14th Annual OSC Readiness Training Program

2011 OSC Readiness Training

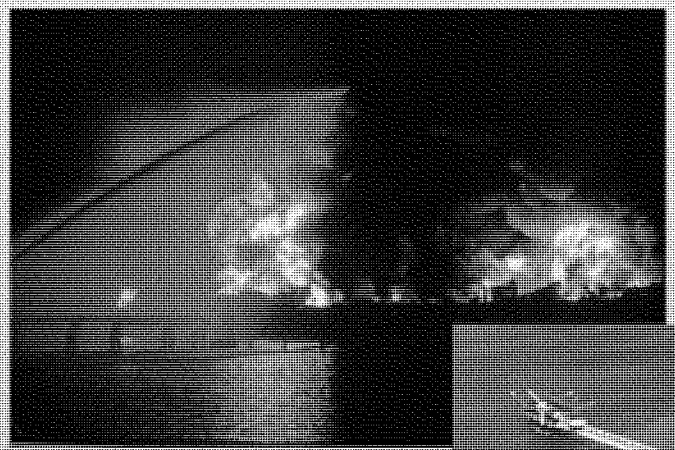
NCP Product Schedule / Selection Guide for Oil Spill Response Technologies / Alternative Response Tool Evaluation System for Oil Spill Response (ARTES)

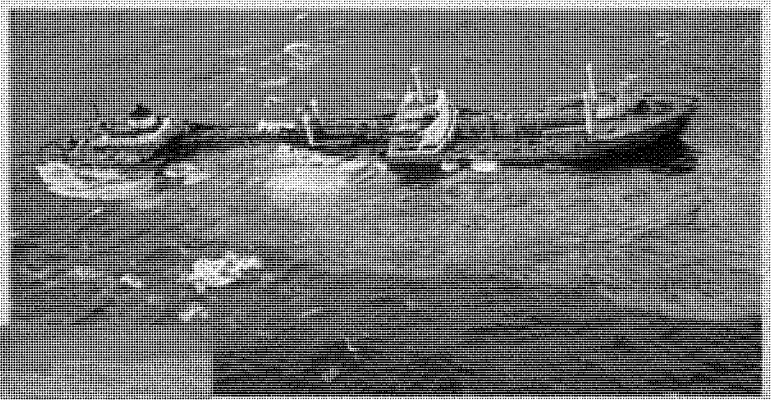
Training by OSCs for OSCs

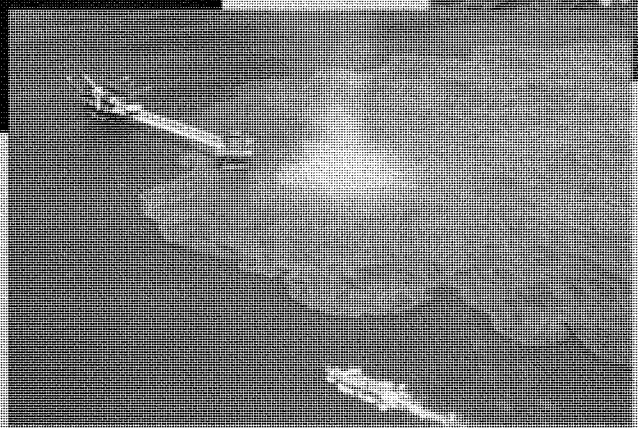
January 31 – February 4, 2011
Orlando, Florida
www.oscreadiness.org

History and Background

- Past spill experiences shapes our current decision-making about countermeasures e.g., *Torrey Canyon*, *Ixtoc I* blowout, *Exxon Valdez, etc.*







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History, Cont.d

- Use of "non-traditional" response technologies (e.g., early dispersants) ⇒ perceived damages
- Their use resulted in changes in Federal regulations:
  - National Contingency Plan, and
  - the Oil Pollution Act of 1990

