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Treatment of Rice Industry Waste Water by Flotation-Flocculation Method

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Abstract : Polyamine flocculants were synthesized by poly-condensation of diphenylamine and epichlorohydrin using 1, 2-diaminoethane as modifying agent. The polyelectrolytes were prepared by taking epichlohydrin-diphenylamine in a molar ratio of 1:1, 1.5:1, 2:1, and 2.5:1. The flocculation performance of these polyelectrolytes was evaluated with rice industry waste water. The polyelectrolytes have been used in conjunction with alum for coagulation- flocculation process. Prior to the coagulation- flocculation process, air flotation technique was used with the aim to remove oil and grease content from waste water. Significant improvement was observed in the removal of oil and grease content after the air flotation technique. It has been able to remove 91.7% oil and grease from rice industry waste water. After coagulation-flocculation method, it has been observed that polyelectrolyte with epichlohydrin-diphenylamine molar ratio of 1.5:1 showed best results for the removal of pollutants from rice industry waste water. The highest efficiency of turbidity and TSS removal with polyelectrolyte has been found to be 97.5% and 98.2%, respectively. Results of these evaluations also reveal 86.8% removal of COD and 87.5% removal of BOD from rice industry waste water. Thus, we demonstrate optimization of coagulation–flocculation technique which is appropriate for waste water treatment.

Keywords : coagulation, flocculation, air flotation technique, polyelectrolyte, turbidity
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