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Performance and bacterial diversity of biotrickling filters filled with conductive packing material for the treatment of toluene

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Abstract

Toluene has high toxicity and mutagenicity, thus, the removal of toluene from air is necessary. In this study, two biotrickling filters (BTFs) were constructed and packed with conductive packing material to treat toluene waste gas. BTF-O exhibited good toluene removal performance even under high toluene inlet concentration, and over 80% of removal efficiency was observed. The elimination capacity reached 120.1 g/m³h corresponding to an inlet concentration of 2.259 g/m³ under 61.5 s of empty bed retention time. During toluene biodegradation, the output voltage was observed in BTF-O and BTF-E, moreover BTF-E also showed slight power storage capacity. The applied voltage inhibited toluene removal and affected the bacterial community. The

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