Use of aluminium-coagulated water treatment residue in the treatment of dye containing wastewater

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ABSTRACT

In this study, the possibility of the use of alum sludge as an adsorbent in reactive dye (Remazol Blue RR) removal from wastewater was investigated. The effects of adsorbent dose, initial dye concentration, initial solution pH and salt concentration on reactive dye adsorption were investigated by batch studies. The equilibrium data were analyzed using Langmuir, Freundlich and Dubinin-Radushkevich (D-R) isotherm models. The Freundlich isotherm model was found to be better fitted than the Langmuir and D-R isotherm models, and the monolayer adsorption capacity for Remazol Blue RR (RB) onto alum sludge was 0.453 mg/g. The results indicated that the alum sludge, aluminium-coagulated water treatment residue, is suitable as an adsorbent material for removing reactive dye from aqueous solution.

Keywords: Adsorption; Reactive dye; Remazol blue RR; Removal; Alum sludge

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