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Microbial degradation of dye house effluent after electrochemical oxidation

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The present study is aimed at investigating the degradation of dye house effluent by electrochemical oxidation treatment followed by Microbiological method. In this work, a synthetic textile effluent containing a reactive dye (Reactive Orange 10) was treated in an electrochemical cell with titanium covered by platinum oxide (Ti/PtOx) electrodes to remove color. The discolored effluent was mixed with other textile mill process effluents according to the rate of each effluent in the mill, and was submitted to biological treatment (activated sludge plant). The following methods have been adopted for the treatment of real textile wastewater: 1) Electro-oxidation (EO) and 2) Microbial treatment (MT). In EO process, reduction of COD and removal of colour were 75% and 85% respectively. The effluent was further treated by MT. MT showed a final reduction of 95% of COD and removal of colour by 97%. Both the combined processes were highly competitive and showed a very good reduction of COD and colour removal. Electrochemical processes generally have lower temperature requirement than those of other equivalent non-electrochemical treatments and there is no need for additional chemicals. These treatment methods may also be employed successfully to treat other industrial effluents.

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