

## Organic matter removal from biologically treated sewage effluent by flocculation and oxidation coupled with flocculation

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### ABSTRACT

Flocculation alone and flocculation coupled with oxidation process were used for removing organic matter from biologically treated sewage effluent. The performances of different flocculants such as ferric sulphate, ferric nitrate, ferric chloride, and aluminium sulphate were experimentally evaluated. Among the flocculants tested, ferric chloride was selected because of its highest dissolved organic carbon (DOC) removal efficiency (67%) and the large size of the floc (mean size  $d_{(0.5)} = 53.04 \mu\text{m}$ ). The optimum dosage of  $\text{FeCl}_3$  was determined as 16 mg ( $\text{Fe}^{3+}$ )/L. Different fractionation of organic matter before and after the flocculation process was analyzed. It was observed that  $\text{FeCl}_3$  could remove 90% of hydrophobic compounds and 61% of hydrophilic compounds. Oxidation process by Fenton reagent coupled with flocculation was also trialed. It is observed that DOC removal efficiency of Fenton reagent coupled with flocculation could reach 86%. The combination of flocculation and Fenton reagent increased the hydrophilic removal to 85%.

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