



An LAEO Science and Technology Committee Review: Water/Soil Pollution Cleanup Technology

Oil Spill Eater II—*Enzyme Type* Bioremediation For the Removal of Oil and Chemical Spills

This information packet contains a summary of key efficacy and toxicity documentation for U.S. EPA NCP Listed Bioremediation, Enzyme Additive (EA) Type Agent, Oil Spill Eater II (OSE II).ⁱ The Lawrence Anthony Earth Organization (LAEO) advocates for the use of this oil spill removal tool, referred to as *EA Type Bioremediation*, as an example of a safe and effective replacement for chemical dispersants as covered in its research paper: *A Call for a Twenty-First Century Solution in Oil Spill Response*.

Since 1989, OSE II (a sole sourced, non-toxic, biodegradable oil spill solution, and the only product currently listed on the EPA's NCP list under the category of Enzyme Additive Type Bioremediation) has been through an extensive vetting process by industry, military organizations, government regulators and environmental protection agencies to determine its appropriate uses in a wide range of environments subject to numerous types of oil, chemical and fuel spills.

With the advent of the 2010 BP oil spill disaster in the Gulf of Mexico, the Lawrence Anthony Earth Organization's Science and Technology Committee (LAEOSTC) conducted its own study of the product's efficacy and toxicity testing information. Based on their findings, LAEO made a formal request to EPA, NOAA and Coast Guard members of the U.S. National Response Teamⁱⁱ to a) get OSE II/EA Type Bioremediation used for the cleanup of the BP oil spill in the Gulf of Mexico, b) obtain pre-authorization designation for its use as an effective, non-toxic, first response tool for US Navigable Water oil spills, and c) to clarify and

correct NRT-issued science guidance that misdirects oil spill response professionals re OSE II EA Type Bioremediation's applicable uses.

Numerous experts, scientists and spill response professionals have donated thousands of hours of in-kind time to this search for better oil spill response solutions and we are expecting the EPA and other responsible agencies to engage in scientific due diligence in collaboration with our team or other qualified individuals to get non-toxic remedies into use for the thousands of future oil spills that inevitably will happen and those that have yet to be fully cleaned up.

It would also be expected of those agencies entrusted with safeguarding our oceans, rivers and lands, that if genuine information was presented, which brought a promising solution (e.g. OSE II--which gives great *hope* for fully remediating the Gulf of Mexico per more than a dozen qualified reviewing scientists during that disaster who confirmed OSE II had merit and recommended it be usedⁱⁱⁱ), that such information would be welcomed by the NRT.

Unfortunately, our experience, thus far, has shown that responses to our submissions, usage requests and even responsible party requests to use *EA Type Bioremediation/OSE II* have been obstructed or stonewalled by said agencies, and ignored by representatives in Congress who were alerted to the matter. Reasons for obstruction have never been transparent; however EPA and NRT members have been citing out-of-date and inaccurate NRT guidance documents (particularly one dated May 2000, entitled *Bioremediation Fact Sheet*)^{iv} as a reason for blocking effective cleanup efforts. We find this behavior unusual because even the EPA itself has employed this bioremediation agent to clean up spills with very good results.^v

Our work in vetting *NCP Product Schedule* listed products during the BP spill turned up OSE II as a qualified, non-toxic remedy for completely nullifying the harmful effects of a spill that would have, additionally, eliminated the need to use chemical dispersants altogether. We believe its efficacy and toxicity documentation, as well as observable results in actual field use, is more than adequate data for oil spill response professionals to make sound decisions that deem it appropriate for use.

One can't argue the end point on EPA, DOI and other agency-conducted tests which showed Bioremediation *EA Type/OSE II* to have the capability to significantly remediate heavy end and other types of crude oil.

Our conclusion: EA Type Bioremediation *works!* Its efficacy has been demonstrated from actual field applications throughout the world and it

(OSE II) is officially registered/approved in 17 countries. Compared to dispersants, it overwhelmingly exceeds the track record of these toxic chemicals. We believe that if EA Type/OSE II, or agents like it, were added to response tool kits, it would solve all the problems that dispersants apparently seek to solve, and more. Yet, despite all scientific indications, and 25 years of destructive health impacts on the environment, marine life, wildlife, and human populations to the contrary, regulators and oil spill response professionals continue to defend and expand pre authorization of chemical dispersants as model oil spill response. The Alaska Region's newly designed preauthorization plans for dispersant use are a current blatant effort in that regard. Why?