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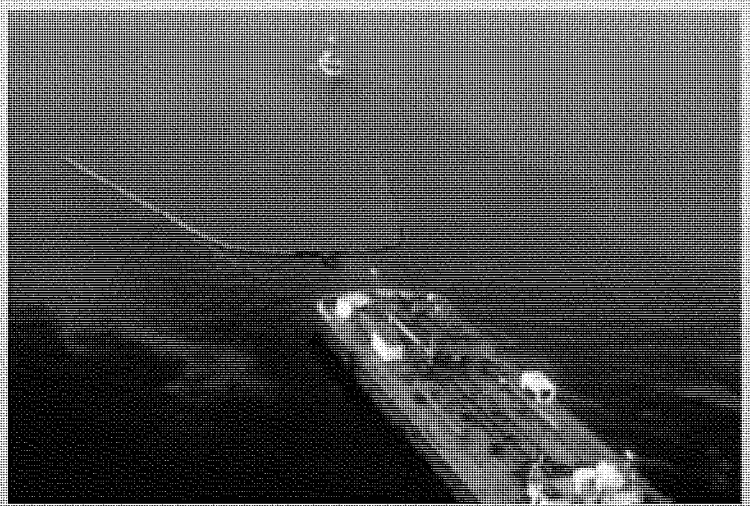
High Comfort Level

- Traditional countermeasures (boom, skimmer, sorbents etc.) are a known entity



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Oil Spill Technologies, Defined

- a.k.a. – "non-traditional" regulated countermeasures
- Countermeasures that are infrequently used; limited experience / knowledge about when these countermeasures could be useful and environmentally beneficial

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Oil Spill Technologies, Defined

- Includes:
  - Dispersants
  - Bioremediation Agents
  - Surface Washing Agents
  - Shoreline Pre-treatment Agents
  - Surface Collecting Agents
  - Solidifiers
  - Elasticity Modifiers
  - Emulsion Treating Agents
  - Other Miscellaneous Agents

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Discomfort with Oil Spill Technologies

- Decision-maker's wary of non-traditional response technologies

Why?

- Lack of experience with the various products / strategies
- Perceived problems with their use:
  - Regulatory agency understanding?
  - Liability?
  - Result in additional environmental damage?
  - Lack of experienced application / recovery personnel
  - Difficult to interpret product information?
  - Vendors

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Technologies Today

- Chemical products significantly changed fro past formulations; research now current and extensive on many products
- Standardized effectiveness and toxicity testing required
- Must be registered with EPA for use on oil spills in the US

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Approach For Evaluating Technologies

- "Tools" available to response decision-makers:
  - The National Contingency Plan (NCP) Product Schedule (Subpart J - 40 CFR Part 300.900)
  - Selection Guide for Oil Spill Response Technologies
  - Applied Response Tool Evaluation System (ARTES)

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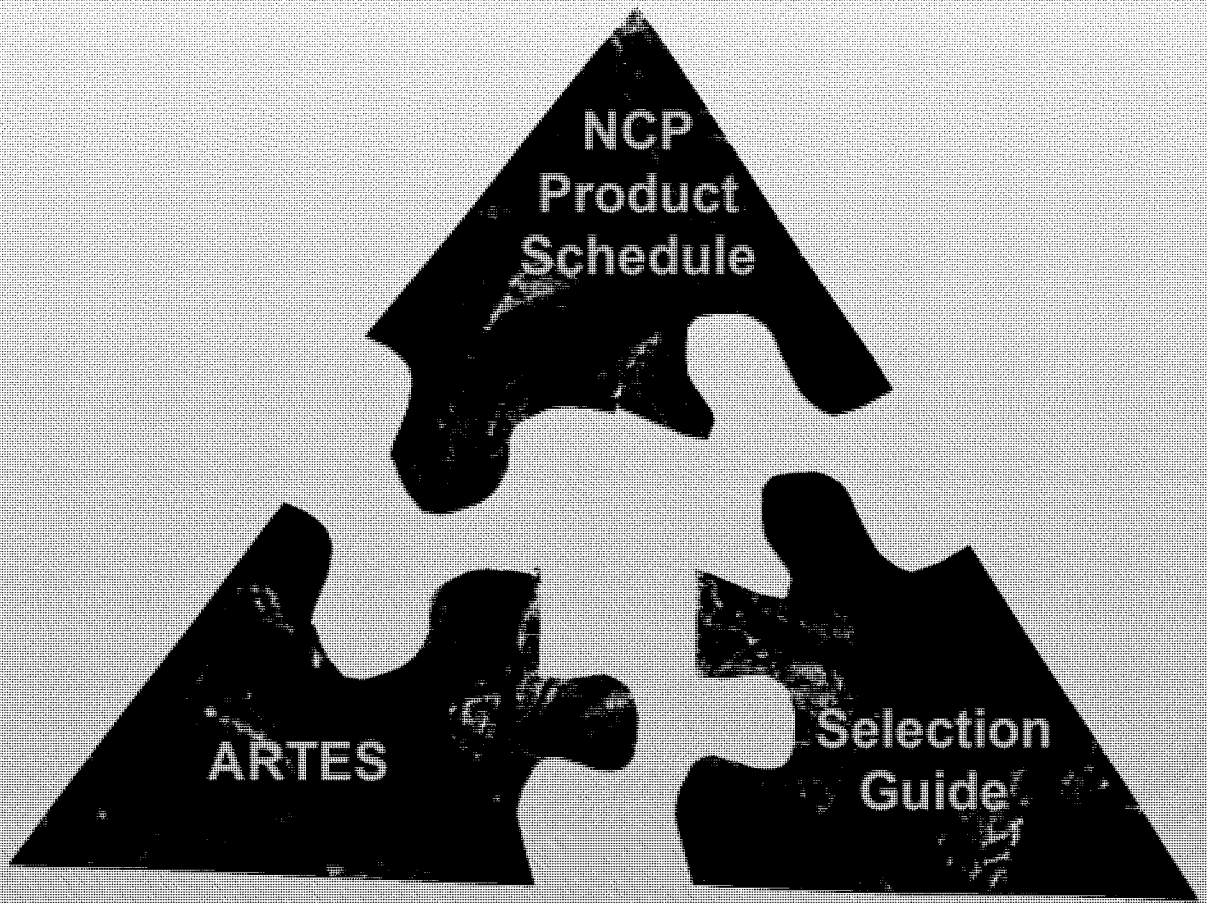
Putting the Pieces Together for Response Decision-making



