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**OSE II ELIMINATING THE ENVIRONMENTAL FOOT PRINT WHILE
REDUCING COSTS ASSOCIATED WITH DRILLING MUD, DRILLING
MUD CLEAN UP, RIG WASHING, RIG OPERATIONS AND
EMERGENCY OIL SPILL RESPONSE FROM OIL RIGS**

Offshore and Onshore Drill Cuttings Clean Up

Emergency Response Clean Ups For Rigs

Rig Wash Clean Up and Over Flow Clean Up

OSE II Removes Oil Base Mud From Drill Cuttings

The OSEI Corporation can help reduce the costly expense associated with oil base drill cuttings. Even water base muds can incorporate diesel and formation fluids that limit their direct discharge to the land or sea.

Oil Spill Eater II (OSE II) is a unique first response bioremediation agent, safe and effective on all types of oil and environments and is completely non-toxic. OSE II breaks down the molecular structure of hydrocarbons through the effects of bio surfactants and over 156 types of enzymes.

The US EPA, all branches of the US military and independent laboratory tests prove that OSE II remediates hydrocarbons. We have to state OSE II is listed on the US EPA NCP List (see link with Letter, and notices <http://osei.us/ncp-listing-information-and-disclosures>) which means OSE II can legally be used on US Navigable waters, which includes ponds, creeks, streams, rivers, Lakes, oceans or seas. OSE II is being used in over 100 countries globally.

Once OSE II comes in contact with oil, it stays attached; remediation begins and will continue to completion. The cuttings, with typically 4-8% oil, are discharged from the shakers and captured in a skiff, where they will be submerged in an OSE II mixture at a ratio of 50 to 1 (untreated water to OSE II). The oil will separate from the drill cuttings in 10-15 minutes depending on temperature. The volume of OSE II mixture should be sufficient to maintain 1-2" level above the cuttings. The entire container can

then be discharged to the sea floor or on land after approximately 14 to 21 days since the toxicity level has been substantially reduced and no visible sheen will be present.

Whole mud can be captured in a separate skiff. The OSE II mixture is added in a volume equal to the oil volume. A small air hose submerged in the container will add O₂ and increase the remediation process. In approximately 14 to 21 days or so the container will be free of hydrocarbons, and the contents can be returned to the sea (or discharged on land) without any adverse effects to the environment. OSE II will also eliminate the flammability of fuels on surface spills in approximately 3 minutes, which becomes a safety feature for rigs as well.

These are simple instructions that will give you an idea of how OSE II can help solve the cuttings and drilling mud disposal problems associated with your company's operations.

*OSE II can prepare protocols for specific applications if requested.

ONSHORE AND OFFSHORE DRILL CUTTINGS DISPOSAL REMEDICATION WITH OSE II

ONSHORE

Regulations / Current Practices - Regulations vary based on country and even on the specific rig location, but generally it is safe to assume that OBM (oil base mud) or SBM (synthetic base mud) cuttings cannot be discarded at the drilling location. The drill cuttings must be trucked to a landfill or a waste management company where the cuttings can be treated and reused or discarded. This practice is often very expensive and influences the entire drilling program. To avoid this additional expense, oil companies often chose to drill the well with a water base fluid that presents less environmental concerns. Unfortunately, this often increases the risk of drilling problems since water base fluids do not provide the inhibitive properties of an oil base mud.

OSE II Advantages – OSE II can be applied to oil base or synthetic base cuttings eliminating all oil toxicity. When the cuttings are exposed to OSE II (50/1 mixture, water/OSE II) toxicity is significantly reduced in only a few hours). OSE II converts the oil to CO₂ and water. The cuttings are then safe to deposit in any landfill or reused. These cuttings can be used for road spreading, landfill cover, fill material and in the preparation of future drill pads. The cuttings also have application to damaged or low quality soil since they will aid in horticulture.

Drill Cuttings Remediation Procedures – Equipment and procedures can be adapted to any drilling operation.

Earthen Pit

1. In some cases a deep earthen pit is dug where the cuttings are deposited. In this case, the pit can be lined with plastic if needed.
2. Either the operator or the rig contractor will arrange for a 150 bbl tank to be available for the mixing of OSE II and untreated water.