We question how it could be that chemical dispersant pre authorization status is still in place in most US coastal Regions while denying the same designation to an effective, non-toxic remedy.

The LAEOSTC believes that chemical dispersant pre authorization should be suspended immediately based on clearly questionable results in the Gulf of Mexico, inadequate toxicity designations, and credible studies that validate observable harm done to marine and other living organisms from their use. That the NRT continues to endorse and defend *preauthorization* of these chemicals, despite science-based doubt on efficacy, is no longer a defensible position. The on-going and negative legacy of the Deepwater Horizon clean-up methods should trigger an aggressive attempt to find something to replace these chemicals, not more *point/counter point* time-intensive debates in defense of these chemicals putting forth insignificant technical data that doesn't hold to reason and common sense.

Oil companies and EPA/NRT/NOAA/Coast Guard, could be heroes if they found a non-toxic replacement for dispersants, not to mention saving billions in economic loss, damage and costs associated with ecosystem destruction. Coast Guard personnel have repeatedly told us that they feel forced into having these chemicals in their tool kits "because there isn't anything else". Working on more *rule making* won't end up in finding better solutions for oil spills.

We are asking all oil spill response professionals to take an honest look at this summary and documentation for *EA Type* Bioremediation with an optimistic view vs. pessimistic pre-conceived ideas.

Once that is done if there are scientific questions or other valid queries, we would like an opportunity to address them.

We appreciate your attention to this matter.

Efficacy Documentation Summary

Regarding Oil Spill Response Agent *Oil Spill Eater II*--Listed on U.S. EPA NCP Product Schedule as number B53 *Bioremediation Agent Enzyme Additive [EA] Category*

**5 May 2012
Updated 12 February 2014
13 August 2014**

The following documentation summary is based on the Lawrence Anthony Earth Organization's Science and Technology Committee (LAEOSTC) and other expert examination of EPA/NETAC and other credible efficacy and toxicity test reports, trials and usage records showing successful oil spill clean ups in the field using Oil Spill Eater II (OSE II).

Since 1989, per reports from OSEI Corporation as well as independent testimony, ***Oil Spill Eater II***[™] (OSE II) *EA Type* Bioremediation has successfully cleaned up more than 27,000 hydrocarbon-based spills. According to recent reports we examined, which included monitoring reports, lab results, video and digital images associated with several major spills addressed using OSE II, real world use showed excellent results. One such spill that occurred in late Nov 2013 (an over 150,000 gallon spill at a harbor terminal which traveled into open ocean, through miles of river waterways and sensitive habitats including mangroves), was completely remedied and removed from the water and shorelines using OSE II with virtually no damage to natural resources.

OSE II is distributed in more than 40 Countries, is listed on the US EPA's National Contingency Plan for Oil Spills (NCP Product Schedule) as well as listed in the U.S. Defense Logistics supply chain and the Navy DENIX system as BAA Book 18 number 14. (US Military have placed thousands of OSE II orders since 1992 <http://osei.us/defenseletter.pdf>) It is also officially listed and authorized for open water use in several of these countries which include Argentina, Australia, Nigeria, Iran, Iraq, Kuwait, Saudi Arabia, Qatar, UAE, Oman, Bahrain and Philippines.

OSE II has undergone extensive efficacy and toxicity testing by EPA/NETAC and other credible institutions since 1989.

In 2009, OSE II underwent a new set of efficacy testing based on EPA prescribed protocols with complete analysis done by LSU. A copy of the complete report is at www.protectmarinelifenow.org/downloads as *Bio Aquatic Lab NCP Complete Testing*. This US EPA NCP test is summarized on the EPA website (see link <http://www.epa.gov/emergencies/content/ncp/products/oseater.htm>). The Bio Aquatic test was conducted with a control and an EPA prescribed Nutrient and OSE II. It measured across the full spectrum of 54 analytes to determine remediation and mass reductions. In summary, OSE II performed very well, reducing 89.9% of Alaska North Slope Crude within 28 days. These tests substantiate with certainty that OSE II effectively converts oil to CO₂ and water.

Please find further efficacy documentation at www.protectmarinelifenow.org/downloads at *OSE II Efficacy Documentation*. This information unequivocally shows in lab conditions that OSE II effectively remediates across the full spectrum of hydrocarbons at an 85-99% reduction rate with no toxicity concerns.

