Summary

This Special Technical Publication (STP) on the Application of Agricultural Analyses in Environmental Studies serves to present a sampling of the state of the art and the leading edge of research in the field. The topics addressed in this publication can be characterized as either the analytical procedures for soil contaminated with petroleum hydrocarbons or the behavior of hydrocarbon contaminated soils.

The importance of accurate and consistent measurement of soil properties and its organic constituents is obvious. The ability to distinguish the properties of the soil from that of the petroleum constituents forms the basis of these methods.

The papers included herein, which have undergone peer review and extensive revision since their original presentation, provide state of the art information on the analyses available. This collection should not be viewed as the sum total of all the analytical methods suitable for the analysis of petroleum contaminated soil, but rather a starting point from which the environmental professional can begin.

Yeung et al. present the differences and difficulties in recovering oil from a soil sample. Specifically, they investigated the influence that the degree of water saturation has on the amount of oil recovered.

Ilias outlines the attributes of the Fuel Isolation, Identification, and Quantitation method. The method uses a Soxhlet extractor, dries the extract over sodium sulfate, and concentrates it using Kudena-Danish concentrators.

Levy et al. and Liebmann et al. present the applicability of Supercritical Fluid Extraction (SFE) to the preparation of oil contaminated soil samples in two different papers. Their discussions focus on the automated experimental verification of optimized SFE and collection variables to achieve efficient and quantitative extractions of various target analytes.

Pollard et al. describe a tiered analytical protocol for characterizing heavy oil residues in soil. This method offers an alternative to elaborate gas-chromatography mass spectrometry in quantifying weathered petroleum wastes.

Parr et al. discuss three methods for measuring petroleum hydrocarbons in soil. Their discussion covers the study design, preparation of test samples, and the precision testing results, as well as, the analytical procedures.

Fan et al. examine the various petroleum hydrocarbon analytical techniques available along with their limitations. They also consider improvements that may be made to obtain better results.

Puri et al. describe the effects of crude oil contamination on compaction, stress deformation, compressibility, shear strength, and permeability characteristics of a sand.

Yong et al. present experimental and modelling approaches to understanding the behaviors of oil in soils. Their study used soil suspensions and leaching columns to describe the retention and transport of refinery residual petroleum.

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