



Combination of adsorption and biological treatment in a SBR for colour elimination in municipal wastewater with discharges of textile effluents

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ABSTRACT

Discharge of textile wastewaters (WW) to municipal wastewater treatment plants (MWWTPs) entails the presence of colour in the final effluent. It causes a negative impact on the environment and, additionally, hinders an efficient disinfection by UV lamps. In this work, a combined process consisting of the addition of powdered activated carbon (PAC) to a sequencing batch reactor was studied. The main objective was to reduce WW colour in order to obtain transmittance values in the final effluent above 60%, measured at a wavelength of 254 nm, with the aim of ensuring disinfection with UV lamps. Experiments were performed with both simulated wastewater (SWW) including the azo dye Reactive Black 5 and WW from a MWWTP receiving discharges from textile mills. Biosorption increased the transmittance of the effluent around 25% for SWW and 24% for WW, in comparison with the values measured in the influent. The PAC concentrations for the achievement of a value of 60% in the transmittance of the treated water were 250 and 400 mg/L for the simulated effluent and for the WW, respectively. PAC had to be periodically added in order to cover its loss in the waste sludge.

Keywords: Colour removal; Powder activated carbon; Remazol Black 5; SBR

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