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### INTERACTION'S EFFECT OF ORGANIC MATERIAL AND AGGREGATION ON EXTRACTION EFFICIENCY OF TPHS FROM PETROLEUM CONTAMINATED SOILS WITH MAE

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#### Abstract:

Microwave-Assisted Extraction (MAE) is a type of low-temperature thermal desorption process that its numerous advantages have caused a wide spread use of it. Microwave heating is a potentially attractive technique as it provides volumetric heating process to improve heating efficiencies as compared with conventional techniques. The ability to rapidly heat the sample solvent mixture is inherent to MAE and the main advantage of this technique. Presently MAE has been shown to be one of the best technologies for removing environmental pollutants specially PAHs, phenols and PCBs from soils and sediments. Five different mixtures and types of aggregation (Sand, Top soil, Kaolinite) besides three concentrations of crude oil as a contaminant (1000, 5000 and 10000 mg/L) were considered. The results indicated that regardless of aggregation, the presence of humus component in soil reduces the efficiency. Minimum and maximum efficiencies were for sandy soil (containing organic components) and kaolinite (without any organic content), respectively. According to the results of this research when some amount of humus and organic materials are available in the matrix, it causes the extraction efficiency to perform as a function of just humus materials but not aggregation. Increasing the concentration of crude oil reduced the efficiency with a sharp steep for higher concentration (5000-10000 mg/L) and less steeper for lower concentration (1000-5000 mg/L). The concentration of the contaminant, works just as an independent function with extraction time and aggregation factors. The extraction period of 10 min. can be suggested as an optimum extraction time in FMAE for PAHs contaminated soils.

#### Keywords:

[Aggregation](#) , [Contaminated soil](#) , [Microwave](#) , [Humus](#) , [Petroleum Hydrocarbons](#)

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