



Water blending effects on coagulation-flocculation using aluminum sulfate (alum), polyaluminum chloride (PAC), and ferric chloride (FeCl_3) using multiple water sources

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ABSTRACT

This study investigated three common coagulants (alum sulfate (alum), polyaluminum chloride (PAC), and ferric chloride (FeCl_3)) to determine the best coagulant and optimal dosages in terms of TOC, DOC, turbidity, and conductivity in multiple types of blended water. In the blended surface water and ground water experiment, PAC displayed the best performance in terms of coagulation at a dosage of 20 mg/L. In the blending treated sewage water and rainwater experiment, the removal efficiency of TOC, DOC, and turbidity was the highest for PAC at a dosage of 20 mg/L. In the seawater, brackish water, and rainwater blending experiment, the turbidity, TOC, and DOC were efficiently removed at a PAC dosage of 20–30 mg/L. The coagulant effects on blending water samples displayed a higher removal efficiency that increased with the blending ratio. The outcomes from these experiments can be used in future water treatment processes that use multiple resources.

Keywords: Coagulation; TOC; DOC; Turbidity removal; Multiple water source blending

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