

Biological treatment of effluent containing textile dyes

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Abstract:

Colour removal of textile dyes from effluent was evaluated using a laboratory upflow anaerobic sludge blanket reactor. Several commercial dyes were selected to study the effect of dye structure on colour removal. The anaerobic reactor was fed with glucose, an easily biodegradable organic matter and selected individual dyes. Results show that some of the dyes are readily reduced under anaerobic conditions even at high concentration of 700 mg/l. The average removal efficiency for acid dyes using this method was between 80 and 90% and that observed for the direct used was 81%. Laboratory experiments using the anaerobic reactor with disperse dyes, such as an anthraquinone based dye, were unsuccessful even at low concentrations of 35 mg/l. Additional experiments were conducted to evaluate the toxicity of a selected disperse dye to an anaerobic environment. Results indicate that the purified dye is more toxic to the biomass than the commercial one.