

## BIODEGRADATION OF LUBRICANT OIL IN SOIL

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### Summary

Exploited lubricants are dangerous contaminants because of their toxicity and low biodegradability. In this study, microbial culture active in exploited lubricant oil Mobil 1 was isolated and inoculated to sandy soil containing 0.5 g of contaminant per 100 g of dry soil. Microorganisms were used as free cells and immobilized on wood chips, soil was also properly supplied with water and nutrients. The bioaugmentation seems to enhance biodegradation process. After 5 months, 93% of non-polar compounds were eliminated from soil containing immobilized biomass. Comparatively, in non-treated soil (control system) the contaminant elimination was at the level of 47%. Bacterial number in treated and non-treated soil was similar for about 3 months; however enzymatic activity (dehydrogenases and hydrolases) in control soil was much lower. Finally, after 5 months of treatment the content of bacteria active in contaminant decomposition in inoculated soil was 100-fold higher than in control system. Presumably, the main reason of low remediation results in non-treated soil seems to be low enzymatic activity of the biomass.