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Bioremediation of PAHs-Contaminated Soil Using Land Treatment Processes

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Abstract : Polycyclic aromatic hydrocarbons (PAHs) are present in crude oil and its derivatives contaminate soil and also increase carcinogen and mutagen contamination, which is a concern for researchers. Land farming is one of the methods that remove pollutants from the soil by native microorganisms. It seems that this technology is cost-effective, environmentally friendly and causes less debris problem to be disposed. This study aimed to refine the polycyclic aromatic hydrocarbons from oil-contaminated soil using the land farming method. In addition to examine the concentration of polycyclic aromatic hydrocarbons by GC-FID, some characteristics such as soil microbial respiration and dehydrogenase, peroxidase, urease, acid and alkaline phosphatase enzyme concentration were also measured. The results showed that after land farming process the concentrations of some polycyclic aromatic hydrocarbons dropped to 50 percent. The results showed that the enzyme concentration is reduced by reducing the concentration of hydrocarbons and microbial respiration. These results emphasize the process of land farming for removal of polycyclic aromatic hydrocarbons from soil by indigenous microorganisms.

Keywords : soil contamination, gas chromatography, native microorganisms, soil enzymes, microbial respiration, carcinogen
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