



“Gheorghe Asachi” Technical University of Iasi, Romania



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

**Sandra Arroyo^{1*}, Genoveva Rosano-Ortega¹, Sonia Martínez-Gallegos²,
Beatriz Pérez-Armendáriz¹**

¹*Universidad Popular Autónoma del Estado de Puebla (UPAEP), Decanato de Ciencias Biológicas, 17 Sur 901, Barrio de Santiago, Puebla, Puebla, 72410, México*

²*Instituto Tecnológico de Toluca, División de Estudios de Posgrado, Tecnológico s/n, Ex Rancho La Virgen, Metepec, Estado de México, 52140, México*

Abstract

Hydrocarbon spillages are an increasing problem in Mexico, which 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, which 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.

Key words: activated carbon, adsorption, contaminated soil, hydrocarbon, soil treatment

Received: December, 2018; Revised final: February, 2019; Accepted: March, 2019; Published in final edited form: September, 2019
