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Mineralization of diazo dye (Reactive Black 5) in wastewater using recirculated up-flow constructed wetland reactor

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ABSTRACT

Application of a sequential anaerobic and aerobic process in a constructed wetland can enhance the treatment performance of textile wastewater. In this study, two laboratory-scale recirculated up-flow constructed wetland (UFCW) reactors planted with *Phragmites australis* were constructed to investigate the treatment performance between aerated and non-aerated reactors for treating 50 mg/L Reactive Black 5 (RB5)-containing wastewater. Results showed that the non-aerated reactor demonstrated an almost entire anaerobic environment yielded a better RB5 removal efficiency (89%) compared to the aerated reactor (81%). However, the aerated reactor performed higher removal on chemical oxygen demand (COD) and aromatic amines than the non-aerated reactor. Proper design ratio of anaerobic/aerobic region in UFCW is a key to accomplish not only color reduction but also COD and aromatic amines in textile wastewater treatment.

Keywords: Up-flow constructed wetland; Supplementary aeration; Reactive Black 5; Aromatic amines; Artificial aeration

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