3. A small centrifugal pump is placed close to the tank to spray the OSE II mixture into the pit and onto the cuttings as they are being deposited.
4. A 2" hose with sufficient length to reach the entire area of the earthen pit should be available.
5. The 150 bbl tank should be filled with 130 bbls of untreated water. This water could come from a water well, stream or river.
6. For example two drums of OSE II are then added to the tank. *(no more than 48 hours before discharge of drill cuttings)*
7. Discharge the entire OSE II volume into the earthen pit. OBM cuttings can then be deposited in the pit.
8. **NOTE:** if a tank is not available, the OSE II and water can be mixed directly into the cuttings pit. The cuttings can then be discharged into the pit.
9. The OSE II and water level should be such that the cuttings are submerged in at least one to two inches of OSE II and water.
10. This level should be maintained throughout the discharge of the oil base cuttings. If additional OSE II is required, it can be mixed by adding 65 bbls of water and one drum of OSE II.
11. The use of a fire hose when adding the water will add oxygen and enhance remediation.
12. Stirring or mixing the cuttings will increase the process of remediation.
13. At the completion of the drilling operation, the oil base cuttings should be safely remediated. They can then be relocated, distributed over the rig location or buried with no adverse effects on the environment, and the liquid will become non-potable water that can be evaporated or discharge around the drilling area or buried.



How to use oil based drilling mud and eliminate
the environmental problems associated with
oil based drilling mud & cuttings



**CLICK HERE
TO PLAY VIDEO**

[OSE II OnShore Drilling mud/cutting clean up](#)

Steel Container (Skiff)

1. If the OBM cuttings are discharged into a metal container, the remediation treatment is simplified.
2. The OSE II mixture is mixed at a ratio of 50 parts water to one part OSE II.
3. Prior to discharging the cuttings, approximately 10 bbls or the required amount of OSE II mixture will be added to the container (usually 25 bbls capacity).
4. As the cuttings are discharged into the container, they will be submerged in the OSE II and water mixture. This water should be untreated. The water source could be a river, stream water well, or ocean. Water associated near the site should be utilized.
5. As the container fills with cuttings, the OSE II level should be maintained 1-2 inches above the cuttings.
6. When the container is full of drill cuttings, the entire contents can be safely distributed over a suitable area, sent to a landfill or sent to a waste management company for reuse. The next container will be prepared with OSE II mixture just as the first. Once the cuttings are treated, OSE II will remain attached to the oil and remediation will continue until all the oil has been converted to CO₂ and water.

OFFSHORE (Steel Container, Skiff)

Regulations – In most areas there is a policy of zero discharge. Some locations allow a small percentage of SBM to be dumped. Zero discharge means solids are virtually free of oil.

1. The offshore procedure for OBM discharge will, in most cases, include a metal container (skiff). These are usually 25 bbl capacities.
2. The treatment procedure will be identical to the “Steel Container” procedures previously describe.
3. After the container is full of cuttings, it will need to be changed out with another container which again must be filled with OSE II and water (generally ocean water if the rig is offshore, or fresh water if the rig is in a fresh water lake). The container full of cuttings is then offloaded onto a barge or work boat, or discharged since the cuttings will be free of oil.
4. The contents can then be transported to shore where trucks can ship the cuttings to any landfill. The cuttings no longer need to be sent to a Class 1 landfill since they are non-toxic. These cuttings can also be reused as previously described.

Areas and Applications

1. Rig location spills - There are several areas on a drilling rig location that are subject to spills. **(Remember all water runoff is safe when treated with OSE II).** These areas include:
 - a. Cellar – Oil base mud from the rig floor and BOP tests collects here and must be pumped out.
 - b. Mud Pumps – Spills occur when pump parts are replaced.

- c. Mixing pumps – Leaks often occur.
 - d. Mixing hoppers – Spills occur during mixing and occasional overflow.
 - e. Mud tanks and Liquid Mud Silos – Valves leak and vacuum trucks often spill OBM in transfers.
 - f. Other Spill Areas – Third party contractors often handle OBM and spills occur.
 - g. Burn or Testing Pits – OBM and Formation fluids often accumulate in these pits.
 - h. Mud Tanks – Mud tanks and mud pit area can be cleaned of oil mud and diesel.
 - i. Rig Floor Safety – OSE II reduces the slippery surface on the rig floor and makes a safer work area.
 - j. Fire Safety– 3 to 5 minutes after OSE II application, diesel (oil base mud) will not burn.
 - k. Smaller Spills – These can be easily treated with a hand pump sprayer. (1 gal water to 3 oz. OSE II)
- (OSE II is not compatible with any OBM / SBM. Only use OSE II on mud tanks and mud equipment during rig moves and rinse with water).**



Demonstration on oil based drilling mud directly from a rig, and
Oil Based drilling mud where some of the oil had been extracted



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TO PLAY VIDEO**

[OSE II Drilling Mud](#)

OFFSHORE (Waste/Formation Water Treatment)

I. Offshore drilling rigs and platforms generate waste water in many ways;

1. Washing the drill floor after a trip,
2. Cleaning up after equipment repair,
3. Accidental mud spills on the floor, at the mud pumps or at the mixing hoppers and
4. Rainwater runoff.

