A bioventing feasibility test to aid remediation strategy

K Pearce^{1*} and WA Pretorius²

¹Division of Water, Environment and Forestry Technology, CSIR, P O Box 395, Pretoria, 0001 ²Division of Water Utilisation Engineering, Department of Chemical and Environmental Engineering, University of Pretoria, 0002

Abstract

A case study is presented where the feasibility of bioventing was assessed for the remediation of a petroleum-contaminated site. This was achieved through the determination of the radius of influence of a single vent well, the soil gas permeability of the site and the oxygen utilisation rate of the *in situ* micro-organisms.

The on-site test used one vent well and three monitoring wells. A radius of influence of 9.5 m was determined. A soil gas permeability of 3.8 Darcy was measured. The oxygen utilisation rate of 1.32% (v/v) O₂/h indicated that an active microbial population existed *in situ*. The theoretical biodegradation rate was calculated to be 752 mg hydrocarbon (based on hexane)/kg soil month. Based on these results, bioventing was found to be a feasible bioremediation option for cleanup of the site, provided that other soil conditions were suitable for biological activity.