



BIOREMEDIATION OF CONTAMINATED AIR USING A BIOSCRUBBER

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Abstract

This study examined the effect of hexane concentration in the inlet gas stream on the treatment performance of a concentric tube internal loop airlift bioreactor with a 7 L capacity, inoculated with a strain of *Pseudomonas aeruginosa*. The experiments were conducted employing hexane-contaminated air, in 0.62, 1.26, 2.15 and 4.5 g/m³ concentrations at 29 ± 1°C. The 100% hydrocarbon removal was verified when effluents containing 0.62 and 1.26 g/m³ of hexane were employed. Under continuous feed conditions, the removal efficiency was approximately 55% and 35% after 288 process hours, when 2.15 and 4.5 g/m³ loads were employed, respectively. The tests performed under discontinuous feed conditions employed positive and/or negative step variation. Total contaminant removal from the effluent was verified in the 0.62, 1.26, 2.15, and 4.5 g/m³ concentrations. Non-use periods of up to 3 hours did not influence the bioreactor performance. For a 6.2 g/m³ concentration, the treatment efficiency obtained was approximately 70%.

Key words: airlift bioreactor, air pollution, bioscrubber, hydrocarbon, *Pseudomonas aeruginosa*

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