Title: Enhanced Biodegradation Of Hydrocarbon Sludge Using Consortium Of Microorganisms.

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Abstract: In this work, the effects of consortium of Microorganisms, *Pseudomonas purida, Pseudomonas aeuniguma, Pseudomonas florescence, and Bacillus megaterium,* in degrading hydrocarbon sludge from refinery wastes, in Niger Delta area of Nigeria, have been studied. Focus is particularly on reduction of BOD, COD, TOC and ROC of the hydrocarbon sludge to comply with standard requirement for disposal. The organisms were maintained in nutrient agar plants and subculture on weekly basis throughout the period of investigation. Lab-assay method was used to carry out the experiment, i.e, Ex-Situ treatment. The sludge was inoculated with the consortium of Microorganisms and samples were taken for analysis at two week interval for a period of eight weeks. Result shows that, for the duration of investigation, there was 71.3% reduction of the initial BOD, 60.0% reduction of the initial COD, 78.4% reduction of the initial TOC and 78.1 % reduction of the initial ROC. It was noted that given enough time the consortium of Microorganisms has the potential to biodegrade the hydrocarbon sludge to an acceptable level of the Environmental Regulatory Body's standard. The sludge however requires more than eight weeks for the toxic level to be reduced to Regulatory Body's standard. It was also observed that the rate of biodegradation of the sludge by the Microorganisms declined with time.