

BP Request to demonstrate OSE II on the marsh in Louisiana for BP Deep Horizon spill in the Gulf of Mexico

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RRT Small-Scale Alternative Marsh Testing Checklist

Bio Chem Strike Team Bioremediation Product Field Trials

Introduction

The purpose of BP's Bio Chem Strike Team (BCST) is to evaluate the efficacy of bioremediation and chemical cleaning products. The team includes staff from BP, State agencies, academia, and third party technical companies. As part of the bioremediation evaluation, the BCST has to propose to test products in both the laboratory and field.

After thorough review, OSE II a product listed on the National Contingency Plan (NCP) Product Schedule has been selected for field tests:

Oil Spill Eater (OSE) II

This document summarizes the proposed field trials. The goal is compare the reduction in concentrations of crude oil and selected compounds of interests in treated areas relative to a no treatment control. The random block protocol is based on methods developed by the US Environmental Protection Agency.¹ While described in more detail in Section 2, each "block" consists of 5 "plots" (product + control). To test reproducibility, five blocks are proposed.

The BCST requests RRT approval to conduct this test on marsh shorelines along the western edge of Bay Jimmy in Barataria Bay, LA. Maps of the test location are presented in Appendix

A. The plots are in the area between the low and high tide lines. The product will be applied using low energy manual sprayers (handheld garden sprayers). Temporary plywood paths will be deployed during application and sampling to protect the marsh. Initially samples will be collected every two weeks, and then extending with time. The length of the test will depend on initial results, but is expected to be between 2 and 6 months. Both sediment and near-shore water will be collected.

B.

C. Analytes include:

- o Total petroleum hydrocarbons (TPH)
- o Diesel range organics (DRO)
- o Oil range organics (ORO)
- o Louisiana RECAP TPH fractions
- o Extended polycyclic aromatic hydrocarbons (PAHs).
- o C12-C35 n-alkanes
- o Biomarkers
- o Nutrients
- o Dissolved oxygen
- o Bioactivity

¹ Venosa, et al., 1996. Bioremediation of an Experimental Oil Spill on the Shoreline of Delaware Bay. *Environ. Sci. Technol.* 30: 1764-1775

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Section 1: Product Information and Background

Product - Oil Spill Eater (OSE) II

1.1. Product Type (based on NCP Product Schedule):

- Dispersants
- Surface Washing Agents
- Surface Collecting Agents
- Bioremediation Agents
- Miscellaneous Oil Spill Control Agents
- Burning Agents (technical information is not required)
- Sorbents (technical information is not required)
- Other

1.1a Manufacturer's Name, Address, Telephone Number:

Oil Eater International Corp.

P.O.Box 515429

Dallas, Texas 75251

Phone (972) 669-3390

Fax (469)241 0896

1.1a Applicator's Name, Address, Telephone Number:

Steven R. Pedigo, Chairman

OSEI

P.O. Box 515429

Dallas, Texas 75251

(972) 699-3390

(469) 241 0896 (Fax)

1.2. Product Name: Oil Spill Eater II

1.3. Product description (basic chemical make-up, etc.) If this is a chemical agent, please list any potentially hazardous components as well as possible breakdown products that would be of an environmental or human health concern. There are none. This product is a combination of microbially produced biosurfactants, microbially produced enzymes and cofactors, and an oleophilic nutrient mixture.

1.4. Is this product either listed on the EPA NCP Product Schedule or Exempted: YES

<http://www.epa.gov/emergencies/docs/oil/ncp/schedule.pdf>

YES

1.5. Short summary of any previous use or studies pertaining to product. A short reference list of any published documents would be of benefit as well as electronic copies of any key papers that would support the use of this product.

The company website (<http://www.osei.us/>) gives a list of application sites and histories. The product is approved by the EPA and used by the major military services. Company literature sites numerous endorsements by state and federal agencies. The product has been used by a private land owner on Grand Isle, LA, for clean up of a sea wall on his property (video shown on OSEI website (News)). <http://osei.us/828>

1.6 Bioremediation agents would likely require a study plan that is outside of the scope of a small-scale study as well as extensive testing of nutrient levels, oxygen depletion,

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and chemical changes in oil chemistry. (OSE II has cleaned up over 16000 spills and demonstrated at Waveland beach Mississippi on sandy beach and marsh in front of EPA RRT IV <http://osei.us/819>) It has also been postulated that the Louisiana Delta is not nutrient limited nor without hydrocarbon degrading bacteria and other microorganisms. If bioremediation products are being considered, prior concurrence with RRT6 is required

Section 1a: Product Technical Information (40 CFR 300 Appendix C 6.0)

1.4a Are there any special handling and worker precautions for storage or field application?

1. Flammability – Non-flammable
 2. Ventilation – Normal room ventilation
 3. Skin and eye contact; Flush with clean water for 10 minutes.
- Ingestion: Do not induce vomiting; drink plenty of water.

Oil Spill Eater II:

1. Product meets EPA requirements for release to the environment
2. Wear goggles for eye protection, protective clothing to avoid dermal contact, including rubber gloves when handling the product.
3. Routine hygiene should be observed;

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4. Skin and eye contact: flush skin and eyes with copious amounts of water if case of contact.

5. Maximum and minimum storage temperatures; <120 °F

Optimal storage temperature; 72°F

1.4.b What is the shelf life under optimum and field storage conditions?

5 Years

1.4.c What is the recommended application procedure?

Use spray equipment to dispense product in marsh or open water (including near shore)

1.4.d What is the recommended concentration of product, application rate, and general cost for area or quantity treated? (e.g. gallons of dispersant per area or quantity of oil/water treated)

Apply as 1:1 ratio (diluted product to oil); 1 gallon of a 1:50 (product:water) dilution per gallon of crude oil (dilution water should come from location of application).

1.4.e What are the conditions for use: water salinity, water temperature, types and ages of pollutants, amenable to land application etc.

Product can be used in fresh or salt water; works faster in warmer waters.

Higher molecular weight or weather residues require somewhat longer to solublize.

1.4.f What is the toxicity if product is a dispersant, surface washing agent, surface collecting

agent, or miscellaneous oil spill control agent and has there been any synergistic affects noted when the agent is used on oil spill related compounds? OSE II is none of the above it is a bioremediation product.

NA (none in 22 years on over 16,000 spill clean ups)

There are numerous toxicity test on the web site under the technical library.

1.4g If the product is a bioremediation agent which means microbiological cultures, enzyme additives, or nutrient additives, is effectiveness data available and if so what are the results? (OSE II does not contain any bacteria)Substantiated testing proving the

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conversion to CO₂ and water. EPA NCP listed test at
<http://www.epa.gov/emergencies/content/ncp/products/oseater.htm>

The company sights multiple examples on its web site of successful clean up efforts. Case studies, and tests are on the web site under technical library (www.osei.us)

1. Flash Point (F) – NA
2. Pour Point (F) – NA
3. Viscosity: 1.30 cps at 60° F
4. Specific Gravity: 1.02 at 20°C
5. pH: (10% solution if hydrocarbon based): unknown
6. List solvents if dispersant or surface washing agent – NA
7. List additives if dispersant or surface washing agent – NA
8. Provide solubility if a surface cleaning agent - NA
9. Provide analyses for heavy metals, chlorinated hydrocarbons, and cyanide if it is a dispersant, surface washing agent, surface cleaning agent, or miscellaneous oil spill control agent

Trace element test on web site (www.osei.us)in the technical library shows no chlorinated hydrocarbons or trace elements.