



Green Technology Accelerator Center

New York State Pollution Prevention Institute (NYSP2I) helps companies accelerate their introduction of green technologies into the market by identifying emerging market opportunities and providing assistance in a variety of areas.



VigorOx® WWT II Performance Evaluation

Client

The Global Peroxygens Division of FMC Corporation (FMC) operates seven plants around the world that produce hydrogen peroxide, persulfates, and peracetic acid (PAA) based products.

Opportunity Areas

Among FMC's newest products is VigorOx® WWT II, a proprietary mixture containing 15% PAA that is registered with the USEPA for use in wastewater disinfection. PAA is an attractive, active ingredient because it breaks down into acetic acid (vinegar) and water in the environment and has no known toxic or carcinogenic byproducts of disinfection.

Previous evaluations of VigorOx® WWT II conducted by the company demonstrated superior reductions in bacterial count at lower use rates and shorter contact times than gaseous chlorine or bleach¹. Further demonstration of the disinfection performance of VigorOx® WWT II at an operating wastewater treatment plant was desired to support broader acceptance by both the regulatory community and treatment plants across New York State.

Objectives

FMC requested that NYSP2I's Green Technology Accelerator Center evaluate the performance of VigorOx® WWT II at the Potsdam Wastewater Treatment Plant in Potsdam, NY. Because the plant utilized ultraviolet (UV) disinfection, this study location allowed synergies between PAA and UV to be explored. It was anticipated that the use of VigorOx® WWT II would improve the operation of the UV system, for example, by reducing the rate of lamp fouling.

Work Performed

NYSP2I's evaluation was conducted in collaboration with Clarkson University. The VigorOx® WWT II delivery system was retrofitted to the plant's existing disinfection chamber. Reduction of indicator bacteria were measured during full-scale testing at target doses of both PAA and PAA with UV disinfection. A laboratory study was also used to explore the combined effects of UV-PAA treatment.

Results

- During full-scale testing, the VigorOx® WWT II technology exceeded New York State disinfection requirements as permitted for the Potsdam Wastewater Treatment Plant.
- Laboratory analysis demonstrated that the addition of 1.0 mg/L PAA could reduce the UV dose required by as much as 50%.



¹ VigorOx® WWT II, Case Studies. Web. FMC Corporation, 2013. <http://environmental.fmc.com/water-treatment/products/vigorox-wwt-ii>

