Enhanced coagulation for treating slightly polluted algae-containing raw water of the Pearl River combining ozone pre-oxidation with polyaluminum chloride (PAC)

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\textbf{ABSTRACT}

The feasibility of using O\textsubscript{3} pre-oxidation and polyaluminum chloride (PAC)-enhanced coagulation for treating slightly polluted algae-containing raw water of the Pearl River was investigated. Results demonstrated that O\textsubscript{3} pre-oxidation and PAC-enhanced coagulation have greatly increased the removal of algae, turbidity, and natural organic material compared with PAC coagulation only. Specifically, the greatest removal of chlorophyll-\textit{a} (chl-\textit{a}) and TOC attained 97.67\% and 32.29\%, respectively, at the O\textsubscript{3} concentration of 1.0 mg/L and a PAC dose of 6.0 mg/L. 1.0 mg/L O\textsubscript{3} pre-oxidation reduces the 60\% PAC dose when the residual turbidities reached 0.99 NTU. 2.0 mg/L O\textsubscript{3} pre-oxidation increased the UV\textsubscript{254} removal from 16.97 to 57.28\% at a PAC dose of 6.0 mg/L.

\textit{Keywords:} Pre-oxidation; Coagulation; Algae; Turbidity; Natural organic material

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