Coagulation and clarification of wastewater using rice husk ash

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Received 4 August 2015; Accepted 6 December 2016

ABSTRACT

The coagulation ability of rice husk ash was investigated. Stormwater with suspended solids concentration of 540 mg/l was dosed with 500 mg/l, 800 mg/l, 1000 mg/l, 1200 mg/l and 1500 mg/l of rice husk ash at pH of 3, 5, 7 and 9. The samples were fitted into a jar test apparatus and stirred at 10 rpm for 30 min. Samples were drawn from the supernatant at intervals of 5, 10, 20 and 30 min and the suspended solids concentrations determined. Suspended solids removal was found to decrease with pH at rice husk ash concentration of 500 mg/l but increased with pH at rice husk concentrations of 800 mg/l to 1500 mg/l. Addition of 1500 mg/l to the raw water did not significantly improve the suspended solids removal efficiency over that obtained for rice husk ash concentration of 1200 mg/l. The maximum suspended solids removal was 93.34% for RHA concentration of 1500 mg/l at pH 9. An optimization process performed using kaolin yielded an optimum RHA concentration of 1500 mg/l at a pH of 3.0.

Keywords: Rice husk ash; Coagulation; Suspended solids; pH; Concentration

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