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NCP Product Schedule

- Functions as the regulatory vehicle for use of any applied technologies
- Regulated under:
  - Section 311(d)(2) of the Clean Water Act, and
  - Section 4201 (a) of the Oil Pollution Act of 1990

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Listing of a product does NOT mean that the product is recommended or endorsed by the USEPA for use on an oil spill;

Only that product has met minimum information requirements for listing.

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Product Categories on NCP PS

- Dispersants
- Surface Washing Agents
- Surface Collecting Agents
- Bioremediation Agents
- Miscellaneous Oil Spill Control Agents

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Limitations of NCP PS

- Not designed for incident-specific decision-making
- Does not allow easy comparison of products
- No way to capture lessons learned for individual product use
- Limited to chemical and biological additive products, that is…not new or advanced mechanical strategies or techniques

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Alternative Response Tool Evaluation System (ARTES)

- Focus of another presentation…
- Used to:
  - evaluate a product's appropriateness for use during a specific incident, under specific circumstances.
  - as a pre-evaluation to identify conditions under which favorable outcomes are anticipated when a product is used.

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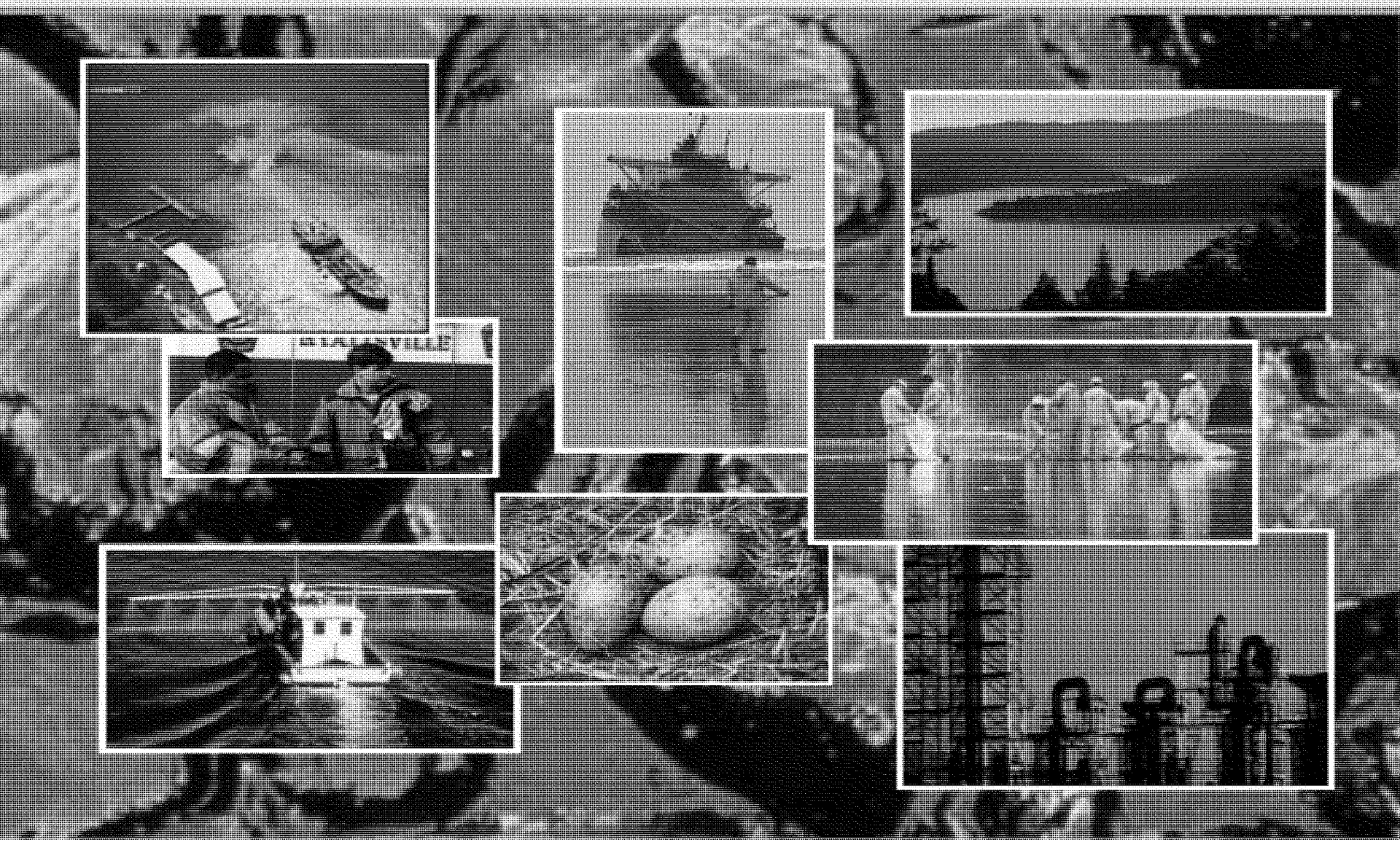
Selection Guide for Oil Spill Response Countermeasures



Why Selection Guide Developed

- Designed to provide OSCs and other response decision-makers with an easy-to-use technical guidance database for considering applied oil spill technologies for use during an incident.
- Developed by Region III in cooperation with Region IV

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Selection Guide, Cont'd

- Two volumes:
  - Decision-making information (Nationally applicable) and
  - Implementation/operational support documentation (regionally customizable)
- Provides information requested by decision-makers to consider, select, and implement an environmentally-appropriate product or technology

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Selection Guide Information

- Bioremediation Agents
- Dispersants
- Elasticity Modifiers
- Emulsion Treating Agents
- *In situ* Burning on Land
- *In situ* Burning on Water
- Shoreline Pre-treatment Agents
- Solidifiers
