

## Educational Corner—Lake Erie—Submitted by Mindy Koch

Lake Erie is the fourth largest and shallowest of the five Great Lakes with an average depth of 62 feet and a surface area of 9,910 square miles. Historically, with the opening of the Erie Canal, Lake Erie was considered a major transportation route connecting Lake Erie to the Hudson River. It continues to play a significant role for commercial shipping and recreational boating.

Today, Lake Erie faces many environmental concerns that threaten its water quality and ecosystem health. Algal blooms are one of the significant environmental concerns. These blooms are rapid increases in the population of algae. Algae are plant like organisms that live in water. They thrive in warm, nutrient rich conditions, particularly when there is an excess of nitrogen and phosphorus in the water. These nutrients typically come from wastewater treatment plants, agricultural runoff, and urban areas.

When the algae die off, they decompose, consuming oxygen creating dead zones where aquatic organisms cannot survive affecting the entire ecosystem, and potentially producing toxins like microcystins which can contaminate drinking water. An algal bloom can prevent people from fishing, swimming, boating, and visiting the shoreline with annual economic impacts estimated at over \$70 million for the Lake Erie region. In 2014, an algal bloom in Lake Erie led to a major water advisory in Toledo, Ohio.

Michigan's Domestic Action Plan was developed in 2018 by the State to accelerate the state's actions to reduce the amount of phosphorus and other nutrients entering Lake Erie. Michigan's goal is 40% reduction in phosphorus loading into the Western Lake Erie Basin by 2025, compared to a 2008 baseline. The plan focuses on reducing nutrient loading from a variety of sources such as wastewater treatment plants and agriculture practices. The plan also promotes practices including wetland restoration and regenerative agricultural practices.

Since 2015, phosphorus loading from agricultural and municipal sources has been reduced to the Lake Erie watershed by over 3 million pounds per year. According to the Environmental Protection Agency, this is a long way from meeting the 40% reduction target.

This year, the National Oceanic and Atmospheric Administration is forecasting a mild to moderate harmful algal bloom in western Lake Erie.

