Efficiency of alcohols biodegradation in a membrane bioreactor

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ABSTRACT

Although alcohols are relatively easy biodegraded and many strains are capable of their degradation, the speed of these processes is not high. To achieve deep wastewater treatment required by standards, residence time in the classical flow reactors would have to be dozens or even hundreds of days. Therefore it is necessary to intensify the biodegradation by increasing biomass concentration which occurs in a membrane bioreactor. The efficiency of the process carried out in a membrane bioreactor is shown on the example of biodegradation of 1-butanol, 1-propanol, 2-propanol by the strain of Pseudomonas fluorescens. It was shown that the biomass concentration higher 5–6 times allows for shortening residence time up to 10–14 days. Further compaction is unnecessary and often poses unwanted problems.

Keywords: Biodegradation; Membrane bioreactor; Wastewater treatment; Alcohols; Pseudomonas fluorescens; Mathematical model verification; VOC

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