- Sorbents
- Surface Collecting Agents
- Surface Washing Agents

Different Categories than the NCP!

Information, Cont'd

- Information Categories
  - Mechanism of Action
  - When to Use
  - Authority Required
  - Availability
  - General Application Requirements
  - Health and Safety Concerns
  - Limiting Factors/ Best Management Practices
  - Monitoring Requirements / Suggestions
  - Waste Generation and Disposal Issues
  - References

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Content

- Instructions and matrices for selecting a strategy or countermeasure using job aid techniques
- Allows direct product comparisons among products and categories/strategies using product comparison tables
- Establishes the need for monitoring and capturing lessons learned

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Content, Cont'd

- Glossary used with various products/ strategies
- History and status of product use (case study examples)
- Toxicity primer – how toxicity is measured and what the numbers really mean

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Strengths of Selection Guide

- Allows comparison of similar products as well as comparison of various strategies to determine the best response
- Developed using "job aid" techniques
- Allows documentation for the decision-making process

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Strengths, Cont'd

- Provides situation–specific assistance in the selection of products and strategies during planning and response, including new products / strategies
- Provides guidance on the use of response technologies and products
- Developed to capture and incorporate lessons learned

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Limitations of Selection Guide

- Only as good as the information submitted; data could be limited
- Should be updated as new information becomes available (e.g., ARTES evaluations, actual use)
- June 2009 Edition available in:
  - paper format,
  - internet download (January 2003) from www.response.restoration.noaa.gov/oilaids.html
  - interactive e-version (to be released soon)

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Limitations, Cont'd

- Decision-makers need to ensure that they are making their decisions with the most current information available
- Not a cook book! – Still have to evaluate incident-specific information with product(s) in mind
- Need Evaluation Team (OSC, SSC, State, USFWS, etc.) to assist with review to ensure effective evaluation for incident-specific conditions for FOSC.

