



## **Microbial monitoring of a petroleum bioremediation process in soil**

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Contamination of soils and groundwater with petroleum compounds is a relevant environmental problem. Although hydrocarbons in general are biodegradable, the main limiting factor to their effective and complete degradation is their scarce bioavailability to soil microorganisms, due to limited solubility in aqueous media, especially for high molecular weight compounds.

Bioremediation technologies involve the activity of microorganisms, primarily bacteria and fungi, to detoxify environmental pollutants and transform them into simpler, less toxic compounds.

Consortia of oil-degrading bacteria commonly found in petroleum-contaminated soils can be usefully utilized as well as endogenous soil microorganisms. In this context, soil has a double role: it is the compartment to be restored and it is also one of the key components of any bioremediation system. In the present study results of microbial resources investigation in artificially polluted soil are reported. In particular, biomass and activity measurements were used in order to monitoring the time course of remediation process in microcosms. Functional and genetic diversity of soil microbial community, determined by CLPP and DGGE analysis, respectively, were determined in order to evaluate the effectiveness remediation of ecological functionality of soil compartment both in microcosms and *in situ* trials.