This water is collected in traps or holding tanks and is potentially toxic, containing oil and grease. Special handling is required to remain in compliance with government regulations and avoid fines. The waste is sometimes treated and discharged to the sea but is often too toxic for in situ disposal. The fluid is then sent to contractors onshore for disposal at a substantial cost.

OSE II can reduce the steps, and the cost, in handling this wastewater. OSE II can be added to the holding tank where all the hydrocarbons can be remediated to a safe TPH level and discharge to the sea in a very short time. OSE II has also been added through a metering pump on the discharge line resulting in continued remediation of all hydrocarbons with no visible sheen observed.



OSE II being injected into the pipe from the liquid tank to make sure no unmitigated hydrocarbons reach the ocean

5. OSE II is being injected into the discharge line from the liquid tank to make sure no unmitigated hydro-carbons reach the ocean. Offshore rig sump tank, all waste oil ect. 1 All waste oil resulting from rig operations and maintenance on the oil platform are sent to this tank. OSE II is added to this tank to remediate the waste oil converting it to CO₂ and water.
6. The sump tank cannot be circulated and some of the oil remains emulsified in water. OSE II is then added to the discharge line to complete the remediation of the final 300 ppm TPH.

Depending on conditions (temperature, oil type and concentration, and others), the remediation time can range from a few hours to a few days. OSE II can eliminate the need for onshore disposal.

II. Applications – The proper amount of OSE II should be calculated for any spill.

OSE II concentrate is mixed with untreated water: (50 parts water to 1 part OSE II)

A. On a Spill: OSE II Concentrate Needed

1. Use one (1) gallon of OSE II concentrate for every fifty (50) gallons of oil spill.
2. Use one (1) barrel of OSE II concentrate for every 2,750 gallons (65 bbl) of oil spill.

B. If you know how many gallons of oil spill:

Multiply Gallons of oil spill x .02 = Gallons of OSE II concentrate needed

-OR-

If you know how many barrels of oil spill:

Multiply Barrels of oil spill x .015 = Drums of OSE II concentrate needed

Upon application of OSE II to an oil spill, several actions begin in a matter of minutes:

- a) The molecular structure of the hydrocarbons are broken down and therefore detoxified,
- b) The hydrocarbons are emulsified, then solubilized and their density is changed, which also causes hydrocarbons to float (when a spill is on water), or causes hydraulic lift producing a separation from other matter including plants, birds, and oil to rise to the surface of soils, etc.
- c) Flammability of the hydrocarbons is significantly diminished (3-5 minutes) depending on the depth of the fuel / hydrocarbons, and
- d) Adhesion properties are reduced to the point they will no longer adhere, to shorelines, vegetation or man made structures.

Oil Field / Metric Formulas

1 Drum of OSE II = 55 US Gallons

1 Cubic Meter = 6.289 Oil Field Barrels

Barrels of Oil Spill X 0.15 = Drums OSE II
Needed

1 Oil Field Barrel (42 gal) = .16 Cubic Meters

Liters of Oil Spill X .00629 = Gallons OSE II Needed

Cubic Meters of Oil (M³) X .1144 = Drums of OSE II



[Drilling Rig Offshore or Onshore Emergency Response for Oil Release or Incidental Spill](#)

Based on the worst-case scenario, the OSEI Corporation will provide a protocol to address the cleanup, reduce cleanup cost and prevent damages, and or fines associated with spill releases, large or small. This will enable insurance companies to more accurately evaluate a potential risk, which will provide an appropriate reduced cost forecast. The utilization of OSE II will allow the lease owner to reduce insurance premiums, by establishing a worst-case response cost. The Operator can usually estimate the potential BPD (Barrels per Day) flow rate. An estimate of a 24 to 48 hour spill can provide the approximate volume of oil that would be released. Based on this estimate, it is easy to establish an emergency response to eliminate an entire release as it occurs. This will require staging enough OSE II, along with firefighting equipment that comes standard on oilrigs. You merely set the eductor/induction at 2% then apply the OSE II and water mixture at the calculated barrels per hour released.