Toxicity Testing:

Western Florida University under contract from US EPA Hap Prichard in Gulf Breeze, Florida did simulated open-water testing with OSE II on oil, measuring its efficacy and showed no acute or chronic toxicity; the 7 day toxicity test was above 2500. OSE II made it through three individual tier reviews by the 31 scientist panel and moved onto Tier IV. See report at: <http://www.nbiap.vt.edu/brarg/brasym95/kavanaugh95.htm> and links below.

OSE II has also been lab and field tested, certified and officially registered/listed by government regulators in 17 other countries^{vi} including in the Middle East under MEMAC within the ROPME Region and, just recently, by the Australian Maritime Safety Authority who conducted extensive efficacy and toxicity testing. See listing and test information at: (<http://www.amsa.gov.au/environment/maritime-environmental-emergencies/national-plan/General-Information/control-agents/list/>)

OSE II can be safely and cost effectively used in any type of environment on oil spills and virtually any hydrocarbon-based material, including PCBs, wastewater treatment, groundwater contamination sites, harbors, airports, refineries and any oil or fuel-spill-prone location or storage facility. It is also safe and non-toxic in sensitive habitats such as salt water marshes, fresh water environments, ocean and marine eco systems, rivers, inlets, public beaches etc.

More than 20 credible [toxicity tests](#)^{vii} have been performed on OSE II validating this product as virtually non-toxic. The following chart using EPA and Environmental Canada numbers illustrates this:

Aquatic Toxicity (ppm*) Comparison--Bioremediation EA vs. Corexits						
Environment Canada Tests					U.S. EPA Tests	
Species	Oncorhynchus mykiss	Photobacterium phosphoreum	Gasterosteus aculeatus	Daphnia magna	Menidia (silverside fish)	Mysidopsis (shrimp)
Corexit 9500	354 (96hr)	0.065 (IC 50)	not listed	not listed	25.2 (96hr)	32.23 (48hr)
Corexit 9527	108 (96hr)	not listed	103 (96hr)	42 (48hr)	14.57 (96hr)	24.14 (48hr)
Bioremediation EA (OSE II)	10,000 (96hr)	5109 (IC 50)	not listed	10000 (48hr)	8839 (96hr)	6698 (48hr)
Higher # = less toxic, lower # = greater toxicity						
*expressed in terms of LC 50 values except for IC 50 where noted. LC 50=Lethal Concentration values in parts per million measuring level in which there is mortality with 50% of species being exposed over a specific period of time.						
Toxicity Comparison, Environmental Canada and U.S. EPA Tests, Bioremediation EA vs. Corexits (34)						

LINKS TO OTHER EFFICACY & TOXICITY TESTS SUMMARIES

OSE II can be used on the surface, below the surface, on the ocean floor, in marshes, estuaries, and sand or soil, beaches on rocks, in bays, ports and harbors. Ample case studies in the field are available to prove its workability in all mediums. OSE II is virtually non-toxic and extremely effective in breaking down oil and fuels. Samplings of OSE II toxicity tests are listed below and more can be found in OSEI Corporation's [Technical Library](#).

(To view documentation and actual test reports, click the blue links or see attached.)

Salt Water Efficacy Tests:

- U.S. EPA / NETAC 21 Day & 28 Day Bioremediation Test - Biodegraded Alaskan Crude 98% in 21/28 days. (pg. 25-35)
- U.S. Respirosity Test – EPA determined OSE II to reduce hydrocarbons by 98% and aromatics by 85%, which was better than any other product tested. (pg. 41-44)
- University of Alaska (Dr. Brown) PAH Test – Demonstrates that OSE II with mineral nutrients and hydrocarbons is **300%** more effective than without OSE II. (pg. 45-49)
- Mega Borg Ship Spill in Gulf (South African Crude Oil) Test – In 216 hours OSE II lowered TPH from 100,070 ppm to 516 ppm for a 99.5% reduction. (pg. 50-52)
- BETX Bioremediation Test- OSE II can even work well on Benzene, Ethyl Benzene, Toluene and Xylene ratios demonstrate the potential to biodegrade as much as 98%. (pg. 53-56)

Fresh Water Efficacy Tests:

- Chevron Crude Oil Bioremediation Test- OSEII on Chevron Crude in 24 days reduced 95,200 ppm to 690 ppm or 99.8% effective on biodegrading this oil.

