

عنوان مقاله:

Biological treatment of toluene contaminated wastewater in an extractive membrane bioreactor: experiments and modeling

محل انتشار:

اولین کنفرانس بین المللی تصفیه فاضلاب و بازیافت آب، فناوری ها و یافته های نو (سال: 1388)

تعداد صفحات اصل مقاله: 9

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خلاصه مقاله:

Some hydrocarbons such as benzene, toluene, ethyl benzene and xylenes, collectively known as BTEX, present ubiquitously in fuel and petroleum contaminated wastewaters. These components cause carcinogenic and mutagenic hazards for human. In this paper, toluene was used as a model toxic contaminant for being widely found in common industrial processes and its wide presence in wastewaters contaminated with petrol derivatives. Biodegradation of toluene contaminated wastewater in an extractive membrane bioreactor using a pure culture *Alcaligenese faecalis* was investigated. Aqueous toluene solution was circulated within membrane tubing. The pollutants diffused out of tubes and transferred into the culture broth where the biodegradation happened. A mathematical model was developed to predict the pollutant concentration profile along the tube side of the membrane modules. In the model, the membrane tube assumed to be as several continuous stirred tanks in series. Overall mass transfer coefficient have been measured and described as resistances in series model. Finally, the model predictions were verified by experimental data.

کلمات کلیدی:

Aromatic hydrocarbons, Biodegradation, Extractive membrane bioreactor, Mathematical modeling, Wastewater treatment

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