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HYDROCARBON REMOVAL FROM DIESEL-CONTAMINATED SOIL THROUGH REUSED ACTIVATED CARBON ADSORPTION

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Abstract

Hydrocarbon spillages are an increasing problem in Mexico, that has left large areas of contaminated land that entail negative effects on environmental, economical and social aspects. Such soil contamination demands fast, efficient and cost-competitive remediation technologies. This work explores activated carbon (AC) adsorption as a fast soil treatment to lower hydrocarbon concentrations in a contaminated soil from Puebla, Mexico, reusing an AC residue for such purpose. Both, semi-wasted AC and soil were characterized, and treatment tests were performed by mechanically mixing both materials during different periods of time. The semi-wasted AC still presented an acceptable adsorption capacity, and the reused AC successfully adsorbed 58% of the initial total petroleum hydrocarbons (TPH) concentration (55,141.4 mg/kg) in 60 minutes. It is possible to exploit the residual adsorption capacity of semi-wasted AC for remediation purposes, which could also reduce the environmental costs of AC production, regeneration or reactivation.

Keywords: activated carbon, adsorption, contaminated soil, hydrocarbon, soil treatment

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