Soil Efficacy Tests:

- U.S. Marine Corps Base 29 Palms California (Cleanup Won Environmental Award)
(pg. 1-5)

Salt Water Species Marine Toxicity Tests

- U.S. EPA / NETAC Mysid Toxicity Test (this test was run twice) – LC50 Test, at 96 hours OSE II greater than 2100 mg/L.
- Both Mummichog and Artemia Salina Toxicity Test – LC50 Test, at 48 hours OSE II is 5285 mg/L. (pg. 14-23)
- EPA/NETAC testing performed by University of Western Florida, under contract from US EPA Hap Prichard, performed toxicity testing with OSE II where in a simulated open water test OSE II was applied to oil and the effluent was tested on two different species and the average LC 60 was above 5000 showing OSE II is virtually non-toxic. The test also measured the degradation of the oil showing significant remediation.
- Toxicity testing from the above open water mesocosm effluent as well as toxicity testing the US EPA, Environmental Canada, South Korean and other foreign agencies have conducted prove OSE II is non-toxic to salt and fresh water species.

Fresh Water Species Marine Toxicity Tests:

- Rainbow Trout Toxicity Test by Environment Canada - Toxicity tests state 1000 mg/L or less is toxic. Anything higher is acceptable and considered non-toxic. OSE II test result = 10,000 mg/L = non-toxic.

Beneficial Environment Effects:

- Biological Oxygen Demand for OSE II – OSE II has minimal impact on BOD, less than 7%.
- Dispersant Swirling Flask Test - Proves OSE II causes oil to float

Although testimonial in nature, the story should be told regarding attempts to use OSE II during the Gulf of Mexico spill disaster. In 2010 during the Deepwater Horizon/BP spill, dozens of experts and qualified scientists tested and/or examined the efficacy of OSE II including a team under Governor Jindal's fast track committee consisting of an Academic Advisory Panel led by the Office of Coastal Protection and Restoration—over 12 members of this panel reported that OSE II had merit. Further, an LSU team of six experts at the request of LA DEQ reviewed OSE II as well as teams from Mississippi and Alabama DEQ's resulting in official requests from numerous officials made for its use on the BP spill. Further, Bruce Freeman with a team from Alabama Department of

Environmental Management (ADEM) examined OSE II. Freeman even called Navy officials to verify the ‘*military use claims*’ made by OSEI Corporation, which did prove out with a response from a naval official indicating OSE II is stored on naval vessels and they use it in their bilges. (OSEI Corporation receives hundreds of U.S. military orders annually. Invoices/documentation are available upon request.) Finally, the BP Bio Chem Strike Force Team comprised of scores of experts from BP, USCG, OSPR in California and academics assessed OSE II showing it had significant efficacy, having made it through all tiers of testing proving that it could remediate oil as well as Corexit mixed with oil.

Oil Spill Eater II Science Facts

An Address of Common Questions-How Does It Work?

Enzyme-Based Bioremediation Oil Spill Removal Process

Oil Spill Eater II (OSE II) is a unique, first response bioremediation agent, safe and effective on all types of oil and environments, and does not contain microbes of any kind. OSE II breaks down the molecular structure of hydrocarbons through the actions of naturally-occurring bio surfactants—eliminating a need for the use of manufactured chemical surfactants that are toxic to marine species. Over 156 types of enzymes, acting as a catalyst, then develop protein binding sites while enhancing indigenous bacteria that rapidly colonize. Once OSE II’s matrices, and its nutrient portions in particular, are depleted, the enhanced bacteria convert over to the detoxified hydrocarbons as a food source via the enzymatic catalyst, digesting the hydrocarbons and hydrocarbon-based material to CO₂ and water.

Using OSE II, this hydrocarbon remediation cycle takes place in 14 to 30 days on most crude oils, and for very heavy long chained hydrocarbons, it can take up to 60 days from the time the remediation starts until full digestion of the hydrocarbons is complete.

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, 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, etc.
- c) flammability of the hydrocarbons is significantly diminished, and
- d) adhesion properties are reduced to the point they will no longer adhere.

In other words, OSE II significantly reduces an oil spill's impact on the environment in a matter of minutes.

See video link <http://osei.us/archives/1135> for observations of what occurs when OSE II is applied to water or a sandy shoreline which can be instantly observed at the 9:40 time notation point on the video.

