BENCH-SCALE TREATABILITY TESTING TO EVALUATE THE BIOREMEDIATION OF PETROLEUM HYDROCARBONS

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Increasingly, bench-scale biotreatability studies are being used prior to implementing enhanced in situ bioremediation (EISB) systems. These studies demonstrate the potential benefits of various amendments in promoting the degradation of common groundwater contaminants, such as chlorinated solvents and petroleum hydrocarbons. The amendments typically include electron acceptors and/or donors, pH neutralization agents, nitrogen and phosphorus nutrients and bioaugmentation cultures. Laboratory studies provide a comparison of different treatment options in a relatively short time frame, an ability to test multiple conditions concurrently and flexibility to allow changes to a remediation strategy that would be impractical at field-scale. Moreover, bench-scale studies allow assessment of performance without risk of accumulation of toxic intermediates, metals mobilization and other potential negative consequences in the field. Ultimately, bench-scale studies provide insight into the potential effectiveness of the selected treatments at field sites, including the rate and extent of contaminant degradation.

The benefits and limitations of performing laboratory biotreatability studies will be discussed and case studies will be presented for a variety of target contaminants, including petroleum hydrocarbons, under both aerobic and anaerobic treatment conditions.

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