

Innovative Applications of Peracetic Acid for Wastewater Recycling

The technology has the potential to reduce the impacts of disinfection chemicals on the receiving aquatic systems.

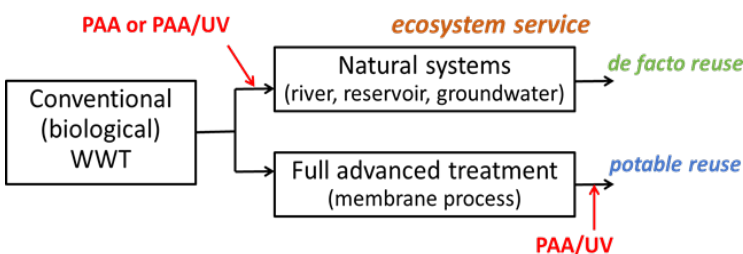
Keywords: disinfection, peracetic acid, wastewater recycling, trace organic contaminants, green chemistry

Process Implementation Readiness



Background and Technology Description

Wastewater recycling is an important strategy to address the growing scarcity of water worldwide. Researchers at University at Buffalo Civil, Structural and Environmental Engineering Department collaborated with Erie County Division of Sewerage Management and the chemical manufacturer PeroxyChem to evaluate use of a novel compound, peracetic acid (PAA), as a more sustainable approach for wastewater disinfection and oxidation.



Compared with the conventional disinfectant chlorine, PAA is less toxic to aquatic organisms and generates much less harmful byproducts. PAA, particularly in combination with ultraviolet light (UV), is effective in removing trace organic contaminants present in wastewater, e.g., from pharmaceutical and personal care products.

This project integrated laboratory experiments and pilot testing to evaluate efficacy of PAA. In laboratory experiments using authentic field samples, it was demonstrated that PAA could achieve pathogen inactivation comparable to chlorine. The pilot testing further determined the dose-dependence of pathogen inactivation achieved by PAA.

Regarding the advanced oxidation performance of UV/PAA, antibiotics and antidepressants were reduced by 20–30% at industrially relevant UV and PAA doses.

The findings of this project have led to other successful funding applications to the National Science Foundation, Great Lakes Research Consortium, and the Bureau of Reclamation.

Technology Benefits and Value

- Provided the first field demonstration of PAA disinfection technology in Western New York
- Advanced the knowledge in PAA disinfection and oxidation for wastewater recycling

Target Customers

Wastewater utilities including conventional treatment plants and advanced treatment plants for wastewater recycling.

Intellectual Property

This technology is currently not under patent.

Opportunity

NYSP2I and University at Buffalo are interested in working with qualified parties for continued technology and product development of this process.



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