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e-version of the Guide

- e-version of the Selection Guide finalized
  - Components & use focus of training after lunch
  - Hands-on practical use of the guide
    - Example scenarios will be used to work through the Selection Guide Process
    - Input your own scenarios

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In Summary

- Use all the pieces to solve the puzzle (make a decision)

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In Summary, Cont'd

- Most effective use of these tools is in a coordinated manner
- NCP is the first step and requirement; provides guiding legislation; Nationally applicable information
- ARTES assists in the evaluation of single product / technology for regional or incident-specific conditions

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In Summary, Cont'd

- Selection Guide allows:
  - Screening the incident for possible strategies/ products that could add value to a response, and
  - Comparison of products / strategies of interest relative to other techniques to select the most appropriate technology

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Thanks for your attention!

If you have any questions, please call
Debbie Scholz
843-367-5126

Application of SMART Protocol OSC Readiness, 2011

Harry L. Allen
US EPA/ERT

What is SMART?

(From the NOAA Dispersant Applicator's Observation Job Aid)

- "Special Monitoring of Applied Response Technologies" (SMART) as a joint product of the USCG, NOAA, and EPA.
- SMART grew out of the Special Response Operational Monitoring Plan (SROMP) to avoid arguments over whether or not the dispersants were working.
- SMART: establishes a monitoring system for rapid collection and reporting of real-time, scientifically based information, in order to assist the Unified Command with decision-making during in situ burning or dispersant operations.
- SMART recommends monitoring methods, equipment, personnel training, and procedures that strike a balance between the operational demand for rapid response and the Unified Command's need for feedback from the field in order to make informed decisions.

How do we use SMART?

- SMART applies particularly to the use of chemical dispersants and *in situ* burning as response alternatives.
- SMART is a decision-making tool during spill operations at a response and a planning tool where pre-approval is sought for burning or dispersant use.
- The SMART protocol has been updated and is available on the NOAA Website:
- http://response.restoration.noaa.gov
- Differences between NOAA and EPA arise over the interpretation of “response technology effectiveness.”

How much dispersion is “effective” and will it cause aquatic toxicity?

- The NCP Product Schedule lists the effectiveness and toxicity of chemical countermeasures, but the RRT needs to approve their use.
- The minimum requirements for listing are dispersant effectiveness of 45% at the application rate of 1:20 Dispersant to Oil Ratio (DOR) in a swirling flask and a toxicity <1/10 LC50. The next slides are typical examples.
- Researchers have demonstrated effective dispersion in the lab at DORs of 1:25 and 1:100 using the new baffled flask test.
- The actual rate for the Deep Sea dispersant application at the well-head was about 1:195 (9 gpm/1,650 gpm).

SUMMARY OF SUBPART J NOTEBOOK INFORMATION ON DISPERSANT FORMULATIONS

Material Tested	Species	LC50 (ppm)	
COREXIT® EC9500A	Menidia beryllina	25.20 96-hr	
	Mysidopsis bahia	32.23 48-hr	
No. 2 Fuel Oil	Menidia beryllina	10.72 96-hr	
	Mysidopsis bahia	16.12 48-hr	
COREXIT® EC9500A &	Menidia beryllina	2.61 96-hr	
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	3.40 48-hr	More toxic when dispersed.
Reference Toxicant (SDS)	Menidia beryllina	7.07 96-hr	
	Mysidopsis bahia	9.82 48-hr	

SWIRLING FLASK DISPERSANT EFFECTIVENESS TEST FOR COREXIT 9500A TEST WITH SOUTH LOUISIANA (S/L) AND PRUDHOE BAY (P/B) CRUDE OILS

Oil Effectiveness (%)	%
Prudhoe Bay Crude	45.3%
South Louisiana Crude	54.7%
Average of Prudhoe Bay and South Louisiana Crudes	50.0%

Use SMART to know you are getting effective dispersion?

