Nonpoint agricultural release is recognized to be the largest single source of excess nutrients to western Lake Erie. Because phosphorus (P) is the limiting nutrient for algal growth in most freshwater systems, the sources, transformations and effects of excess P were the focus of much of the assessment.

Findings include:

There’s little doubt that nutrients lost from agricultural lands are primarily responsible for elevated nutrient levels and harmful algal blooms in western Lake Erie. For the western Lake Erie basin, estimated commercial fertilizer application was 72% of total phosphorus while manure generation accounted for 28%. However, there were large differences between the US (roughly 80% from fertilizer and 20% from manure) and Canada (where the two sources were roughly equal).

SELECTED RECOMMENDATIONS

- Expand efforts to evaluate the effectiveness of agricultural best management practices (BMPs) at the field and watershed scales, including the implications for BMP effectiveness of no-till agriculture leading to phosphorus accumulation at the soil surface and of phosphorus transport to and through drain tiles.

- Agencies should obtain commercial fertilizer sales and application data at county and finer scales to allow for improved understanding of this important source. Agencies should evaluate approaches to making these data broadly available to better inform models of fertilizer runoff and improve understanding of the effectiveness of farm practices.

- Continue emerging research on phosphorus source monitoring, including stable isotope and organic phosphorus fingerprinting research as part of source attribution efforts.

"Lake Erie has benefitted from bold action in the past and requires similar bold action today to ensure its health and value to the people of the basin into the future."

- Fertilizer Application Patterns and Trends and Their Implications for Water Quality in the Western Lake Erie Basin, page 10