



Essex Region
Conservation
Authority



Phosphorus Frequently Asked Questions (FAQ)

What is phosphorus?

Phosphorus (P) is an element important for the growth of plants; it is a plant nutrient. It can be found in plants and animals, and attached to soil. It can also be found in water ('dissolved' or plant available P) as well as attached to the sediments in water ('particulate' or 'organically bound' P).

How does it cause the growth of algae?

Phosphorus greatly influences the growth of algae blooms. When certain conditions are present, such as warm weather, low winds and high levels of nutrients (in specific, plant available P) in the water, algae populations can very quickly increase to form a large mass called an algae bloom. The algae bloom can cause the water to have a foul odor and pea-soup colored foam, scum or mat appearance. See the Essex Region Conservation Authority FAQ on blue green algae for more information.

What are the sources of phosphorus?

Phosphorus comes from both 'point' sources (specific location) and 'non point' sources (various areas). An example of a 'point' source is a sewage treatment plant, while an example of a 'non point' source is cropland runoff due to rain. Due to water quality improvement measures undertaken from the 1960s after Lake Erie was declared 'dead', point sources of P were reduced significantly but not entirely eliminated. In the past few years, there has been a significant reduction in the amount of P in household dishwashing and laundry detergents in Canada. However, even today, P is still commonly found in residential lawn fertilizers, agricultural fertilizers, sewage, and industrial and commercial detergents.

Discover

Develop greater scientific knowledge of our region in order to adapt to climate change and respond to its impact on the safety, health, and economic well-being of our residents.

ERCA has developed a vast amount of scientific knowledge on our region's natural and cultural landscapes, shorelines, and watersheds. We know from our experience that our region is impacted by, habitat loss, coastal processes, and changing land use patterns. The ability of the region to adapt to changing climate conditions, unpredictable weather and associated flood threats directly impacts the safety, security and economic well-being of our residents.



How does phosphorus get into our streams and lakes?

Plant nutrients are carried to water bodies through rain runoff or when snow melts, and become a source of food for algae and other plants. Phosphorus can enter the water through 'sewage bypass', which occurs when there is a heavy rain event beyond a sewage treatment plant's capacity, resulting in the plant releasing untreated or partially treated sewage. Similarly, P can enter the water through 'combined sewer overflows' where both untreated sewage and storm water combine during high rain events. The combined untreated sewage and storm water is discharged to a stream or lake. P can also enter water from agricultural fields after manure or fertilizer is applied. A rain event carries some of this manure or fertilizer from the surface of the field and from tile drains to ditches which then lead to streams and lakes. Other P sources include spills from nutrient storage facilities and partially treated or untreated sewage from a faulty septic tank.

How much is too much phosphorus?

The Provincial Water Quality Objective (PWQO) for phosphorus is 0.03 mg/L for streams and rivers. Through ERCA's surface water monitoring program and a partnership with the Ministry of Environment, close to 20 water quality sites across the watershed are sampled monthly April to November each year. In 2011, the phosphorus levels ranged between 1 to 130 times the PWQO, with the highest levels in those streams discharging to Lake Erie. This includes rain event sampling results, during which the levels of P increase due to transport of P from the land into the water.

What can be done to reduce/eliminate phosphorus pollution?

There are several best management practices that can be conducted in order to reduce or eliminate phosphorus pollution to our streams and lakes.

Residents in urban and rural areas can:

- Test your lawns for soil phosphorus and use P-reduced or P-free lawn fertilizers
- Continue to use P-free dishwashing and laundry detergents
- Inspect and maintain your septic tank regularly
- Disconnect your downspout from the storm sewer and redirect flow to rain barrels or rain gardens
- Naturalize your shoreline

Agricultural landowners can:

- Reduce fertilizer use by the 4Rs: by using the right product, at the right rate, during the right time and in the right place
- Establish nutrient management plans to manage nutrient storage and application
- Test soil for P to determine fertilizer amount needed
- Improve health of the soil by planting cover crops, adding organic matter and crop rotation
- Prevent livestock from entering water by fencing
- Maintain vegetated filter strips to reduce surface field runoff
- Create wetlands to absorb nutrients from surface and tile drain runoff
- Tile drainage management by using controlled drain structures

Resources/Links:

Agriculture and Agri-Food Canada, Ontario Ministry of Agriculture, Food and Rural Affairs, and Ontario Federation of Agriculture. A Phosphorus Primer. Best Management Practices for Reducing Phosphorus from Agricultural Sources. 2011.

Ministry of Environment

http://www.ene.gov.on.ca/stdprodconsume/groups/lr/@ene/@resources/documents/resource/std01_079455.pdf

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