

Wijittra Sansud 2013: Colour and COD Removal from Distillery Wastewater by Electrooxidation Process with Graphite Electrode. Master of Engineering (Environmental Engineering), Major Field: Environmental Engineering, Department of Environmental Engineering. Thesis Advisor: Associate Professor Patcharaporn Suwanvitaya, M.App.Sc. 70 pages.

Distillery industries is considered as one of the largest polluter in Thailand. The effluent from distillery wastewater treatment is high in organic carbon and dark brown in colour. It can cause the adverse effects if treated without proper treatment before release to environment.

This study investigated the effects of electrooxidation process on distillery wastewater. Distillery wastewater with initial COD of 1,000 mg/L was treated in a 5 L. batch reactor. Electrolytic cell in the reactor consisted of 17cm. x 17cm. x 1cm. graphite anode and an 17cm. x 17cm. x 1cm. iron cathode. The experiments were conducted under varying conditions of pH, electrical current and supporting electrolyte concentration. Experimental results, at pH 5.7, 2A, showed that with the use of graphite anode, electrooxidation was enhanced by electrolyte. Color could be removed to a greater extent while organic matter to a lower extent. Removal of color, COD and TOC increased from 9.06, 13.25, 1.63% without NaCl to 92.94, 45.82, 10.00% in the presence of 10g NaCl/L. Varying pH had only slight effect on color and TOC removal, but a stronger effect on COD. COD removal at pH 4 was found to be highest with 54.56% removal. The effect of electrical current was also noticeable, increased with increase in electrical current. At pH 4 with 10g NaCl/L, after 150min retention time, the lowest removals of 45.37% Colour, 25.06% COD and 7.35% TOC at 0.8A, increased to 96.58% Colour, 56.51% COD and 21.94% TOC at 8A.

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Thesis Advisor's signature

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