

## Treatment of Biodigester Effluent of a Rice Grain Based Industry

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In distilleries various raw materials as mollasses, sugar cane juice, grains etc. are used to produce ethanol. Rice grain is one of the option. Ethanol is produced by the various sequence of steps. This process contains four steps *viz*; preparation of rice grain, fermentation, rectification or distillation and packing. In distillation column ethanol is obtained as top product and bottom is called stillage or distillery wastewater (DWW). DWW is treated by anaerobic process, which generate methane as top product and wastewater called biodigester effluent (BDE) . The BDE was taken for treatment by coagulation, thermolysis and electrochemical process (ECP).

In coagulation process calcium carbonate, copper nitrate and sodium silicate were used. The best results were obtained with copper nitrate. COD of effluent reduced to 1955 mg/dm<sup>3</sup> from 11500 mg/dm<sup>3</sup> with 40 mM copper nitrate. In ECT process with Cu electrode the optimum COD reduction of 1610 mg/dm<sup>3</sup> achieved from 11500 mg/dm<sup>3</sup> at current density  $j$  111.6 A/m<sup>2</sup> . Similarly CuO gave best result in thermolysis process. With 4 g/dm<sup>3</sup> CuO catalyst at optimum pH 5; 66% ,70%, 77% and 78.5% COD reduction were obtained at 65<sup>0</sup>C, 80<sup>0</sup>C, 95<sup>0</sup>C and 100<sup>0</sup>C respectively. The sludge obtained in all the three process can be separated easily. All the three process have been found to very effective.