

Evaluation of biofiltration performance for removal of vaporous Methyl Ethyl Ketone

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In response to strict regulatory demands for control of volatile organic compounds (VOCs) emissions, biofiltration systems have recently emerged as an efficient and costeffective technology. In this study, removal performance of the biofilter system for the removal of methyl ethyl ketone (MEK) was evaluated to optimize operation conditions. Biofiltration involves the passage of a polluted air stream through a packed bed containing microorganisms immobilized within a biofilm attached to the bed-packing material. A biofilter system used in this study was packed with glass-type media with 5L of bed volume and inoculated with mixed microorganisms obtained from a sewage treatment plant. The biofilter systems were operated at an EBRT (Empty Bed Retention Time) of 15~30s under nitrogen deficient condition where nutrient solution was supplied only 1L every 2 weeks. During more than 2 months operation, maximal, biofilters show that the removal efficiencies were more than 90% at inlet MEK concentration of 91 ~ 591 ppmv, which corresponded to elimination capacity 16 ~ 85 g/m³ h.GC and MS analysis for the detection of byproducts indicated that methanol and acetone were detected from that for MEK removal.