

Lake Erie Water Quality Improvement

■ SUMMARY

Removal of soluble P from waterways in Ohio can be achieved using a utility by-product when coal is burned to produce electricity.

■ SITUATION

The Great Lakes contains 20 percent of all the freshwater on the Earth's surface and Lake Erie is the most productive, most exploited and possibly the most impacted of the Great Lakes. There have been serious concerns about the accelerated eutrophication of Lake Erie mainly due to the excessive loadings of nutrients, especially nitrogen and phosphorus.

■ RESPONSE

Utilities must scrub sulfur dioxide from gas emissions when high sulfur coal is burned to produce electricity. This produced more than 20 million tons of high quality flue gas desulfurization (FGD) gypsum in 2010. Application of gypsum to soil offers several water quality and crop production benefits. It very effectively decreases the offsite loss of soluble P from fields and prevents P transport to water lakes and streams. In addition, it provides plant nutrients (i.e. Ca and S) for enhancing crop production, increases the efficiency in which crops use fertilizer N, and improves overall soil quality.

■ IMPACT

Tourism associated with Lake Erie provides more than \$7.4 billion annually in direct sales. Lake Erie sport fishing has been estimated to generate hundreds of millions of dollars annually. This work will create a win-win situation in which by-product gypsum from one industry (i.e. the electricity producing industry) is used to protect Lake Erie from phosphorus pollution and preserve the economic activity associated with another important resource. The calcium and sulfur added to soil as gypsum has an addition economic benefit to farmers as a result of increased crop yields.

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