



The characteristics and effect of grain-slag media for the treatment of phosphorus in a biological aerated filter (BAF)

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Received 6 July 2011; Accepted 25 March 2012

ABSTRACT

Haydite and grain-slag, a new type of filter media made of grain slag, were used as filter media for biological aerated filter (BAF) to treat synthetic wastewater in parallel. The aim of this study was to compare the phosphorus removal performance of two BAF reactors at the different influent pH values, hydraulic retention time (HRT), and phosphorus load rates. It demonstrated that the BAF packed with grain-slag showed higher phosphate removal efficiency than with haydite. The removal of phosphate by the grain-slag BAF was in the range of 75.21–84.98%; 63.10–70.44%; 40.49–48.02%; and 26.10–33.11%, respectively, under the HRT of 12, 8, 5, and 1 h. The results obtained from the study of phosphate removal rate vs. pH values indicated that grain-slag BAF could remove phosphorus effectively by biologically induced chemical precipitation and the sediments do not affect the effluent turbidity.

Keywords: Grain-slag media; Biologically induced; Chemical precipitation; Phosphorus removal

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