Calculations:

Each 55-gallon drum of OSE II will clean up 2,750 gallons (65 barrels) of oil and remediate it to CO₂ and water. If you know the flow rate for 48 hours, then you know the potential amount of oil that can be released each hour. If you know the flow rate in 48 hours is 1,000 barrels this becomes 42,000 gallons of oil then you divide that number by 2750, which equals 15.272, and that is the number of 55 gallon drums of OSE II that needs to be staged on a rig. If you have enough OSE II staged on a rig for the amount of oil that can release in 48 hours, you will know in 24 hours if you need to ship in more OSE II and that would give the OSEI Corporation enough time to get you more OSE II delivered. If a company owns multiple rigs they may want to store OSE II at a warehouse, in order to expedite the delivery of OSE II when a release occurs. So it is simple math to alleviate the adverse effects of an oil release,

reduce fines, cleanup costs, and completely clean up the release. OSE II would merely need to be staged in enough quantity to handle at least 48 hours or more of release, in order to give the OSEI Corporation time to get additional OSE II delivered if the release is more than the amount of staged OSE II.

The cost to completely remediate one (1) gallon or (1) liter of oil will be based on the shipping, insurance and any VAT in a particular country, however OSE II should prove to be 50 to 90 % less expensive than any other means to remediate drilling mud, and or emergency response spills. We can do price comparisons based on request for a particular country. When the staging cost of OSE II is compared to any other method, OSE II becomes the easy economical decision. In most cases with an offshore oil rig, a release will never be able to come ashore, since the oil will be cleaned up to CO2 and water. In the cases where the rig is close to the shoreline, the oil that has had OSE II applied to it, will have been broken down, detoxified, adhesion properties diminished to the point the oil will be unable to adhere to the shoreline, sand, grass, rock, or man-made objects/structures. If an oil spill makes it to shore, and has had OSE II applied to it, then the spill will be rendered harmless, so the spill cannot harm the environment, which in turn limits risks, and liability, and cleanup costs.

The insurance required to operate a rig is an expense that with OSE II can be reduced, if you know the end point to a potential catastrophic event associated with a blow out; and you can reduce cleanup costs, as well as fines, and damage costs. The insurance company reduces potential payout for a release, which in turn can reduce premiums associated with owning and operating a rig.

OSE II should be written into your SPCM (Spill Counter Measure Plan), or Emergency Response Plan to save money and reduce risks associated with releases. An OSE II concise response plan can be added to the Operator's, or Contractor's, Response Plan.

Field Measurement:

On oil rigs (offshore or land) and platforms the waste fluids can be tested after OSE II is added to ensure that the hydrocarbons have been remediated and the waste material is now in compliance with discharge regulations. Field-testing equipment (like the InfraCal TOG/TPH Analyzer) is readily available. Using standard Infrared analysis (that correlate with US EPA test methods), the effectiveness of OSE II to bio remediate is measured and the TPH value is recorded.

http://osei.us/wp-content/uploads/Attachment-B_Concise-Bioremediation-Response-Plan.pdf

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More support documents with pictures and videos follow



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**ENVIRONMENTAL DRILLING
SOLUTIONS SOLIDS CONTROL
CLEAN UP OPTIMIZATION**

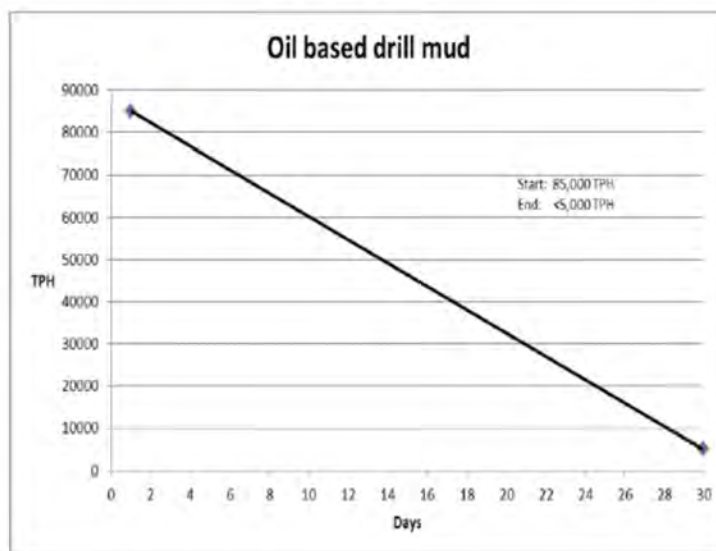




Optimising Solutions

Through the use of two technologies, the TPH associated with oil based drill mud can be effectively managed:

- Vertical Cuttings Dryer
- Oil Spill Eater II (OSE II)





Oil Spill Eater II (OSE II)



- provides a cost effective and environmentally responsible solution to managing oil based drill mud.



