Advanced treatment of laundry wastewater with coagulation and flocculation

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The major active ingredients of laundry wastewater are the surfactants. Therefore, special attention is needed on the treatment and disposal of laundry wastewater. Aim of this study was to test the efficiency of chemical coagulation and flocculation process in laundry wastewater in order to render the waste suitable for its disposal at the municipal sewage system.

Physicochemical analyses were performed, monitoring the content of nitrogen (total nitrogen), phosphorus (total phosphorus), anionic surfactants (M.B.A.S.), total suspended solids (T.S.S.) and also turbidity, pH, C.O.D. and $B.O.D._5$ were estimated. The coagulation-flocculation processes were evaluated for three coagulants (aluminum sulfate – $Al_2(SO_4)_3$, ferric chloride – $FeCl_3$ and ferrous sulfate – $FeSO_4$). According physicochemical parameters, pollutant removals values between 9 and 92% were achieved in all the cases under the conditions studied. The most efficient coagulation agent was $Al_2(SO_4)_3$ (optimum dosage 75 mg/l) in combination with polyelectrolyte (optimum dosage 25 mg/l) as flocculation aid.

The approbated laboratory-scaled study can be applied in laundry industries, following the proposed chemical coagulation and flocculation process with the most efficient results. Waters with appropriate physicochemical characteristics can be obtained which could be either disposed at the sewage system or could be reused in the laundry processes and other uses.

Keywords

laundry; wastewater; coagulation; flocculation