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ROLE OF EXTRACELLULAR POLYMERIC SUBSTANCES ON TWO BIOLOGICAL REACTORS PERFORMANCE TREATING PHENOL

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Abstract

The objectives of this study were to investigate the composition of activated sludge biofilms and flocs in a sequential batch reactor (SBR) and in a sequential biofilm batch reactor (SBBR), and to evaluate the role of the extracellular polymeric substances produced in the reactors in comparison with the respective treatment efficiency of domestic wastewater, containing 1 to 40 mg/L phenol. Both reactors showed variable removal efficiencies. The SBR was found to contain more protistan species than the SBBR suggesting a more diverse microfauna of these species. EPS in the form of carbohydrates were found in increased concentrations in both reactors, than those in the form of proteins. However, carbohydrates exhibited higher concentrations in the SBR, favouring the development of higher protistan diversity due to the increased protection of the cells by the carbohydrates.

Keywords: extracellular polymeric substances, phenol, sequential batch reactors, wastewater treatment

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