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Analysis and modelling of predation on biofilm activated sludge process: Influence on microbial distribution, sludge production and nutrient dosage

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**ANALYSIS AND MODELLING OF PREDATION ON BIOFILM  
ACTIVATED SLUDGE PROCESS: INFLUENCE ON MICROBIAL  
DISTRIBUTION, SLUDGE PRODUCTION AND NUTRIENT  
DOSAGE**

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**ABSTRACT**

The influence of predation on the biofilm activated sludge (BAS) process is studied using a unified model that incorporates hydrolysis and predation phenomena into the two stages of the BAS system: moving bed biofilm reactor pre-treatment (bacterial-predator stage) and activated sludge (predator stage). The unified model adequately describes the experimental results obtained in a cellulose and viscose full-scale wastewater plant and has been used to evaluate the role and contribution of predator microorganisms towards removal of COD, nutrient requirements, sludge production and microbial distribution. The results indicate that predation is the main factor responsible for the reduction of both nutrient requirements and sludge production. Furthermore, increasing the sludge retention time (SRT) does not influence the total biomass content in the AS reactor of a BAS process in two different industrial wastewater treatments.

**Keywords:** BAS unified model; moving bed biofilm reactor (MBBR); nutrient dosage; predator microorganisms; sludge production.

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