

Mechanistic studies of hydroxyl radical-induced catalytic wet oxidation of dyehouse effluents at atmospheric pressure

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Catalytic wet oxidation method with Cu/Al₂O₃ catalyst and H₂O₂ was used to degrade reactive dyes in aqueous solutions. The method was found to be effective for the removal of TOC and color at mild reaction condition of 80°C and atmospheric pressure. The oxidation was based on hydroxyl radical(HO•) produced from the dissociation of H₂O₂. Cu/ Al₂O₃ catalyst could accelerate the formation of HO•. More than one step was involved in the oxidation process. The first step was the breakdown of the large dye molecules into smaller intermediate molecules, and the next step was believed to be the degradation of the smaller molecules into carbon dioxide and water.