

Two liquid Phase Biofiltration for Removing n-Hexane from polluted Air

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Abstract

Two equal size perlite based biofilters were used to investigate the effect of adding silicone oil to the bed of a biofilter for removal of n-hexane from contaminated air. Bed particles of the one of the biofilters partially coated with silicone oil. An n-hexane degrading bacterial culture was used as inoculum in both biofilters. The biofilters operated in parallel under the same conditions for 70 days. Results showed that the silicone oil added biofilter performed better than the other consistently during the investigation period. The maximum elimination capacity for silicone oil added biofilter was $167 \text{ gm}^{-3}\text{h}^{-1}$ compared to $114.9 \text{ gm}^{-3}\text{h}^{-1}$ for the biofilter without silicone oil. Response of the biofilters to step and pulse change at inlet concentration was also investigated. A new steady state was established within several minutes after a change at inlet concentration. When the inlet concentration decreased suddenly, the outlet concentration of the silicone oil added biofilter was higher than the other for a short period of time due to desorption phenomenon.

Key words: Biofiltration, n-Hexane, Silicone oil