



Evaluate Solutions

Background Knowledge:

You have:


- a) Explored the impacts of algal blooms in Lake Erie from both sides of the Canada-USA border.
- b) Looked at some of the sources that have contributed to the nutrient loading that is amplifying this issue.
- c) Been introduced to 4RNutrient stewardship and its goal to promote sustainable farming that is better for the environment.

Analyze and Evaluate Solutions:

You will now look at what people have been doing about this situation.

1. Review the **List of Solutions**. Solutions listed include legislation, conservation group efforts and agricultural advocacy groups.
2. Choose one of the solutions listed and conduct an evaluation study. Begin by researching and gathering information about the solution.
3. Describe/summarize the solution and include the location, action being taken and consequences.
4. Discuss who is responsible for initiating the solution and who is responsible for carrying it out.
5. State the claim or predicted outcome of the solution *i.e.*, *40% reduction in phosphates*. Identify the evidence for making the claim. If data is used to support the claim, identify the kind of data (qualitative/quantitative) and how it was collected. Include in your evaluation study the data used to support this claim.
6. Provide reasoning through science for the viability of this solution. Consider and address the following:
 - a) What is the science behind this solution?
 - b) Why will it work to reduce HABs based on your new knowledge about them?
 - c) Is it scalable, meaning can it be used in many places or across a larger area?
 - d) What are the pros and cons of this solution?
 - e) Who benefits from this solution?
 - f) Who will have to change their behaviour as a result of this solution?
7. Identify the signing date or the last update of your chosen solution to evaluate. As time passes and new research comes to light, are there components of the solution that need to be kept/enhanced/changed or new areas that need to be addressed? Identify them and make science supported recommendations.

Possible Solutions to Evaluate:

1. In 2012, Canada and the United States signed the amended **Great Lakes Water Quality Agreement, 2012 (GLWQA)**, which commits the two countries to update phosphorus loading targets and develop strategies and domestic action plans for achieving specific nearshore and open-water ecosystem objectives — starting with Lake Erie. <https://www.canada.ca/en/environment-climate-change/services/great-lakes-protection/2012-water-quality-agreement.html>
2. **Canada-Lake Ontario Action Plan:** A plan between Canada and Ontario with 120 actions to reduce amount of phosphorous entering Lake Erie.

 - https://www.ontario.ca/page/canada-ontario-lake-erie-action-plan?utm_source=newsroom&utm_medium=email&utm_campaign=%2Fen%2Frelease%2F1000148%2Fgovernments-improving-lake-erie-water-quality&utm_term=media
 - <https://www.canada.ca/en/environment-climate-change/services/great-lakes-protection/action-plan-reduce-phosphorus-lake-erie.html>
3. **Ontario's Great Lakes Strategy:** A strategy that sets a vision, goals and priorities to help restore, protect and conserve the Great Lakes.
 - <https://www.ontario.ca/page/ontarios-great-lakes-strategy>
4. **Ontario Clean Water Act (2006):**
The goal of the *Clean Water Act* is to protect sources of drinking water – lakes, rivers and underground aquifers – by identifying and managing risks to the quality and quantity of municipal sources of drinking water. Local source protection committees were established.
 - <https://www.ontario.ca/laws/statute/06c22>
 - <https://www.ontario.ca/page/ontarios-great-lakes-strategy>
5. **Nutrient Management Act (2002):** Ontario established a **Nutrient Management Act, 2002** that helps to match nutrient application to crops' fertility needs and to keep excess nutrients and pathogens out of waterways. Farmers are implementing nutrient management requirements under this act.
 - <https://www.ontario.ca/laws/statute/02n04>
6. **Canada-Ontario Environmental Farm Plan (EFP):** Farmers are implementing nutrient management requirements and taking voluntary action through the



Environmental Farm Plan partnership program to improve farm environmental performance.

- <http://www.omafra.gov.on.ca/english/environment/efp/efp.htm>

7. Lake Erie Agriculture Demonstrating Sustainability (LEADS): a program for farmers that supports the implementation of Best Management Practices

- https://www.ontariosoilcrop.org/wp-content/uploads/2018/04/CAP_LEADS_E_web.pdf
- <http://www.omafra.gov.on.ca/english/cap/watershed.htm>
- <https://www.ontariosoilcrop.org/canadian-agricultural-partnership/lake-erie-agriculture-demonstrating-sustainability-leads/>

8. 4R Nutrient Stewardship: A framework that promotes sustainable agriculture that increases crop production, efficiently uses of nutrients and limits effects on local environments.

- <https://nutrientstewardship.org/4rs/>