



Removal of turbidity, colour and organic matter from surface water by coagulation with polyaluminium chlorides and with activated carbon as coagulant aid

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ABSTRACT

The aim of the research work was to evaluate the capability of pre-hydrolysed aluminium salts to reduce turbidity, colour and organic matter from surface water. The coagulants used in the study were $\text{Al}_2(\text{SO}_4)_3$ and hydrolysed polyaluminium chlorides: PAX18, PAX-XL3, PAX-XL10, PAX-XL 19F, PAX-XL1905, PAX-XL61 and PAX-XL69. Using pre-hydrolysed salts—polyaluminium chlorides—made it possible to obtain better effects of surface water treatment compared with the results accomplished with non-hydrolysed aluminium salt (aluminium sulphate). At a dose of 3 mg Al L^{-1} the best effects of turbidity, colour and organic matter removal were obtained using PAX-XL1905, which is polyaluminium chloride of high alkalinity. Under these conditions, 89% reduction in turbidity and 50% in colour was achieved. Moreover, the total organic carbon (TOC) value decreased by 26%. When pH was decreased from 8.2 to 6.2 the effectiveness of TOC removal increased (upto 37%). The addition of powdered activated carbon to water during coagulation did not significantly affect the effectiveness of organic compounds removal.

Keywords: Surface water; Coagulation; Polyaluminium chlorides; Organic matter

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