- stimulates and accelerates natural biological reactions. When combined with fresh or salt water and oxygen



- Cause hydrocarbons and other organic substances to rapidly decompose; eventually biodegrading them to carbon dioxide and water.

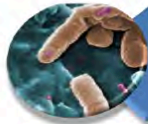


- non-hazardous, is not a dangerous good and is 100% biodegradable.

How It Works – Oil Spill Eater II (OSE II)



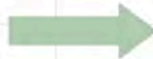
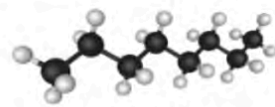
Combination of bio-surfactants, enzymes and nutrients.



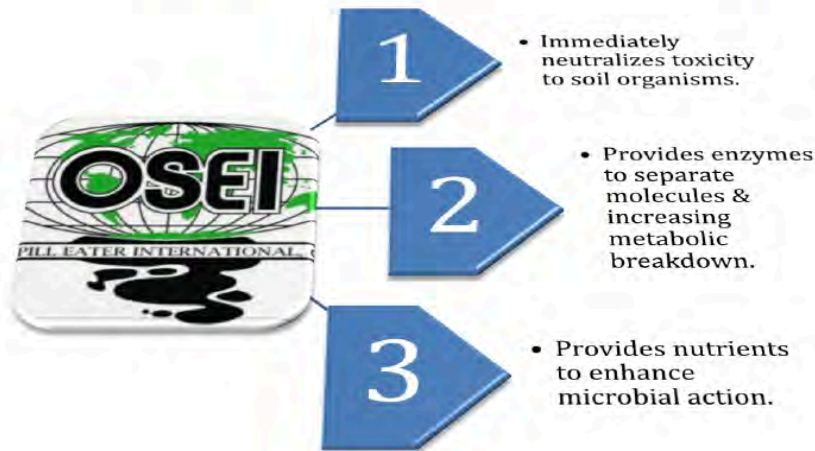
Enables native micro-organisms to efficiently and completely break down contaminant.



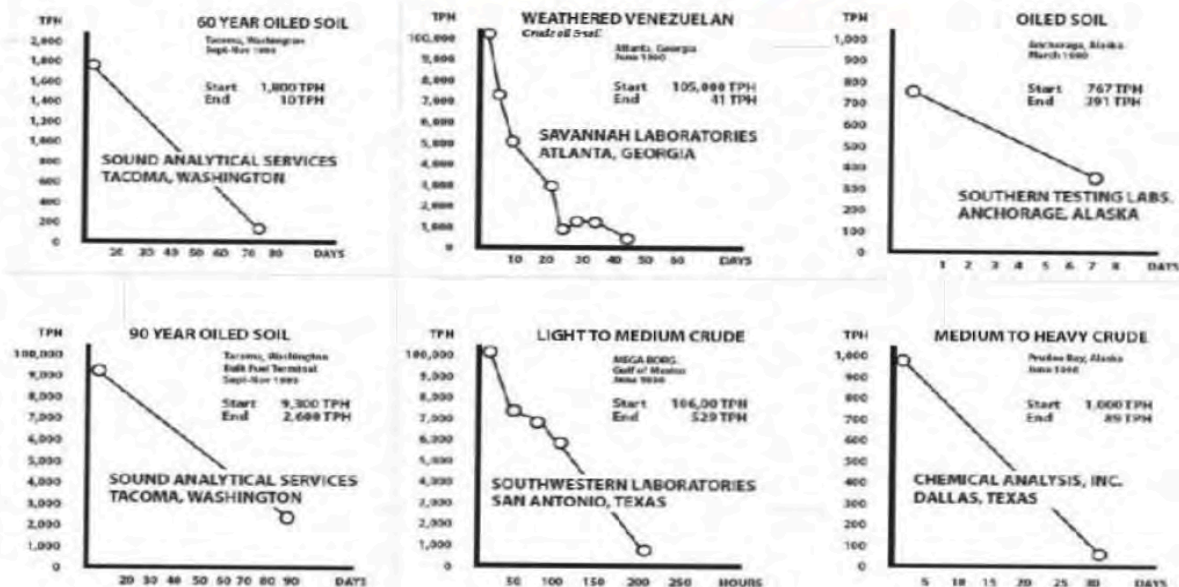
Leaves only harmless CO₂ and water.



Three-Pronged Attack



Selected Projects



OSE II

- No specific precautions.
- No specific protective clothing required when handling OSE II.
- Particle size does not affect remediation.
- No vapours emitted.
- OSE II is a one-time application.
- OSE II can be applied to an indefinite area.
- Low risk.
- Emulates Mother Nature's process allowing soil to be returned to pre spill conditions, converting soil into a valuable top soil for resale.

