

PILOT FIELD TESTS OF PHYTOREMEDIATION OF PETROLEUM-CONTAMINATED SOILS: A PUBLIC-PRIVATE PARTNERSHIP

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Abstract

Field performance results are needed to determine the effective range of contaminant conditions and environments suitable for phytoremediation of petroleum hydrocarbons in soil. Thirteen field trials are in progress to provide these data as part of a public/private partnership involving the USEPA, Environment Canada, U.S. Department of Defense, petroleum companies, universities, and consultants. Test locations include refinery sites, former manufactured gas plants, spill sites, motor vehicle wastes, and oil production sites. The RTDF (Remediation Technologies Development Forum) Phytoremediation Action Team developed a standard protocol for the trials. The protocol specifies an experimental design using three or four vegetation treatments compared in a randomized block design. Treatments include a standard cool-season grass/legume mixture, one or two locally selected treatments-usually native species or trees, and an unplanted and unfertilized control. Soils are sampled at two depths annually for a minimum of three growing seasons. Analytical methods include estimation of total petroleum hydrocarbons, polycyclic aromatic hydrocarbons, hopane biomarker, and petroleum fractions. This paper will describe the field test procedure and highlight results in progress.

Key words: petroleum hydrocarbons, field tests, randomized block design