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Treatment of Simulated Textile Wastewater Containing Reactive Azo Dyes Using Laboratory Scale Trickling Filter

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Abstract : The present study was conducted to evaluate the potential applicability of biological trickling filter system for the treatment of simulated textile wastewater containing reactive azo dyes with bacterial consortium under non-sterile conditions. The percentage decolorization for the treatment of wastewater containing structurally different dyes was found to be higher than 95% in all trials. The stable bacterial count of the biofilm on stone media of the trickling filter during the treatment confirmed the presence, proliferation, dominance and involvement of the added microbial consortium in the treatment of textile wastewater. Results of physicochemical parameters revealed the reduction in chemical oxygen demand (58.5-75.1%), sulphates (18.9-36.5%), and phosphates (63.6-73.0%). UV-Visible and FTIR spectroscopy confirmed decolorization of dye containing wastewater was the ultimate consequence of biodegradation. Toxicological studies revealed the nontoxic nature of degradative metabolites.

Keywords : biodegradation, textile dyes, waste water, trickling filters
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