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Research Article

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study has clearly demonstrated that activated carbon from coconut shell (ACCS) can be used to significantly enhance the rate of degradation of petroleum hydrocarbon in the soil when homogenized with water in a ratio of 20 w/w and studied under an atmospheric temperature. A significant degradation was achieved after 32 days of the remediation process. When the soil to ACCS ratio and crude oil to ACCS were 48 w/w, and 1 mL/g respectively, (AX1) sample code had a ratio of crude to ACCS as 1:1, which reduces the total petroleum hydrocarbon (TPH) from 43.56 to 18.78 residue (mg/L). TPH was also observed to reduce to 2.83 mg/L from initial concentration of 28.92 mg/L when ratio of crude oil to ACCS was 1:1.5 (BX1) sample code, while reduction in THP of 13.63 mL was achieved with 0.5:1.5 ratio of crude oil to ACCS (CX1) sample code. The three (3) results had their rate and percentage of remediation for AX1, BX1, and CX1 as 0.77, 0.82 and 0.43 (mg/L)/day and 56.88%, 90.22% and 92.97% respectively. BX1 approach with the ratio of 1:1.5 has the high rate and percentage remediation more promising compared to AX1 and CX1. Lead which is a big treat to both plants and animals was almost reduced to a Zero (0) percentage.

Keywords: Activated carbon; Adsorption; Agro waste; Contaminated soil; Crude oil; Remediation; Total petroleum hydrocarbon

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beet pulp, etc.) can be used as sorbents to remove the contaminants, especially heavy metals [5].

e common natural precursors for activated carbon synthesis include coal, petroleum coke, pitch, wood, nutshells, peat, lignite, and more exotic ones include starch, sucrose, corn grain, leaves, coTee grounds, and straw. More advanced Activated Carbons (AC s) with better developed porosity, reproducible properties and more uniform microstructure and pores are produced from synthetic polymers, such as polyacrylonitrile (PAN), polyvinylidene chloride (PVDC),

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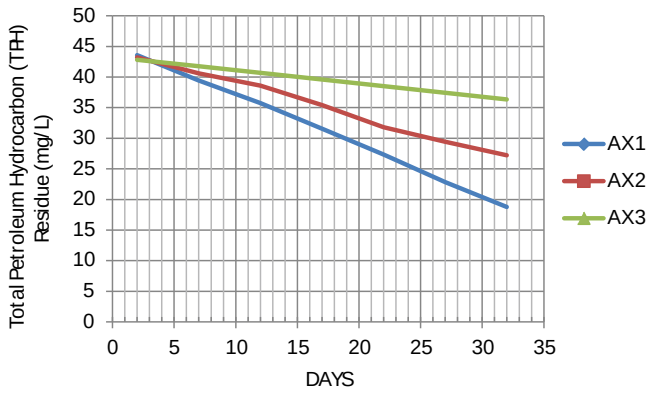

Figure 1: Total Petroleum Hydrocarbons (TPH) vs Days of remediation.

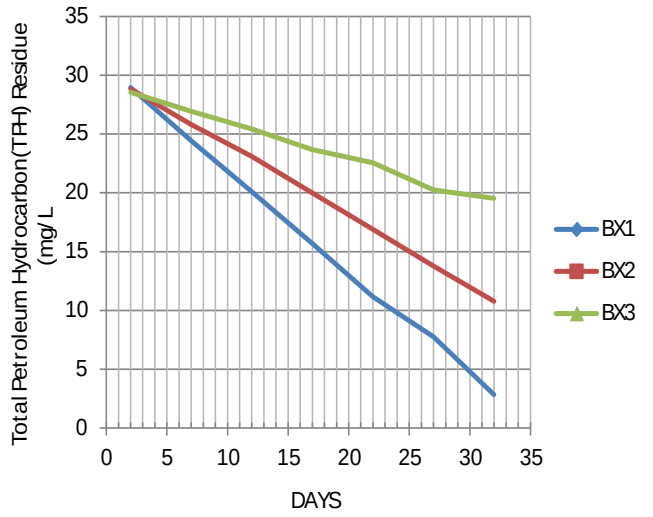

Figure 2: Total Petroleum Hydrocarbons (TPH) vs time at constant crude oil.

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