

# EFFECTS OF WASTE ENGINE OIL SPILLAGE ON SOIL PHYSICO-CHEMICAL AND MICROBIOLOGICAL PROPERTIES

Author(s): OO Amund, CA Omole, N Esiobu, EO Ugoji

## Abstract

Changes in physic-chemical and microbial properties of soils contaminated with waste motor oil were monitored over a 24 week period. Oil application to soils resulted in a decrease in moisture content but brought about increase in organic matter, total nitrogen and available phosphorus contents. There was an initial decrease in microbial counts followed by a subsequent increase in population levels after four weeks. Microbial species diversity was however reduced in oil-contaminated sites relative to the control sites. Hydrocarbon-utilizing bacteria isolated from the experimental sites were identified as *Pseudomonas*, *Acinetobacter*, *Alcaligenes*, *Flavobacterium* and *Corynebacterium*. The organisms grew on long-chain n-alkanes, crude oil and fresh engine oil while a few species grew on aromatic hydrocarbons. Laboratory biodegradation studies of fresh engine oil using strains of *Pseudomonas*, *Acinetobacter*, and *Corynebacterium* showed a progressive decrease in oil concentration and pH of the medium due to the production of acidic metabolites.

**Keywords:** Oil Spillage, Bodegradation

**Published:** on 1993