

## Remediation of crude oil polluted soil in Otuogidi town in Bayelsa State of Nigeria using poultry manure.

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**ABSTRACT:**

Remediation by poultry manure (RPM) is a farming treatment technology, which relies on biological processes to cleanup pollution in soil. In this study, remediation by poultry manure was employed on oil contaminated site in Otuogidi town at Bayelsa State of Nigeria. 200g of the polluted soil samples were distributed in four sterile containers labeled A, B, C, and D. 100g, 200g, 300g and 0g of manure were added to the soil samples respectively. Then the total heterotrophic bacteria and fungi, hydrocarbon utilizing bacteria and fungi, total petroleum hydrocarbon, moisture content, sulphate content, nitrate content, phosphate content, soil pH and temperature were determined. The total heterotrophic bacteria counts ranged from  $5.00 \times 10^2$  to  $3.91 \times 10^5 \text{cfug}^{-1}$  and fungi ranged from  $2.40 \times 10^2$  to  $2.00 \times 10^3 \text{cfug}^{-1}$ . The hydrocarbon utilizing bacteria counts ranged from  $3.20 \times 10^2$  to  $3.02 \times 10^4 \text{cfug}^{-1}$  and fungi which ranged from  $5.00 \times 10^1$  to  $3.60 \times 10^2 \text{cfug}^{-1}$ . In the crude oil contaminated samples, the values of total petroleum hydrocarbon, pH and temperature were greatly influenced by high rate of microbial activities including high humidity which has a great impact in any given sample. This made the microbial and physicochemical properties of the soil samples to vary with the different concentrations of nutrient supplement and at different periods of remediation. Therefore, poultry manure is an effective method of remediating crude oil polluted soil.

**Keywords:**

Remediation, Contamination, Heterotrophic, Physicochemical, Microbial.