OSEI

OIL SPILL EATER INTERNATIONAL, CORP.

THE THREE BASIC PARAMETERS FOR HOW TO ADDRESS OIL/HYDROCARBON BASED MATERIAL SPILLS

BIOLOGICAL ENZYME EMULATING MOTHER NATURE

The most basic question to ask in regards to oil spills is, why do you clean them up?

Very few people get the reason why you clean up an oil spill. The reason you clean up an oil spill is to reduce the toxicity of the oil to the environment so that living organisms can survive/ live. If single celled organisms can live in the environment, then generally humans will not be adversely affected.

The OSEI Corporation believes there are 3 main considerations when determining how to clean up an oil/fuel hydrocarbon based material spill.

1. **Is the product/process safe for humans.**
2. **Is the product/process safe for aquatic marine life.**
3. **Does the product/process permanently remove oil/fuel from the environment in accordance to the US Clean water act, without creating any secondary clean up problems/ processes.**

The purpose of these actions is to insure a safe for humans, non toxic to marine species clean up that will permanently remove spills from the environment without creating secondary clean up processes trade offs or adverse effects, if possible.

Sub categories to address in order to clean up an oil/hydrocarbon based material spill.

- **Utilizing a cost effective method would be the first sub consideration, either from the stand point of applying a clean up product or plan, which will utilize a plan that prevents natural resource damages, natural resource protection could override the cost of a product or process in a plan implementation that ultimately prevents natural resource damages, since natural resource damages are generally the most costly expense in regards to large oil spill accidents.**
- **Can a plan or product clean up the type of oil/hydrocarbon based material understanding if the hydrocarbon based material is fresh or weathered, in other words if you are going to address a certain type of hydrocarbon will the product or plan actually remove it from the environment.**

- **Type of water (fresh, ocean, or brackish) will the product or plan work on the type of water associated with a spill. Once again will the product or plan actually remove hydrocarbons from the type of water associated with the spill area.**
- **Type of shoreline material will the product or plan work on the type of shoreline, sandy, fine grain or large grain, clay. Silt, gravel, rock etc., associated with a spill. Once again will the product or plan actually remove hydrocarbons from the type of shoreline associated with the spill area.**
- **Estuaries or Marshes, will the product or plan work on the Estuary or Marsh while not depleting the BOD, associated with a spill. Once again will the product or plan actually remove hydrocarbons from the type of Estuary or Marsh associated with the spill area.**

- **Man Made structures, concrete wood, steel or other material, will the product or plan work on the type of man made structure, or will it harm the man made structure associated with a spill. Once again will the product or plan actually remove hydrocarbons from the type of man made structure without harming it, that is associated with the spill area.**
- **Booms, will the product or plan should be required to work in concert with booms, not allowing anything that will sink oil under or prevent booms from carrying out their intended purpose of placing a barrier between the hydrocarbon based material spill and a sensitive area or area that one wants to prevent hydrocarbons from entering or being exposed to a particular area.**

There is one Solution that meets these 3 basic criteria, that has been used on over 33,000 spills since 1989, Oil Spill Eater II (OSE II)

The process developed with OSE II emulates mother natures own process, except OSE II speeds the process of converting oil/fuels/hydrocarbon based materials to CO2 and water in a matter of days to weeks, while mother nature may take 25 to 50 years, allowing the lingering toxicity of the oil I the environment.

Oil Spill Eater II the proven, safe for humans, non toxic to aquatic species, means to permanently remove oil/fuel spills from the environment, without creating any secondary spill problems or clean up processes.

NOTE: See the link to the video, at the end of this letter, to see how other countries, including third world countries carry out safe effective oil spill response protecting natural resources, instead of allowing natural resource destruction.

The OSE II process, is basically a three phase process, where OSE II contains bio surfactants, enzymes, and a nutrient system.

1. Bio surfactants, in OSE II attacks the molecular structure of the hydrocarbons/oil/fuel to break the oil into small particles, and break up the hydrocarbon molecules; this in turns reduces the toxicity of the oil so indigenous bacteria can utilize the oil as a food source.

