dense, acclimated population of microorganisms to degrade the multiple substrate combinations of phenol, PCP and DCP. At a slow growth rate, the microorganisms can completely degrade the test compounds and generate minimal sludges.

Bioremediation and biomonitoring of an oil-based sludge-contaminated site

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Abstract

Production of hazardous waste in the United States exceeds the capacity available for storage and treatment of these wastes. While onsite bioremediation of oil-based sludges may be a viable alternative to the offsite shipping and storage of wastes, concerns regarding the possible production of more toxic intermediates during degradation have been raised. In this study, bioremediation of an oil-based sludge-contaminated site is being conducted in concert with short term bioassays which will monitor the progress of waste degradation. Assays including Microtox (toxicity), Ames (point mutation), and Prophage Induction (SOS response) are being used. Following two weeks of bioremediation of contaminated soil in a laboratory reactor, an enhanced mutagenic response in both the Ames and Prophage assays was obtained after 13 days. Further experiments are ongoing with longer time frames to determine the time required for the degradation of the biologically active compounds. The sources of the active components are being pursued as both metals and organic toxicants have been identified in the sludges. This approach using biomonitoring concurrently with bioremediation will assist in the determination of feasibility of this technology in future large-scale cleanup procedures.
