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STUDY ON ELECTROCHEMICAL ADVANCED OXIDATION PROCESS TO TREAT FISH MEAL INDUSTRY WASTEWATER

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Abstract

Fish meal processing industries convert the raw fish into a various commercially edible form. The effluent generated from this industry comprises a large amount of pollutants such as BOD, COD, and total solids. Specifically, the effluent has a large amount of COD since the process includes raw fish. Mostly traditional biological and chemical methods have been adopted to treat the effluent coming out of the fish meal industry. By using these traditional methods at the end of the process, a large amount of sludge is produced. This sludge should undergo a process like sludge drying, thickening process and finally disposed of in the landfill. Electrochemical Advanced Oxidation process is an electrochemical method to treat Wastewater and it can be performed using different methods such as Electro Oxidation, Electrochemical Advanced Oxidation process using Fenton's reagent. In this paper, we used the Electrooxidation method. We have used Titanium Electrode coated with ruthenium dioxide as Anode material and stainless steel as a cathode material. The most complex organic compound could be broken by this Electrooxidation method. We have studied Chemical oxygen demand, Biochemical oxygen demand, total suspended solids removal and also the effect of Current on the removal of pollutants at various currents such as 3.2V with 0.06A, 5.65V with 1.17A, 7.79V with 1.62A. We have also discussed the effect of pH on the removal of pollution. 88% of COD was removed at 7.79V after four hours of treatment. TSS and BOD removal was found to be 87% and 84% respectively. Overall, the Electrochemical Advanced Oxidation process seems to be efficient in removing the pollutants such as COD and TSS.

Key words: biochemical oxygen demand, chemical oxygen demand, ruthenium dioxide coated Titanium anode, stainless steel cathode, total suspended solids

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