Treatment of Fishery Wastewater Using a Bio-Flocculation-Adsorption Sedimentation Process

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ABSTRACT

The wastewater treatment by Bio-Flocculation-Adsorption Sedimentation process could improve the efficiency of the conventional secondary treatment and be beneficial to the biological treatment. It was conducted in this study. The process was applied to the wastewater of fishery processing. The parameters that affected the bio-flocculation-adsorption sedimentation process are the aeration time and concentration of the mixed liquor suspended solids (MLSS). The optimal values were found that aeration time was 20 minutes with air rate 0.5m3/hour/m3, MLSS 4 g/l, and sedimentation time for 1.5 hour. The study showed the bio-flocculation-adsorption sedimentation process before the biological treatment process was capable of increasing removal efficiency of suspended solids up to 84.64%. The activated sludge within the bio-flocculation-adsorption tank could be considered a bio-flocculent which improved the quality of the effluent from the primary treatment process. The mechanism of the bio-flocculation-adsorption sedimentation process is the agglomeration of suspended solid in the wastewater with the returned activated sludge into larger particulates and engenders the settlement more efficient. This bio-adsorption sedimentation followed by the activated sludge system could achieve the COD removal efficiency of 93.8 %. Though alum chemical process is also effective for removing suspended solids, but it induces higher cost.

Keywords : Activated Sludge, Bio-flocculation, Biosorption, Adsorption, Fishery Wastewater Treatment

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