

Removal of phosphorus from secondary effluents by coagulation and ultrafiltration

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ABSTRACT

Secondary effluents of municipal wastewater in Israel contain on average 10 mg/L phosphorus, a concentration that is twice as high as a limit recently legislated by the Israeli Ministry of Environment. Reduction of phosphorus concentration to the required level is often performed by biological methods, or by flocculation followed by sand filtration. The current study explores a different path of coagulation with FeCl_3 followed by ultrafiltration. The results suggest a general applicability of the proposed treatment with a relatively significant phosphorus removal percentage of 54% achieved by a combination of 120 ppm of ferric chloride and polysulfone membranes with a molecular weight cut-off of 20 kDa. As the removal levels should be increased and concentration of the coagulant decreased, continuous optimization is warranted.

Keywords: Pretreatment; Ferric chloride; Alum; Ultrafiltration membrane; Phosphorus removal

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