# Remediation of Aquaculture Effluents Using Physical Treatment

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**Abstract:**
The wastewater of the aquaculture industry contains harmful pollutants that have harmful effects on aquatic life and population. The main concern is the high values of biological oxygen demand (BOD), chemical oxygen demand (COD), and ammoniacal nitrogen in wastewater, which do not comply with the Environmental Quality (Industrial Effluents) Regulations 2009 under the Environmental Quality Act (1974), the Department of Environment (DOE), Malaysia. This study aims to evaluate the efficiency of natural and commercial wastewater treatment of aquaculture wastewater. Two natural reagents (activated carbon (AC) and MNRg-Treat powder) and a biological coagulant (MNRg-Treat liquid) were used to treat aquaculture wastewater samples. Nine beakers were used in this treatment, and 1.5 L of wastewater samples from the shrimp, tilapia, and patin ponds were poured into three beakers. After that, 7.5% by weight of each reagent was added to 1.5 L of wastewater for each sample and left for three days without mechanical assistance. Then, five parameters were analyzed for the samples in each beaker: pH, BOD, COD, dissolved oxygen (DO), and ammoniacal nitrogen. The results showed that AC is the best material to reduce ammoniacal nitrogen. The ammoniacal nitrogen level of the tilapia pond reduced by 58.82% and the patin pond reduced by 30.77% using AC, followed by 17.64% reduction using MNRg-Treat liquid for the tilapia pond. Meanwhile, MNRg-Treat powder recorded 5.88% reduction for the tilapia pond. The obtained results showed that the treatment agents demonstrated their best performance at 7.5 wt. %.

**Keywords:** Chitosan; Activated carbon; ammoniacal nitrogen reduction; Natural biocoagulant; Aquaculture effluent; Wastewater treatmen

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