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Effect of suspended solids in secondary wastewater effluent on DOC removal by enhanced coagulation

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ABSTRACT

Wastewater recycling is increasingly seen as a sustainable solution to meet the increasing water demand. However, organic matters and suspended solids (SS) affects its treatment, distribution and use in many different ways, including fouling of membrane when membrane process is adopted. Enhanced coagulation can effectively remove both SS and organic matters, consequently increasing the performance of membrane. However, it is still unknown how dissolved organic carbon (DOC) removal is affected by the presence of SS, especially when microbes and bio-molecules are present in the effluent. Thus, this study aims to investigate the impact of SS on DOC removal by enhanced coagulation (with ferric chloride), from secondary wastewater effluent (SWWE). Results indicated two-stage DOC removal for a single coagulation pH over lower and higher doses of coagulant. In the first stage, DOC removal was compromised when SS was present at concentrations as low as 8.8 mg/L, suggesting removal of SS prior to coagulation is important for effective DOC removal and sludge reduction.

Keywords: Enhanced coagulation; Suspended solids; DOC removal; Adsorption

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