Thesis Title Effect of the algaes on the Efficiency of Rapid Sand Filter

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Abstract

The purpose of this study was to investigate effects of algae on the efficiency of Rapid Sand Filter by comparing treated water with no algae, treated water with Chlorella sp. at concentration levels of 50,000 100,000 150,000 and 200,000 cells/ml and treated water with Ankistrodesmus sp. at concentration levels of 5,000 10,000 15,000 and 20,000 cells/ml. Head loss at different running periods, filter run and the efficiency of Turbidity Removal were studied as well.

At the same running time the higher algae concentration was, the more head loss. The increasing head loss was linearly correlated with the running time ($r = 0.99$, $p < 0.01$). At head loss 120 cm. Chlorella sp. at concentration 100,000 150,000 and 200,000 cells/ml had filter run about 44 41.44 and 28.31 hours respectively and Ankistrodesmus sp. at concentration levels of 10,000 15,000 and 20,000 cells/ml had filter run about > 45 36.12 and 30.15 hours respectively.

The running time, algae concentration and species of algae had effect on filter clogging ($p < 0.05$). There were interactions between running time and algae concentration on filter clogging ($p < 0.05$). But there was no interaction between running time and species of algae. It was found that the efficiency of turbidity removal was in the range of 64.92 - 70.30 % and the water that used in this experiment was treated already.