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# Life Cycle/Cost Assessments of Nutrient Removal Technologies in Wastewater Treatment Plants: U.S. Environmental Protection Agency Releases Report

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The United States Environmental Protection Agency (“EPA”) announced the release of a report titled:

*Life Cycle and Cost Assessments of Nutrient Removal Technologies in Wastewater Treatment Plants (“Report”)*

See EPA 832-R-21-006.

The Report was prepared by Eastern Research Group, Inc.

The objective of the Report is described as assessing a series of wastewater treatment system configurations designed to reduce the nutrient content of effluent from municipal wastewater treatment facilities.

The Report states that the:

. . . combination of life cycle assessments (LCA) and life cycle cost analyses (LCCA) provides a full picture of costs, both quantitative and qualitative, for the various wastewater treatment configurations evaluated.

The results of the study are outlined in the Report.

The phrase “nutrient” refers to nitrogen and phosphorus. Excessive nitrogen and phosphorus can stimulate excess growth of algae. This can impair the recreational use of waterbodies and also increase organic matter which (when decomposed) can depress dissolved oxygen concentrations harming aquatic life. Further, excessive nutrients can stimulate nuisance algae which can produce cyanotoxins.

EPA has for a number of years been considering strategies to develop nutrient water quality criteria for various waterbodies.

As noted in the Report, some municipal and industrial wastewater treatment plants can be significant point sources of nutrients in some watersheds. EPA and the states’ efforts to develop water quality criteria for nutrients has and will continue to result in limits that can be challenging for many of the wastewater treatment plants.

The Report states that such potential impacts on wastewater treatment plants can be assessed using holistic, systematic approaches that incorporate:

- Life cycle impact assessments analysis
- Life cycle cost analysis

The two approaches are argued to provide a cradle-to-grave analysis of:

- Environmental impacts
- Environmental benefits
- Economic costs
- Benefits associated with individual products, processes or services throughout their life cycle

Components of the Report include:

- Goal and Scope Definition
- Trace Pollutant Removal Performance Characterization
- Life Cycle Cost Analysis Methodology
- LCA Methodology
- Life Cycle Cost Baseline Results
- Life Cycle Impact Assessment Baseline Results by Treatment Group
- Toxicity LCIA Results
- Summary Baseline Results
- Sensitivity Analysis

A link to the report can be found [here](#).