



***ICEEM/03 – ENVIRONMENTAL ENGINEERING
SECTION***

Solid Waste Management

**BIOREMEDIATION OF TPH-CONTAMINATED
SOIL WITH MUNICIPAL COMPOST**

**Yousefi Kebria Darush^{1*}, Khodadadi Ahmad¹, Haghpaazhooh Hasti²,
Farajzadeh Ahdie³**

¹*Faculty of Environmental Engineering, Tarbiat Modares University, Tehran, Iran*

²*Faculty of Environmental Engineering, Amirkabir University, Tehran, Iran*

³*Bs in Public Health, Tehran University of Medical Sciences, Tehran, Iran*

Abstract

Old petrol stations, petroleum storage sites, and oil refinery sites are often contaminated with hydrocarbons which need to remediate for prevention of ground water pollution. Bioremediation is known to used as a permissibly technology for the decontamination of soil pollutant with TPH. In this research, the effect of compost as an amendment was investigated using laboratory-scale in-vessel composting reactors for soil with petroleum compounds in the concentration of 140000ppm provided from the grounds around Tehran Oil Refinery site in Iran. The major objective of the 60-day period research was to find the best appropriate mix ratio of this amendment with soil for enhancing degradation, thus the 1:0.1, 1:0.3, 1:0.5, and 1:1 ratios as wet weight basis of contaminated soil to this organic amendment were investigated in solid phase and unsaturated situations together with manual mixing (mixed composting reactor: MCR). By the way, the ratio of 1:0.5 was evaluated in aerated composting reactor (ACR) for investigation of breathing resulted of biologic activity of microorganisms. The results show that the most rate of degradation and elimination of hydrocarbons in the ACR and MCR reactors took place in the 1:1 and 1:0.5 ratios. The rate of elimination for compost and control soil for MCR reactors are 60% and 25%, respectively and for ACR reactors were: 63% and 38%, respectively.

Keywords: contaminated soil, composting, TPH, compost, biodegradation

* Author to whom all correspondence should be addressed: Phone: : +98-912-5808130, e-mail: YOUSEFID@modares.ac.ir