- SMART Tier 1 relies on visual observation of dispersant effectiveness by trained observers.
- SMART Tier 2 employs field analytical techniques such as fluorometry (referenced to background), turbidity, droplet size distribution, conductivity, temperature, and depth (CTD) to estimate dispersion.
- SMART Tier 3 requires sampling and analysis to determine what oil fractions are being dispersed, whether the emulsions are physical or chemical, and whether there are toxic chemicals in the emulsion. Lab work is usually required. Dissolved oxygen is also considered a Tier 3 analyte, but electronic DO meters need lab calibration.

Estimating Initial Oil on the Water

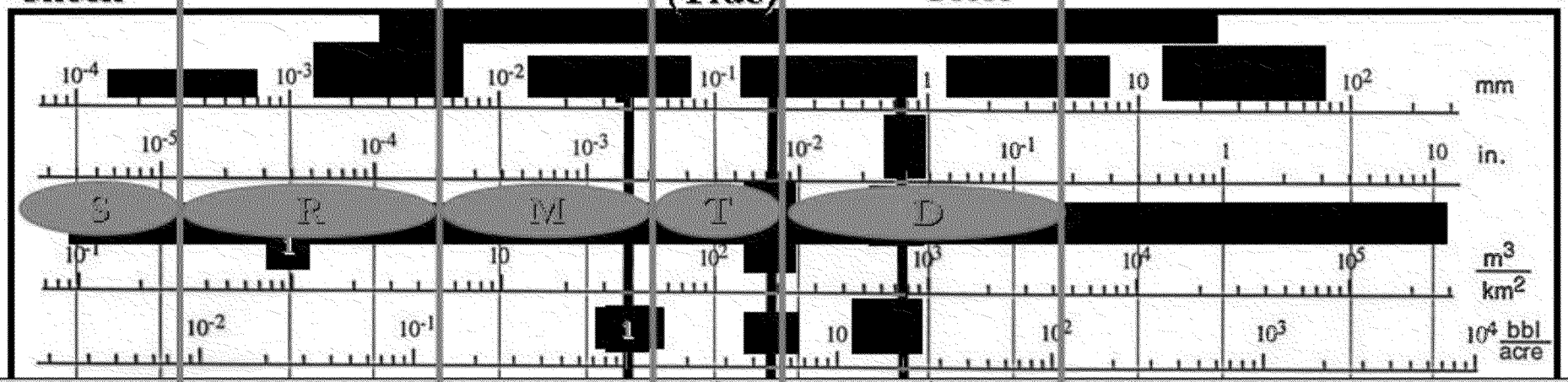
- It is an important first step to estimate the amount of oil on the surface in order to determine the required dispersant loading or to predict the feasibility of *in situ* burning.
- Al Allen of Spiltec has created an elegant oil thickness estimation system. Using this and an estimate of the area of oil coverage, we can calculate oil volume on the surface. If we have made an initial estimate before dispersant application, the relative degree of dispersion can be estimated as closely as by any other means.

Visual Estimation of Oil Thickness & Quantity

Note:
1 μm = 1 m^3/km^2
≈ 0.026 bbl/acre

Color Code

Silvery Grey Sheen	Rainbow	Metallic	Trans. Dark (True)	Dark (True) Color
0.3 μm 3×10^{-4} mm 1.2×10^{-5} in.	5 μm 5×10^{-3} mm 2×10^{-4} in.	50 μm 5×10^{-2} mm 2×10^{-3} in.	200 μm 2×10^{-1} mm 8×10^{-3} in.	4,000 μm 4 mm 0.16 in.



0.1 μm	1 μm	10 μm	100 μm	1000 μm
10^{-4} mm	10^{-3} mm	10^{-2} mm	10^{-1} mm	1 mm
4×10^{-6} in.	4×10^{-5} in.	4×10^{-4} in.	4×10^{-3} in.	4×10^{-2} in.