See how fast OSE II Can break down Drilling Mud



Demonstration on oil based drilling mud directly from a rig, and Oil Based drilling mud where some of the oil had been extracted



**CLICK HERE
TO PLAY VIDEO**

[OSE II Drilling Mud](#)



Research - cleaning of brine
contaminated with crude
iFacts not 2016909

OSEI NOTE: The laboratory that performed the test used the term dispersion even though you can clearly see the oil did not sink, dispersion in this reports really means molecular breakdown of the oil

Requested by: signature project coordinator: Jorge Marín Fecha: 09.07.2015 produced by: Lab Tech Chem signature: Yinneth Alvarado Fecha: 09.07.2015 reviewed by: Lab Tech Chem signature: Nubia Ramirez date: 07... 2015 approved by: Manager technical firm: Jorge Marín Fecha: research - cleaning of brine contaminated with crude iFacts not 2016909

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|---|--------------------------------|-----------------------------|
| Solicitado por: Coordinador de proyecto | Firma: Jorge Marín | Fecha: 09.07.2015 |
| Elaborado por: Lab Tech Chem | Firma: Yinneth Alvarado | Fecha: 09.07.2015 |
| Revisado por: Lab Tech Chem | Firma: Nubia Ramirez | Fecha: 07..2015 |
| Aprobado por: Gerente Técnico | Firma: Jorge Marín | Fecha: |

Propietario: Equipo Baroid TEM-COL-HAL-BAR-LAB-400A-ES Aprobado por: Miguel Gonzalez
26 - ENERO - 2015 Rev. D

Owner: Team TEM-COL-HAL-BAR-LAB-400A-ES Baroid approved by: Miguel Gonzalez
26 - January - 2015 Rev. D

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1 OVERVIEW

During operations that are performed after drilling a well or during repair, to prevent the well properly are operations where uses special fluid that will circulate in the well for control, cleaning, tamponade, cannonade, evaluation and completion. Once they return these fluids to surface, which have been contaminated with crude oil, especially in production testing and evaluation of well, is necessary to dispose or reuse these fluids that are generally pickles since they generate a high impact on the environment. Properties highly alkaline and high concentrations of organic salts pose a threat to vegetation and the environment. Usually these fluids once discarded can be treated by evaporation or dilution which requires large quantities of water for final disposition that does not impact the environment.

Is of great importance to recover part of the brines used since they represent an envelope cost in the process of completion of wells and to mitigate environmental impacts that can be generated, therefore intends by means of an organic compound based on molasses with an enzymatic effect that acts upon any hydrocarbon achieve clean contaminated pickles returned on completion in-situ processes , with what could reuse the pickles and especially to reduce the environmental impact and the costs of treatment and disposal of these special fluids.

Through a simulation with brine contaminated at different concentrations as it would happen in well in operations of completion and evaluation of wells are laboratory tests using a chemical compound of enzymatic action as cleaning agent is evaluates its efficiency to determine how they could use to reuse of fluids.

Two fluids are used for laboratory tests. 8.4 sodium Formate lpg and sodium Formate with NOBLOK 0.5% v/v and Guraldehido 0.5 lpb which are salts that are used most frequently as cleaning agent is used OIL SPILL EATER, which is a concentrated organic compound of catalytic action that denatures the natural organic substances such as oil decomposing them into carbon dioxide and water. (See annex 1.)

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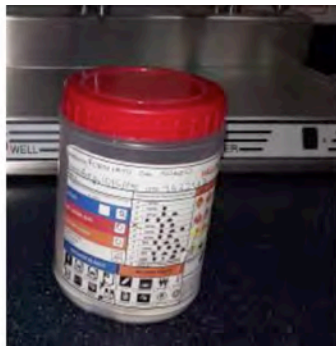
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2 OBJECTIVE

Check the efficiency of the use of chemical OIL SPILL EATER II CONCENTRATE product for the treatment and recovery of different types of pickles contaminated with crude oil, by varying the percentage of pollutant, performing laboratory tests with different concentrations of OIL SPILL, according to the recommendations of the supplier.

3. PROCEDURE

3.1 mixing 5 barrels of lpg 8.4 sodium Formate laboratory.



8.4 the picture No. 2 formiato sodio lpg, 7 lpb

3.1.2 contaminated brine with oil of different fields.

Used raw Campo Guando, 15, 78 and field castilla 132 which are of higher viscosity, by varying concentrations of crude oil in the brine to evaluate the efficiency of the treatment of cleaning of this product.

