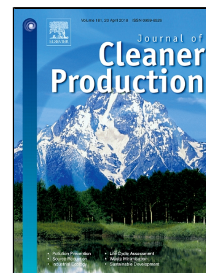


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Photochemical Treatment of Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) in Aqueous Solutions Using Advanced Oxidation Processes: Towards a Cleaner Production in the Petroleum Refining and Petrochemical Industries

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ABSTRACT

Current environmental initiatives and global demands for cleaner practices are driving the petroleum refining and petrochemical industries to consider greener methods for the treatment of their industrial wastewater. The photochemical degradation of benzene, toluene, ethylbenzene, and xylenes (BTEX) in petrochemical wastewater by UV/H₂O₂ and VUV/H₂O₂, centered at 254 and 185 nm, respectively, **was investigated**. Total organic carbon (TOC), biochemical oxygen demand (BOD), and pH were measured for the characterization of the wastewater and overall **organics removal rates**. It was observed that the recommended H₂O₂ concentration to degrade **a TOC inlet concentration of** 100 mg/L of BTEX was 250 mg/L and 300 mg/L for UV-185 and UV-254 nm, respectively. Under acidic conditions at pH 3, the UV-185/H₂O₂ removed 10% total

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