Once the bio-surfactants have in a matter of minutes broken down the oil several things become true, the oil is detoxified so its impact to the environment is lessened quickly, the oil is caused to float protecting the water column where 60% of marine species live, the adhesion properties of the oil is reduced so the oil will no longer adhere to anything including beaches with fine sand, and the flammability of the oil is diminished quickly.

2. The enzymes (of which there are over 165 types) in OSE II form protein binding sites to induce or trick indigenous bacteria into digesting the detoxified oil to CO_2 and water.

3. OSE II does not contain any bacteria especially foreign bacteria, however the nutrients in OSE II will rapidly grow and colonize large populations of indigenous (Local) bacteria, and when they utilize all the nutrients in OSE II they convert via the enzymes to the only food source left the detoxified oil at which point the oil is digested to CO2 and water.

OSE II is mixed 50 to 1 50 parts water to one part OSE II and then applied on a one to one basis. In other words you mix 50 gallons of water (if the spill is in the ocean mix OSE II with ocean water, if it is inland mix OSE II with fresh water, the water contains the indigenous bacteria to enhance) with 1 gallon of OSE II and then apply this to 50 gallons of oil. OSE II can be applied with any type of spray device.

Scientific back up

1. Is the product/process safe for humans.

A. US department of OSHA letter stating OSE II would not be harmful for humans at link
http://osei.us/tech-library-pdfs/2011/9-OSEI%20Manual_OSHA.pdf

B. In the OSEI videos showing OSE II being applied, you can see our associates run their hands under the stream of OSE II, no one has ever become sick after 26 years

2. Is the product/process safe for aquatic marine life.

This link to 18 of the 32 toxicity tests, showing how safe OSE II is for marine life
http://osei.us/wp-content/uploads/18-Toxicity-test-with-4-2012-Log0.pdf

3. Does the product/process permanently remove oil/fuel from the environment in accordance to the US Clean water act, and other countries requirements, without creating any secondary clean up problems/processes, trade offs, adverse effects or putting a pollutant on a pollutant.

A. Link to numerous tests performed by the US EPA, DOI, and other efficacy tests at link
http://osei.us/wp-content/uploads/Attachment-C_OSE-IIs-Irrefutable-Science-An-Address-of-Common-Questions.pdf

B. Also see the extensive test performed by LSU for OSE II to be approved for listing on the US NCP list at link
http://osei.us/wp-content/uploads/Bio-aquatic-lab-NCP-complete-testing.pdf

C. Also see peer review of the King Fahd Petroleum Institute of OSE II's efficacy and toxicity tests, where the two professors concluded OSE II should be used on water and soil spills in the Kingdom of Saudi Arabia, and is very non toxic, see link
http://osei.us/wp-content/uploads/Saudia-Arabia-King-Fadh-University-peer-review-of-OSE-II-large-report-2014-Report-on-the-Evaluation-of-Oil.pdf .

OSE II is approved by the 22 countries for use in their countries waters, with more pending.

The above information lays out what needs to be considered when addressing a spill, why you clean up a spill, and a 26 year proven safe method of doing so that is now approved in 22 countries.

The US Navy used OSE II for three and a half years on hundreds of spills, of which the US EPA was a witness to the Navy's description of their clean ups. The US EPA accessed OSE II for a spill in Oklahoma, the Coast Guard has procured OSE II for their spills, NOAA was first hand witnesses of a demonstration of OSE II in South Korea, and the department of Energy has utilized OSE II as well. OSE II has cleaned up over 33000 spills since 1989.

The next link is an actual clean up of 125,000 gallons of oil that coated 18 kilometers of shoreline or 52000 acres of soil, including sensitive mangroves, as well as covering open water. In 3 and a half weeks you could not tell there had ever been a spill, there were no natural resource damages, the sensitive mangroves were not destroyed, and in this time frame 99% of the oil on the water was permanently removed, and 97% of the oil on the shoreline was permanently removed, with no secondary clean up problems or processes required, and no humans were adversely effected. See the link to this video http://osei.us/archives/1519

OSEII Eliminating Environmental Footprint On-Shore & Off-Shore

This information is presented to show how and why decisions should be based for spill response and show there is a safe effective means to meet the US Clean Water act, and requirements set forth in other countries.