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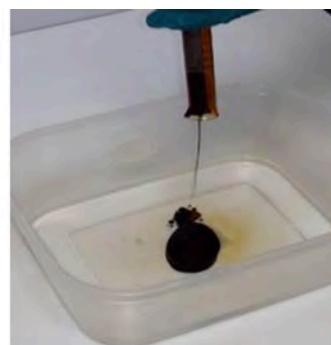
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Photo No. 3 8.4 sodium Formate lpg,**Photo No. 4 Crudo Campo Guando**

They were the tests in a laboratory or 350.5 barrel ml of brine, it was decided to replace the vessel precipitated by a container of greater volume that simulate the open tank or catch tank where usually return fluids contaminated Workover operations and tests well, to observe in detail the reaction and to have a greater surface for the dispersion of crude oil area.



Photo No. 5 8.4 sodium Formate lpg,**photo No. 6 oil field under 5% v/v**

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Photo No. 7
contaminated brine,



photo No. 8 addition of OSE II
uniform spray in the surface



Photo No. 9
immediate dispersal of traces of crude oil to the vessel walls

3.1.3 variation of the concentration of trace amounts of crude oil in a barrel of brine laboratory samples.

To perform the same procedure with different raw's with higher viscosity index and is a qualitative and quantitative analysis of the efficiency of the OSE II in the cleaning of contaminated pickles, resulting in the following analysis.

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Photo No. 10
crude field Castilla 5% v/v



Photo No. 11
(Dispersion Molecular breakdown of the oil)
of crude oil towards the walls of the container
once added the OIL SPILL EATER II

Evidence that the OSE II effectively also works with raw of high-density, or heavy oil.
Qualitative analysis of reaction.

- It is observed that with the different percentages of pollution in contaminated pickles dispersion (molecular breakdown) of the crude reaction is immediate with low amounts of OSE II.
- Is added you OSE II by spray method using a splash and evenly spraying the surface area and also by directly applying the product in the form of drip about brine contaminated and
- moved OSE II concentrations for the cleaning of the brine and it was noted that once the enzyme reacts to add as much of OSE II generates a saturation and does

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not generate any additional effect, which indicates that once the required amount of product is minimal and generates an immediate reaction determined by the time that delay in generating the dispersion (molecular breakdown) of the crude oil.

· underwent the springers contaminated after some agitation is added the OSE II and was made by the movement of the fluid to mix new mind the crude on the surface but not in a way even if not in the form of capsules. According to the description of the product after a while and with reaction with air free crude oil becomes a gelatinous layer that has released CO₂ and water forming an asphaltene with greater ease of separation.

Quantitative analysis of the reaction.

| TRAZAS DE CRUDO | VOLUMEN DE OIL SPILL EATER II | OBSERVACIONES |
|-----------------|-------------------------------|---|
| 0.1 % v/v | 0.2 ml | The product is sprayed evenly according to the recommendations of the supplier and is immediately observed that crude oil is dispersed into the walls of the container |
| 0.5 % v/v | 0.4 ml | To be able to quantify the amount of Oil spill Eater II added is the product with syringe, while provider recommendation is to spray the product evenly over the contaminated area, either a surface liquid or on the ground, with the help of a hose pressurized, not in dilution. |
| 1 % v/v | 1 ml | Note that the dispersion (molecular breakdown of the crude oil) is immediate and is not necessary to add too much product |
| 1.5 % v/v | 1 ml | Molecular break down is immediate, crude moves towards the walls of the container, the dispersion of crude oil is instant |

3.1.4 analysis of efficiency of OIL SPILL EATER II in the cleaning of brine polluting sodium Formate of 7 lpb, 0.5% v/v of Guraldehido and 0.5% v/v of NO BLOCK C
Qualitative analysis of reaction.

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- different tests were carried out in a laboratory barrel or 350.5 ml of brine, with additives ALDACIDE G and not BLOCK C. The effectiveness of the OSE II in the dispersion (molecular breakdown) of crude oil in the brine is evidencio, but using greater volume of the product, the reaction became a little slower.
- Once generated the dispersion (molecular breakjdown) of crude oil mixture is saturated by adding more product and does no further reaction.



