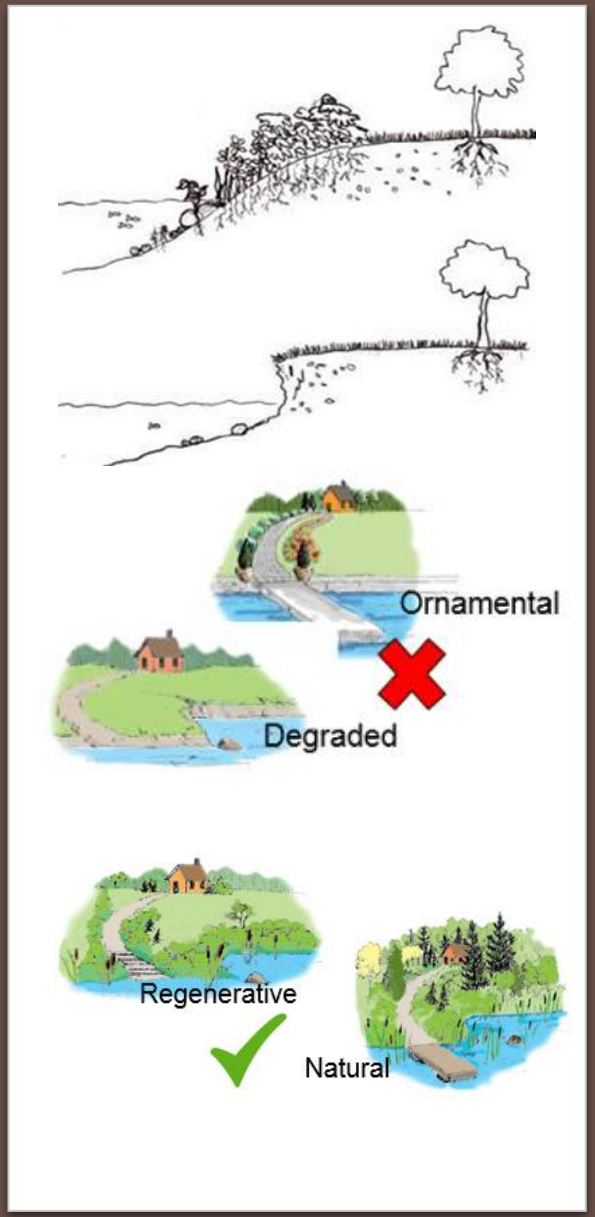
Prevention of Algae Growth

Strategies to Minimize Impacts to the Lake

- Maintain a minimum no-development setback distance from the lake of 30m (including the setback for sewage systems and wet saunas)
- Maintain or re-establish a minimum 3m wide, natural vegetative shoreline to buffer runoff to the lake that helps capture nutrient loadings and protect fish habitat and other species
- Reduce lot grading and limit the creation of impervious surfaces towards the lake
  - Roads, parking, roofs, patios, etc.
  - Create areas that encourage infiltration (e.g. rain gardens, infiltration trenches instead of gutters, grassed swales, vegetated filter strips







Strategies to Minimize Impacts to the Lake

- Minimize water use.
- Do not use fertilizers or pesticides on lawns and gardens.
- Maintain natural vegetation as ground cover or shrubs instead of a lawn. This will capture nutrient loadings to the lake and minimize runoff and erosion of shorelines.

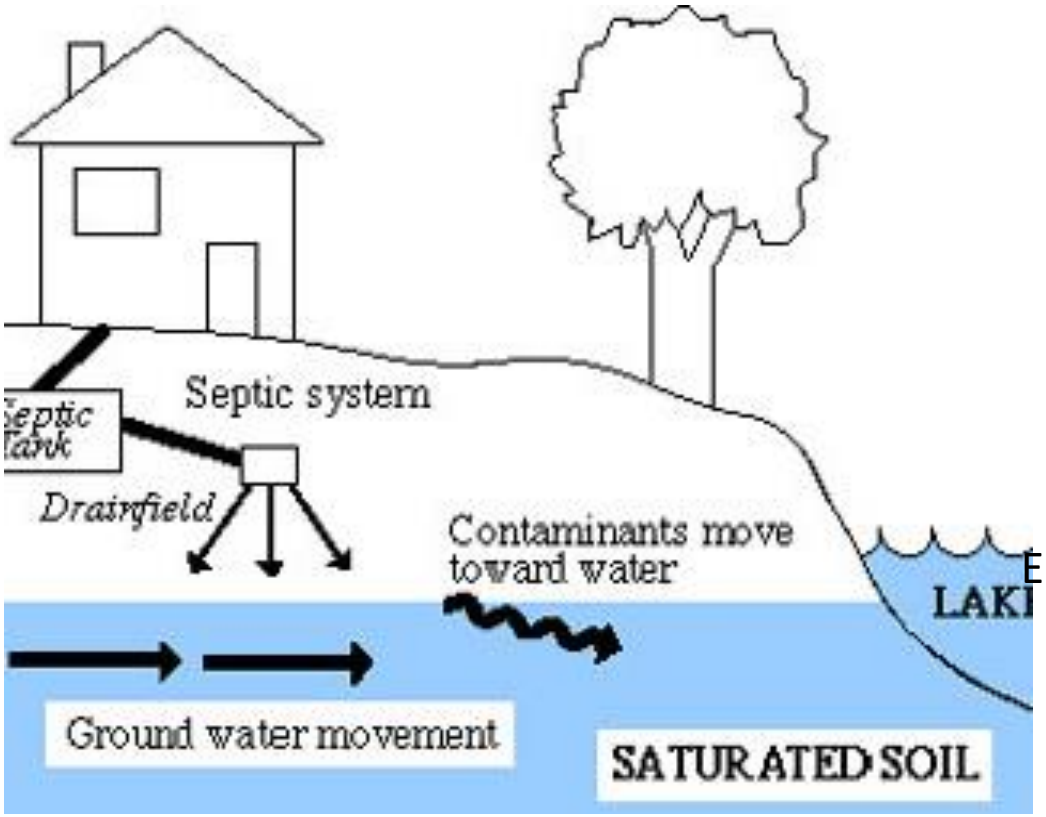
Strategies to Minimize Impacts to the Lake

Septic Systems

Maintain and protect your septic system:

- Pump your tank regularly
- Inspect septic field regularly
- Be mindful of what enters your septic system (i.e.: no food, compost, bleach, harsh cleansers, paints, solvents, pesticides, or toxic chemicals)
- Conserve water
- Keep trees, shrubs, and heavy equipment away from field

Absolutely NO sewage/grey water discharges to the lake.



Strategies to Minimize Impacts to the Lake Washing and Bathing

- Bathe on land, far away from the shore; adding suds directly to the water, even if the soaps are biodegradable, can kill off wildlife species and create algae blooms

- Use phosphate-free, chlorine-free and biodegradable soap, shampoo, household cleaning products and detergents

Strategies to Minimize Impacts to the Lake Boating

Prevent Hazardous Spills

- Maintain engine and inspect fuel lines, clamps, and filters regularly
- Fuel detachable tanks away from the lake
- Recycle spent fuel and oil at a hazardous waste facility

Clean your boat far from shore when leaving the water

Reduce wakes near shore to help prevent erosion

Remember every activity over time by multiple users has impacts to the lake. Therefore, we each play a key role in protecting the lake for continued use and enjoyment.

Questions?