If not bounding, use as "nominal" mid-range values for each code #

Crude Oils Appear Dark ("True") in Color

Warm Stable

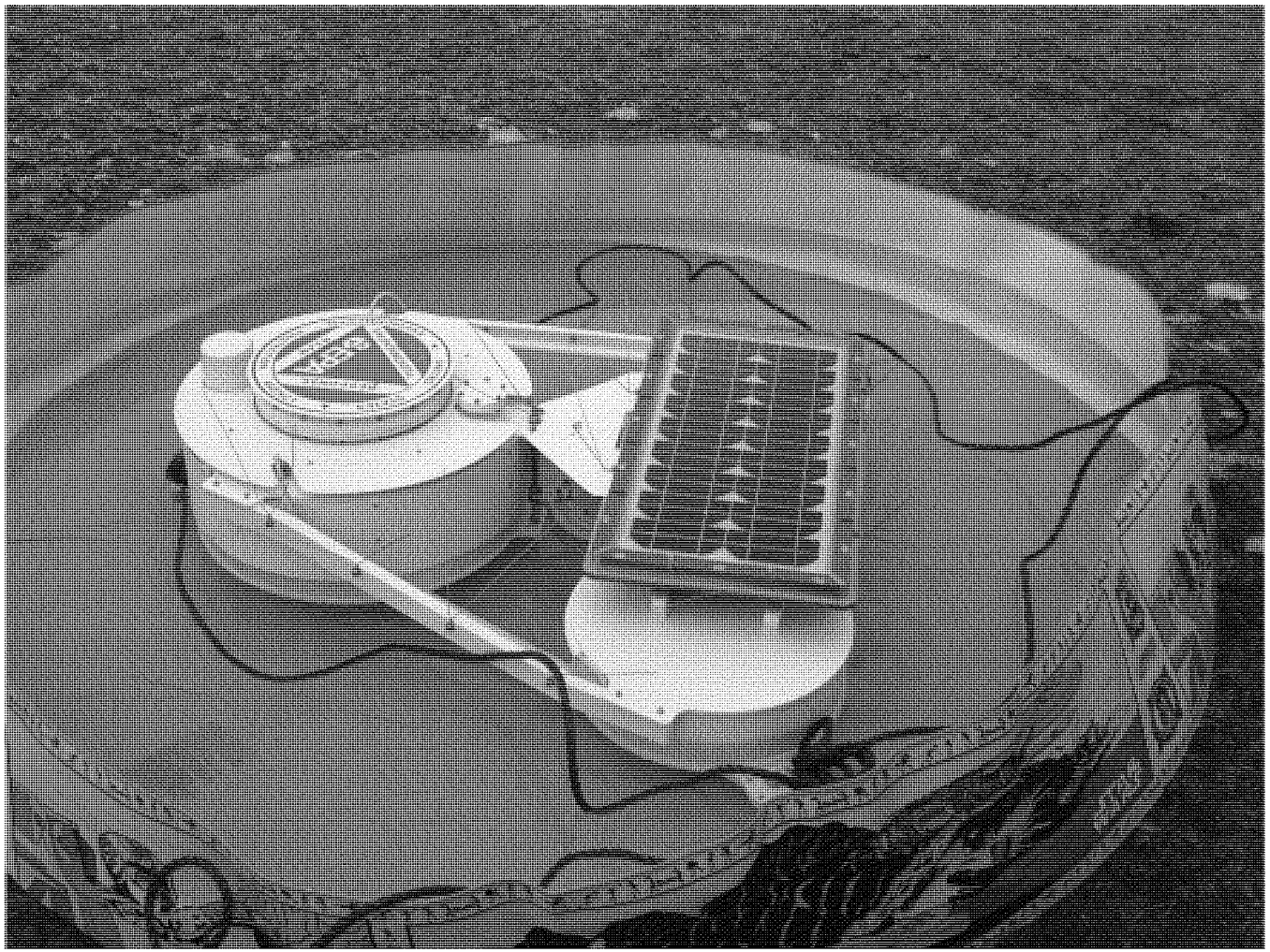
Emulsions

Cold Stable

Dr. Alan A. Allen, Spiltec

The Leakwise Detector “Waverider” by GE Systems

May be used to measure the thickness of floating or emulsified oil remotely. Then it emails and texts this information to Command.