As the process continues, the bacteria deplete the OSE II matrices/nutrients and begin to convert over to the hydrocarbons as a food source, digesting the oil. The end point of the digestion process is merely a conversion of broken down detoxified hydrocarbons including all the attached OSE II matrices (which include its bio surfactants, enzymes and nutrients) to CO₂ and water. There are no intermediary constituents.

The fact OSE II converts hydrocarbons to CO₂ and water has been substantiated by National Contingency Plan eligibility tests conducted by the US Environmental Protection Agency on four separate occasions that we know of. The test reports showed that all four tests were within 10% of each other's efficacy results, even despite the fact that one test was performed fifteen years after the first three previous tests. Further these tests and many others conducted by independent labs, government agencies and oil companies in other countries all show results consistent with US EPA's extremely thorough OSE II efficacy tests.

One such US EPA NCP test (see link <http://www.epa.gov/emergencies/content/ncp/products/oseater.htm>) was conducted with a control, and measures 54 analytes, or separate compounds of crude oil, to definitively determine across the full spectrum of individual analytes if they are remediating, or if mass is reducing. The tests are performed in triplicate, at four different times, on days 0, 7, 14, and 28. These tests conclusively substantiate that OSE II converts oil to CO₂ and water.

LONG TERM STUDIES NOT REQUIRED

The notion that a long-term study of "after effects" of OSE II is needed to determine long-term environmental impacts is nullified and pointless once the conversion of hydrocarbons to CO₂ and water is complete. Because the hydrocarbons are removed from the environment, whether it be ocean, fresh water, estuarine, or soil environment; the biodegradable and organic ingredients of OSE II are no longer present after the process is complete. Monitoring protocols, however, have been developed and are prescribed for all types of environments as a matter of best practice.

The conventional call for *long term studies* are derived from the use of chemical dispersants, since they have proven to disperse and sink oil into the water column with still unknown effects; although we do know that portions of the oil form into plumes or tar balls, which also end up on shorelines and/or remain on the seabed.

Dispersants have proven to contain constituents that prevent or slow the degradation of hydrocarbons by indigenous bacteria. Dispersants have demonstrated a tendency to exacerbate the toxicity of the oil, to cause oil to persist in the environment, as well as to facilitate ingestion by marine organisms and life, again, with as yet unknown effects; hence, long-term studies are required.

TOXICITY LEVELS = INSIGNIFICANT

In terms of concerns over toxicity to marine species, OSE II has had over 18 toxicity tests performed on it, some by the US EPA, Environment Canada, and in accordance with other countries' requirements. The average LC or LD 50 is 5000 and above. Keep in mind the US EPA has established anything above 100 to be virtually non-toxic. See test at link <http://osei.us/wp-content/uploads/18-Toxicity-test-with-4-2012-Log0.pdf> page 25.

To address possible concern over intermediaries, the US EPA had Western University of Florida perform a toxicity test on OSE II, using it in a simulated open water test. The toxicity tests were performed on two different species over a 7-day time period. The 24-hour toxicity test on both species showed an LC 50 of over 6000; the 48-hour LC 50 on the same species was 5970; the 96-hour LC 50 was 5700; and the 7-day LC 50 was 2500. These toxicity tests tell that when OSE II is applied to oil there is virtually no intermediate toxicity. In a second [and completely separate] species toxicity test, LC 50's were 8839 for the 48-hour and the 96-hour test. These tests suggest there are no intermediate toxicity concerns even during the time frame hydrocarbons are being remediated to CO₂ and water.

A good example of long-term and repeated use having no toxic effects is demonstrated by a video of an end user in Bakersfield, California who has used OSE II to remove oil dust (from oil fields nearby) on a monthly basis from a 2600 gallon Koi fish pond with abundant vegetation surrounding the edges of the pond. See video link at <http://osei.us/archives/1150>. This clearly demonstrates the application of OSE II to the oil dust on the surface of the water. The fish come up and appear to ingest some of the OSE II and swim through it several times, without harm. This application of OSE II has been done routinely for over two and a half years, without any harm to the Koi fish. While just seeing fish swim through water mixed with OSE II in a video is not conclusive that there are no long-term negative impacts, the end user reports that these Koi have repeatedly had OSE II applied to their pond every month for over two years and they, as well as the plants and vegetation surrounding the pond, are growing and thriving.

