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OPTIMIZING THE PROCESS OF DEPOLLUTION THROUGH THERMAL ABSORPTION OF SOILS CONTAMINATED WITH CRUDE OIL

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Abstract

This paper presents the results of experimental researches regarding the optimization of a decontamination process through thermal desorption of soils contaminated with crude oil. The optimization was performed for the following desorption parameters: heating temperature of the soil and the treatment duration, by increasing the temperature from 300°C to 350°C and decreasing the treatment duration from 10, 15 and 20 minutes to 5, 10 and 15 minutes. The economic calculation of the decontamination process was performed for emphasizing the efficiency of thermal desorption. The experiments were performed on soils with loamy sand texture, loamy texture and loamy clay texture. It was found that the contamination degree, the texture and the treatment duration influence the thermal desorption efficiency. The analysis of how the texture influences the process of depolluting soils contaminated with various concentrations of crude oil, reveals that the loamy-sand texture has a higher efficiency, as compared to the loamy and loamy-clay textures. Moreover, it was shown that the highest efficiency is obtained by treating the loamy-sand soil for 15 minutes at 350°C.

Key words: crude oil, pollution, soil, thermal desorption

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