



Drinking water treatment by *in situ* generated ferrate(VI)

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ABSTRACT

The present study aims to investigate the efficiency of on-site produced ferrate(VI) for drinking water treatment as well as for the removal of micro pollutants. The study examined and validated the laboratory electrochemical production of ferrate(VI) and tested water treatment efficiency of the resulting ferrate(VI) in comparison with that of FeClSO₄ and poly-aluminium chloride (PACl). The performance of water treatment was compared by the removal efficiency of turbidity, dissolved organic carbon, microbial count and trace organic micro pollutants. Major observations were that 0.5 mg/L of ferrate(VI) as Fe was sufficient to remove most of the contaminants and achieve complete disinfection irrespective of the original microbial counts. Ferrate(VI) has considerable oxidation potential to degrade commonly occurring trace organic micropollutants (other than melamine) in the Danube River water. In contrast, FeClSO₄ or PACl cannot remove any trace micro pollutants.

Keywords: Coagulation; Disinfection; Drinking water treatment; Ferrate(VI); Removal of micro pollutants

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