

Bioassays and bioremediation of petroleum contaminated soils and waters

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Abstract. The contamination of soil and water by petroleum derivatives is a serious environmental problem; the removal of solid residues from oil tanks is a technical one. In this study a treatment by autochthonous hydrocarbons degrading bacteria (HDB) on contaminated soils and water has been performed, *in situ* on soil and water and at laboratory level on soil. Three strains of bioluminescent bacteria (BLB) have been employed to measure the biotoxicity of all samples before and after direct inoculation of HDB *in situ*, as well as before and during the laboratory-scale treatment. The measured acute and chronic toxicity values have been in good agreement with the hydrocarbons content, determined by gas chromatography. The selected HDB resulted very effective in remediation activity. According these results, the HDB have been employed also in the treatment of the solid sludge from oil tanks, obtaining more fluid residues, which should made easier the cleaning procedures, and allowed a partial recovery of oil from the solid fraction.

Keywords: soil bioremediation, oil tank sludge, bioluminescent bacteria
