

Assessing the efficacy of a remediation product for degrading polycyclic aromatic compounds (PACs) after spills of conventional heavy crude oil into freshwater

Summary

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(3) Jacor LLC, Chicago, USA. A pilot study was performed on 12 simulated freshwater ecosystems to determine efficacy of EcoBioClean® (EBC) as an oil remediation (4) Department of Environment and product. EBC aims to disperse the surface sheen and enhance microbial degradation. The purpose of this study was to determine fate the of Geography, University of Manitoba, Canada. PACs and alkylated PACs (APACs) when treated with EBC. While detailed chemistry is still being performed on sediments and for APACs, (5) Department of Chemistry, University of parent PAC data, nutrient data, and COD measured by a PeCOD analyzer provide interpretable preliminary findings. Manitoba, Canada.

Background

- Conventional heavy crude oil (CHV) is commonly transported through pipelines to markets for shipping or refinement
- Remediation of affected environments is crucial for aquatic oil spills.
- IISD-ELA has undertaken a program of study to evaluate the efficacy of minimally invasive methods for remediating of oil spills in freshwater
- EcoBioClean[®] is a proprietary lyophilized product consisting of nutrients, dispersants, and bacterial inoculant applied to oil spill affected areas as a passive remediation technique.







CHV application = 2g/L, EBC application =(0.136:0.55 EBC:CHV) (USEPA)

Water sampled on days 0,1,4,9,16,32, for COD, nutrients, [PACs] and sediment sampled on days 0 and 32 for [PACs]

Water sampled from stainless steel sampling straw, using 30mL glass gastight syringe equipped with stainless steel/PTFE filter holder (GF/C filters) PACs extracted using dichloromethane for GC-MS-MS analysis

Elevated [PACs] in water of oil treatments corresponded with higher COD for

EBC application resulted in near-immediate dispersion of oil from surface to

EBC + Oil appeared to enhance productivity, indicated by nutrient

Ongoing work examining aPACs (expected to be 90%) and PACs in sediments Future work could be conducted with a focus on microbial degradation, followed by a full experiment in an open freshwater system



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Untreated Treated VS

