

Faculty of Agriculture

Department: Soil and Water Science

Name: Dr. Esawy Kasem Mahmoud

Title: Chemically enhanced primary treatment of textile industrial effluents

Authors: Mahmoud E. Kasem

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Abstract:

Textile industries consume substantial volumes of water and chemicals for wet processing of textiles. Effluent discharge from textile industries to neighboring water bodies and wastewater treatment systems is currently causing significant health concerns to environmental regulatory agencies. Chemically enhanced primary treatment (CEPT) involves the use of chemical coagulants to enhance the coagulation or flocculation of wastewater particles. The chemicals of aluminum sulphate (Alum), ferric chloride (FeCl_3) and cationic polymer were studied by jar test to select the most suitable coagulant for effective treatment of textile industrial effluents. The results showed that the optimum dosage for the removal of 75% of colour, 64% turbidity and 69% of chemical oxygen demand (COD) was 300 ppm of alum after pH adjustment at $\text{pH}=7.2$. A experiment test further revealed that the addition of 300 mg l^{-1} of alum and 1 mg l^{-1} of polymer could provide a reduction of colour, turbidity, COD and phosphorous higher than 95% , 75% , 76% and 90% respectively. The experimental results confirmed that CEPT can be adopted as a decolonization of textile industrial effluents. Moreover, it can be improve sludge setting and dehydration properties, and decrease the treatment cost.

Keywords: textile industrial, industrial, chemically enhanced primary treatment; decolonization; coagulation.