عنوان مقاله:

Adsorption of Petroleum Hydrocarbons from Crude Oil Polluted Soil Using Agrowaste. Service Unavailable

محل انتشار:

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خلاصه مقاله:

This study was carried out to ascertain the Adsorption of heavy metals from crude oil-polluted soil using agro-waste. Samples of garden soil with no history of crude oil pollution were spiked with ۱۰۰mL of Bonny light crude oil and left for two weeks to simulate the condition of a major spill before adding different weights of palm bunch ash (۰, P+NOPBA, ۵۰g, ۱۰۰g, and ۱۵۰g). Preliminary results revealed alteration of chemical properties of soils, elevated heavy metals levels, and TPH content one month after spiking. Metal content increased significantly from ND (not detected) to Cr (۱.۴۱ mg/kg), Pb (۱.۱۸ mg/kg), Cd (۰.۳۰ mg/kg), and As (۱.۹۳ mg/kg) respectively. The initial TPH content was ۱۷۶.۸۱ mg/kg whereas, one month after spiking with crude oil, the value increased to ۱,۵۳۵.۵ mg/kg indicating that the soil sample had undergone alteration concerning TPH. There was a dose-dependent decrease in TPH and heavy metal content of the crude oil-polluted soils with time. Net reductions of total petroleum hydrocarbon concerning treatment levels at the end of the experiment were P+US ۱,۴۰۹ (۴۳.۷%), P+۵۰ g ۱,۳۲۰ (۷۲.۷%), P+ ۱۰۰g ۱,۱۲۲ (۸۷.۹ %), P+۱۵۰g ۱,۰۴۳ (۹۸.۹%). Overall, the net reduction in heavy metals and TPH was very low in the soil left under natural attenuation than in treated soils. Net reduction of heavy metals (Pb, Cr, Cd, and As) was as follows: P+US (۲۳.۷%), (۳۷.۸%), (۲۶.۹%),(۳۱.۸%), P+۵۰ g (۸۵.۷%), (۸۸.۴%), (۸۶.۱%), (۷۷.۳%), P+۱۰۰g (۹۳.۹%), (۹۴.۶%), (۹۳.۵%), (۸۹.۱%) and P+۱۵۰g (۹۸.۹%), (۹۹.۹%), (۹۸.۷%), (۹۳.۷%). This study has established a marked degradation of the heavy metal and hydrocarbon contents of soil which indicated that agro-waste could be used for the remediation of crude oil-polluted soil. It is recommended that agro-waste be replaced with conventional fertilizer in the restoration of crudely contaminated soil.This study was carried out to ascertain the Adsorption of heavy metals from crude oil-polluted soil using agro-waste. Samples of garden soil with no history of crude oil pollution were spiked with ۱۰۰mL of Bonny light crude oil and left for two weeks to simulate the condition of a major spill before adding different weights of palm bunch ash (۰, P+NOPBA, ۵۰g, ۱۰۰g, and ۱۵۰g). Preliminary results revealed alteration of chemical properties of soils, elevated heavy metals levels, and TPH content one month after spiking. Metal content increased significantly from ND (not detected) to Cr (۱.۴۱ mg/kg), Pb (۱.۱۸ mg/kg), Cd (۰.۳۰ mg/kg), and As (۱.۹۳ mg/kg) respectively. The initial TPH content was ۱۷۶.۸۱ mg/kg whereas, one ... month afte

کلمات کلیدی:

Adsorption, Crude oil, Heavy metals, Agrowaste, Imo State