

Parsippany-Troy Hills Township Wastewater Treatment Plant needed to eliminate THMs (trihalomethanes) in sewage plant discharge water to adhere to New Jersey Department of Environmental Protection's new regulations and needed to be environmentally considerate. Initial use of chlorine ceased because free chlorine reacts with certain organic compounds in wastewater leading to formation of harmful DBPs (disinfection by-products) including THMs. DBPs in discharged wastewater effluent can contaminate surface waters including rivers, streams, lakes, reservoirs and the ocean. When ammonia is added to protect surface water quality it reacts with free chlorine to create chloramines. Chloramines produce fewer THMs, but this process may increase total nitrogen effluent concentrations. Strict federal, state and local regulations restrict levels of nitrogen, chlorine and ammonia in treated runoff waters to prevent pollution. Parsippany-Troy Hills wanted to test whether BioSafe Systems' PAA chemistry could treat the water for regulated contaminants without leaving harmful residuals or disinfection by-products in discharged effluent.

SOLUTION

BioSafe Systems' peroxyacetic acid (PAA) based product SaniDate[®] 15.0, which contains 10% hydrogen peroxide and 15% peracetic acid, was used in the trial because it does **not** produce any harmful DBPs, is effective over a shorter contact time, utilizes a lower dose than chlorine, and the chemical composition breaks down in water to completely non-toxic residuals.

TESTING

In testing, levels of *E. coli* and fecal coliforms were recorded before disinfection and in treated water after passing through the contact chamber. From lab testing, initial PAA dosage of 1.0–1.5 ppm would sufficiently reduce contaminant levels to below NJDEP permitted levels.



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A full-scale peracetic acid (PAA) trial was scheduled at the plant to test efficacy of BioSafe Systems' SaniDate 15.0. At the startup of the full-scale PAA trial the chlorine system was turned off and all chlorine residuals were cleared out of the contact chamber. Then PAA was baseline fed at 1.5 ppm and sulfur dioxide shut off. PAA residuals were tested at four locations downstream from injection site. Consistently, *E. coli* and fecal coliform levels were well under the prescribed limits, and residual PAA as well.

RESULTS

Effective results were achieved treating the water with SaniDate 15.0 application of 1.1ppm of PAA. Measurements taken at each test location proved PAA remained present at contact inlet and throughout the contact chamber. At the end of the line the residual PAA was minute with contaminant levels dramatically decreased.

CONCLUSION

Results proved treating wastewater with SaniDate 15.0 at a rate of 1.1ppm PAA held in the contact chamber for 25 minutes consistently reduced *E. coli* and CFUs levels to well below permitted limits. Likewise, DBPs were reduced by considerable measure post SaniDate 15.0 application to below EPA mandate and PAA residuals were less than 1ppm.