

Public Abstract

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Title:OPTIMIZATION OF CHEMICAL DOSING IN WATER TREATMENT FOR ENHANCED COAGULATION/SOFTENING AS IT PERTAINS TO DBP REMOVAL

Drinking water treatment facilities out of compliance with EPA regulations are often not using the best possible chemical treatment. Determination of the most effective chemical type, combination and concentration can assist in reduction of disinfection by-product precursors. Disinfection by-products form when disinfectants used to treat drinking water, such as chlorine, react with organic compounds in the water. The effects of optimal chemical treatment was tested on three surface waters (two receiving water from reservoirs and one receiving water from a lake), and one ground water (receiving water from alluvial wells) using enhanced coagulation and enhanced softening. Enhanced coagulation involves the addition of a coagulant, typically a metal salt, in order to obtain improved removal of disinfection by-product precursors. Enhanced softening involves the addition of a coagulant during the softening stage of the treatment process. Results indicated treatment using enhanced coagulation was more effective at removing DBP precursors from waters with higher initial UV-254 absorbance values and lower alkalinities while enhanced softening was more effective for waters with lower initial UV-254 absorbance values and higher alkalinities. UV-254 absorbance is an indicator of aromatic organic carbon present in the water. In a number of cases, ferric salts outperformed aluminum salts at reducing disinfection by-product precursors.