研究简报

再生水用于地下回灌过程中有机物的迁移和去除

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摘要　　人工地下水回灌是解决我国水资源短缺的有效途径之一. 在实验室利用土壤柱系统，考查了回灌过程中有机物的迁移和去除. 二级处理出水经活性碳吸附后进入土壤柱系统，土壤柱系统对TOC、UV-254和BOD_5的去除率分别为44%、34.36%和95%，并且大部分有机物是在土壤表层0～0.5 m被去除的. 进水TOC浓度为9～11 $mg·L^{-1}$时，回灌过程中TOC浓度随土壤柱深度的变化符合指数方程：$C=10e^{-0.6934h}$（$R^2=0.8697$）. 用该方程可以较好地预测土壤柱出水中的TOC浓度.

关键词　　地下水回灌　土壤柱　有机物　微生物降解　指数方程

分类号

Migration and removal of organic matters in reclaimed wastewater during groundwater recharge.

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Abstract

  Artificial groundwater recharge is one of the efficient approaches in mitigating water shortage in China. With laboratory scale soil column system, this paper examined the migration and removal of organic matters in reclaimed wastewater during groundwater recharge. The results showed that after the secondary effluent pretreated by activated carbon was percolated through soil column system, the TOC, UV-254 and BOD_5 in the effluent were removed by 44%, 34.36% and 95%,respectively, and the majority of the organic matters was removed in the first 0-0.5 m of soil column. When the TOC concentration of influent was 9-11 $mg·L^{-1}$, the variation of TOC concentration with soil depth during recharge followed exponential equation $C=10e^{-0.6934h}$ ($R^2=0.8697$).This equation could be used to well predict the TOC concentration of the effluent from soil column system.

Key words　　groundwater recharge　soil column　organic matter　biodegradation　exponential equation

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