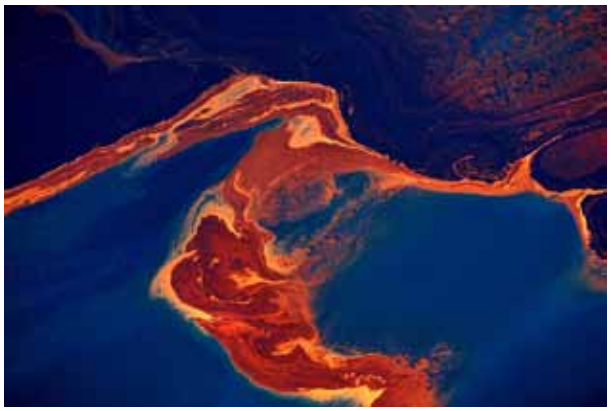
June 21, 2012

NEWS ALERT

Evaluation of The Effectiveness of Petroleum Degradation Agents Biosurf, Stimulus, and BCP-35S



BACKGROUND

BIOSURF, STIMULUS, and BCP-35S consist of natural surfactants, bacterial suspensions and nutrients for the facilitation of the natural process of biodegradation of hydrocarbons in the environment. BIOSURF is recommended for its properties of surface active agents (biosurfactants) that allows the dispersion of oil in small fractions which under agitation, increases the surface to volume relationship thus facilitating the biodegradation of the hydrocarbons. The addition of STIMULUS corresponds to nutrients and enzymes that facilitate the action of enzymatic biodegradation of BCP-35S suspension. In its application as a whole, the three components are a natural alternative for in situ biodegradation of oil spills. These tests were performed at the Faculty of Environmental Chemistry of the University of Valparaiso in Chile.

RESULTS AND METHODS

A volume of 5 ml of crude light oil from "Caño Limón" was provided in a 22 liter aquarium filled with seawater, equivalent to 0.27 grams of crude oil per liter of seawater and equal to 270 mg/L. 10 ml of BIOSURF, 10 ml of STIMULUS, and 2 grams of BCP-35S was added to the aquarium. Agitation was provided by aeration with air stones to build a circulation of water.

After 20 days a visual decrease in oil on the water surface was observed, the formation of colonies around the remaining oil droplets and the appearance of organic filaments in the water column were apparent. Representative samples of the seawater including surface oil fractions for analysis by fluorimetry. The hydrocarbons were extracted with n-hexane, and were dehydrated with a rotary evaporator and the samples were read in a fluorimeter with the equivalent of chrysene.

The average final concentration of 6.6 mg/l was determined for the representative samples. This efficiency is calculated as (100-(6.6/270) x 100) = 97.55% in 20 days. This analysis to determine that there is a very good light crude oil biodegradation under laboratory conditions according to the protocol indicated.

DISCUSSION

Overall, the results showed a 97.55% decrease in petroleum hydrocarbons after 20 days in a laboratory setting. The selected biological in BIOSURF, STIMULUS, and BCP-35S were shown to be a good combination for petroleum hydrocarbon in situ remediation in a marine environment. In situ remediation using this method proves to be a practical and economical way of achieving compliance with environmental criteria.

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