Photo No. 12
sodium Formate with additives



photo No. 13 contaminated brine



Photo No. 14 addition of OSE II



photo No. 15 Dispersion of crude oil

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Foto No. 16. **Dispersión total del crudo**

Análisis cuantitativo de la reacción. Formiato de Sodio con aditivos

| TRAZAS DE CRUDO | VOLUMEN DE OIL SPILL EATER II | OBSERVACIONES |
|------------------------|--------------------------------------|---|
| 0.1 % v/v | 0.8 ml | Crude oil is dispersed (molecular breakdown) into the walls of the container, the reaction is a bit slower compared to the reaction with Formate without additives |
| 0.5 % v/v | 1.25 ml | Crude oil is dispersed (molecularly broken down), the sample is subjected to agitation and shown that they become to mix components, crude oil is evenly distributed on the surface of the brine. |
| 1 % v/v | 1.4 ml | Note that the dispersion (molecular breakdown) is immediate and is not necessary |
| 1.5 % v/v | 1.45 ml | Dispersion (molecular breakdown) is immediate, crude moves towards the walls of the container, the dispersion (molecular breakdown) of crude oil is instant |

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3.2 FORMULACIONES

| PRODUCTO | FORMIATO DE SODIO | FORMULACION 2 lpb |
|-------------------|-------------------|-------------------|
| FORMIATO DE SODIO | 7 lpb | 7 lpb |
| NO BLOCK C | | 0.5 % v/v |
| GURALDEIDO | | 0.5 lpb |

4 COMMENTS

- It was observed that all the tests occurred a dispersion of crude oil immediately.
- The OSE II in higher viscosity crude encapsulo crude oil generating a better separation of the mixture.

greater efficiency in the addition of the OSE II was observed by the method of spraying surface spraying product evenly and not applying it directly to the mix. In comparison of two contaminated sodium Formate brines, required increased volume for the dispersion of crude brine of sodium Formate with additives Is evident in all the tests with different trace concentrations of crude that OSE II dispersed crude oil in an effective manner, but it is recommended to evaluate subsequent dispersion separation method

- With the application of the OSE II concentrated organic evidence that it does not affect the properties of brines.

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6 ANNEXES

**ANNEX 1.
OIL SPILL EATER****Description OIL SPILL EATER OIL SPILL EATER II**

the product is an organic liquid product, molasses-based, accelerates biological reactions is a composite concentrate a multi biocatalitico enzyme that makes oil and other natural organic substances to break down rapidly and they are degraded to carbon dioxide and water.

OSE II is 100% biodegradable and has a shelf life of five years when stored at temperatures below 120 ° F. Freezing does not harm OSE II, cold temperatures however slow their speed of reaction somewhat.

The product is completely stable and reactive in a pH of 3.5pH to 11.7pH environment.



Photo No. 18 OIL SPILL EATER II

Applications

OIL SPILL EATER concentrate is used in oil spills, is used as a remedial agent before any kind of contamination with organic base compounds.

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When pollution is exposed to open air and time, a gelatinous layer can be formed. Higher hydrocarbon and more exposed to the elements, thicker will be the layer, over time this layer becomes asphaltene. ("asphaltene" brings together the components that remain as insoluble fraction after treating a mixture under certain conditions such as solvent, temperature, etc) It can be used for remediation for spills or contamination of the following classes of compounds. It is recommended to preferably apply it in concentrated form and spraying product evenly on the contaminated area

- or most of the compounds of organic base

- or most all types of gasoline

- or diesel fuel

- or numerous solvents

- or crude petroleum

- hydrocarbon compounds,

- including crude oil

- norte-pendiente Alaska

- or pesticides

- or Zylene

- or toluene

- and ethyl benzene

- or Chrysene

- or Hopane

- or Hexadecane

- or naphthalene

- or Fluorene

- or Fitano

- or Phenanthrene

OSE II is a method of cleaning environmentally safe for spills of waste, since it uses their own processes of bioremediation of nature to effectively eliminate the hazardous materials

Risks to health and the environment.

OSE II is not toxic to humans, animals, plants and marine life. It is non-toxic, even if accidentally ingested and non- irritating to sensitive skin. OSE II contains no allergens known to cause skin, respiratory or other allergic reactions.

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Original Spanish Version of this Halliburton Report Available Upon Request

Pictures of OSE II staged on Offshore Rig in the Gulf



**Video of OSE II being used on an Offshore Oil Rig in
the Gulf, for Rig clean up, and for emergency spill from the Rig**



[OSEI RIGWASHING](#)

**150,000 gallon or 550,000 liter spill on the ocean, covering
18 kilometers of shoreline clean up with OSE II**

<http://osei.us/archives/1519>

**OSE II ELIMINATING THE ENVIRONMENTAL FOOT PRINT
WHILE REDUCING COSTS ASSOCIATED WITH DRILLING MUD,
DRILLING MUD CLEAN UP, RIG WASHING, RIG OPERATIONS
AND EMERGENCY OIL SPILL RESPONSE FROM OIL RIGS**