The U.S. Occupational Safety and Health Administration (OSHA) has reviewed OSE II and determined there is no toxicological concern for humans in regards to OSE II (see link http://osei.us/tech-library-pdfs/2011/9-OSEI%20Manual_OSHA.pdf).

OSEI Corporation demonstration videos generally show it to be harmless as persons can be seen pouring OSE II over their hands to clean any oil off. These types of demonstrations have been carried out repeatedly since 1989 thousands of times without any harm coming to the OSEI associates being exposed to the product.

SUMMARY

In summary, OSE II has clearly scored a “pass” on repeated efficacy tests, with over 27,000 successful cleanups on its record since 1989 on fresh, brackish and salt water spills, as well as spills in sensitive habitats, on soil, underground, ground water and concrete, permanently removing the spills from the environment by converting them to CO₂ and water.

Being that OSE II is classified as an *Enzyme Additive Category Bioremediation Agent* on the US NCP Product Schedule (meaning it contains no microbes) qualifies it as a first response tool on fresh and ocean navigable waters while other bioremediation categories are not recommended as such. To understand why it is different than other types, see Bioremediation Fact Sheet at: http://osei.us/wp-content/uploads/TYPES-OF-BIOREMEDIATION-THREE-MODES_OSEI_Updated.pdf

There are very few, if any oil spill cleanup products that have over 18 toxicity tests - acute, chronic and long term tests - except OSE II, which irrefutably document it as virtually nontoxic. The OSHA letter shows that, with OSE II, there are no toxicological concerns for responders, or humans in general. OSE II removes oil from the environment, which it does by converting oil to CO₂ and water with no toxicity trade-offs or secondary clean up requirements. OSE II's own matrix is nontoxic as tests prove, and is 100% biodegradable as actual clean ups have proven for 25 years.

OSE II emulates nature's own process; it merely speeds the natural process up to accomplish in a few days or weeks what Mother Nature may take decades to achieve. OSE II reduces the time toxic hydrocarbons are able to persist and remain present in any given environment to adversely affect it.

Common Questions Summary compiled by LAEOSTC
In consultation with Steven Pedigo,
Spill Response Expert and Inventor of OSE II^{viii}

ⁱ <http://osei.us/wp-content/uploads/OSEI-EPA-NCP-listing-letter.pdf>

ⁱⁱ See member agencies of the U.S. National Response Team: www.nrt.org/

ⁱⁱⁱ Governor Jindal's fast track review committee consisting of qualified scientists and oil spill response professionals/consultants, headed by Prof. Dean Mallory of Lafayette University reviewed OSE II along with DEQ teams in Mississippi, Alabama and Florida.

^{iv} [http://www.nrt.org/production/NRT/NRTWeb.nsf/AllAttachmentsByTitle/A-78bioremedFS/\\$File/bioremed_FS.pdf?OpenElement](http://www.nrt.org/production/NRT/NRTWeb.nsf/AllAttachmentsByTitle/A-78bioremedFS/$File/bioremed_FS.pdf?OpenElement)

^v Osage Indian Reservation Cleanup - an example of EPA involvement in using OSE II on US Navigable Waters---records which should be available in your archives.

^{vi} OSEI manufacturer has retained the right to keep the details of this information confidential to protect its business interests. Lawrence Anthony Earth Organization has examined the documentation from various countries where OSE II has been extensively used on major spills and can attest to the authenticity of the information but respect OSEI Corporation's request to keep this information confidential.

^{vii} <http://osei.us/wp-content/uploads/18-Toxicity-test-with-4-2012-Log0.pdf> Note, this document summarizes toxicity tests done on OSE II. The complete reports are available upon request and can be validated by contacting the 3rd party sources also. LAEO has validated these as authentic and scientifically valid.

^{viii} At the time of this writing there is only one source for Bioremediation Agent EA Type Category, and this is OSE II. Mr. Steven Pedigo is the inventor of the product and qualified in the sciences related to oil spill response and chemical clean up agents.

Downloadable attachments for this review available at:

<http://protectmarinelifenow.org/wp-content/uploads/delightful-downloads/2014/08/Bio-aquatic-lab-NCP-complete-testing.pdf>

<http://protectmarinelifenow.org/wp-content/uploads/delightful-downloads/2014/08/OSE-II-Efficacy-Documentation.pdf>

http://protectmarinelifenow.org/wp-content/uploads/delightful-downloads/2014/08/OSE-II-LAEO_DOCUMENTATION_SUMMARYAUG2014_FF.pdf