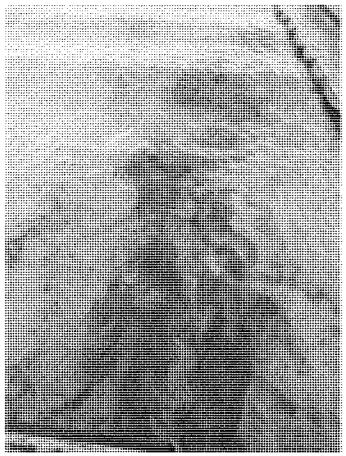
Standardizing SMART Tier 1

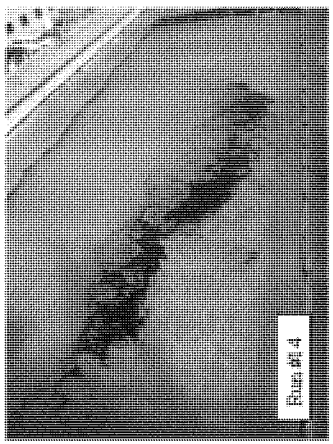
- Visual assessment of oil slick and oil in surface waters:
  - Trained observers may be hard to find.
  - Attempts to standardize observation and reporting of visual dispersion observations
  - Assesses ONLY initial break up of slick into dispersed oil droplets
  - Remember that dilution of the dispersant may allow the oil to resurface after a few hours. Think “Terminator 2.”

Lewis Four Point Effectiveness Scale	
Effectiveness rating	**Description[a]**
1	No visible evidence of dispersion
2	Some evidence of partial dispersion
3	Moderate and incomplete dispersion
4	Rapid and complete dispersion

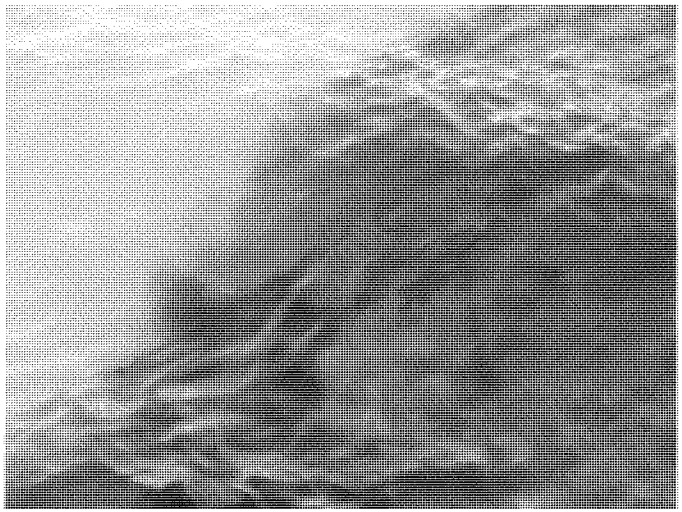
a. Based only on behavior of oil in first 15 minutes after dispersant added and agitated by waves.

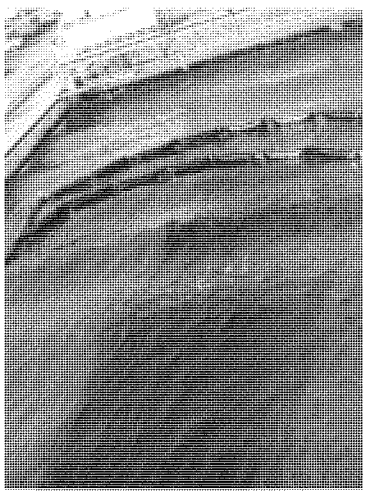
Visual Effectiveness = 1



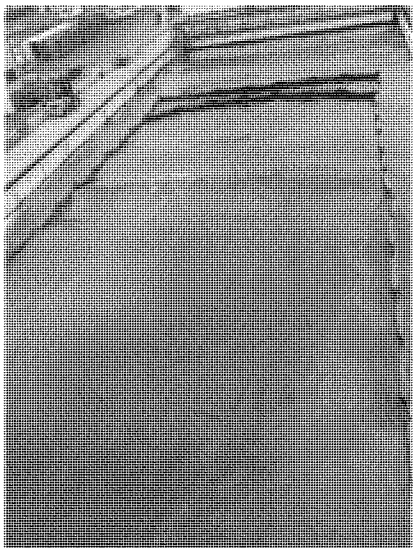


Visual Effectiveness = 3





Visual Effectiveness = 4



SMART Tier 2 - Fluorometry

- Dissolved unsaturated and aromatic hydrocarbons, when excited by light waves at 280-320 nm, emit photons (fluoresce) at characteristic wavelengths. Aromatic hydrocarbons emit at about 340 nm; saturated hydrocarbons at about 445 nm. The size of the signal relates to the concentration of each fraction.
- Tier 2 SMART procedure makes use of this characteristic. Deploying a fluorometer by boat, the monitoring team samples at a depth of 1 to 2 m along transects through sections of the slick before and after dispersant spraying.

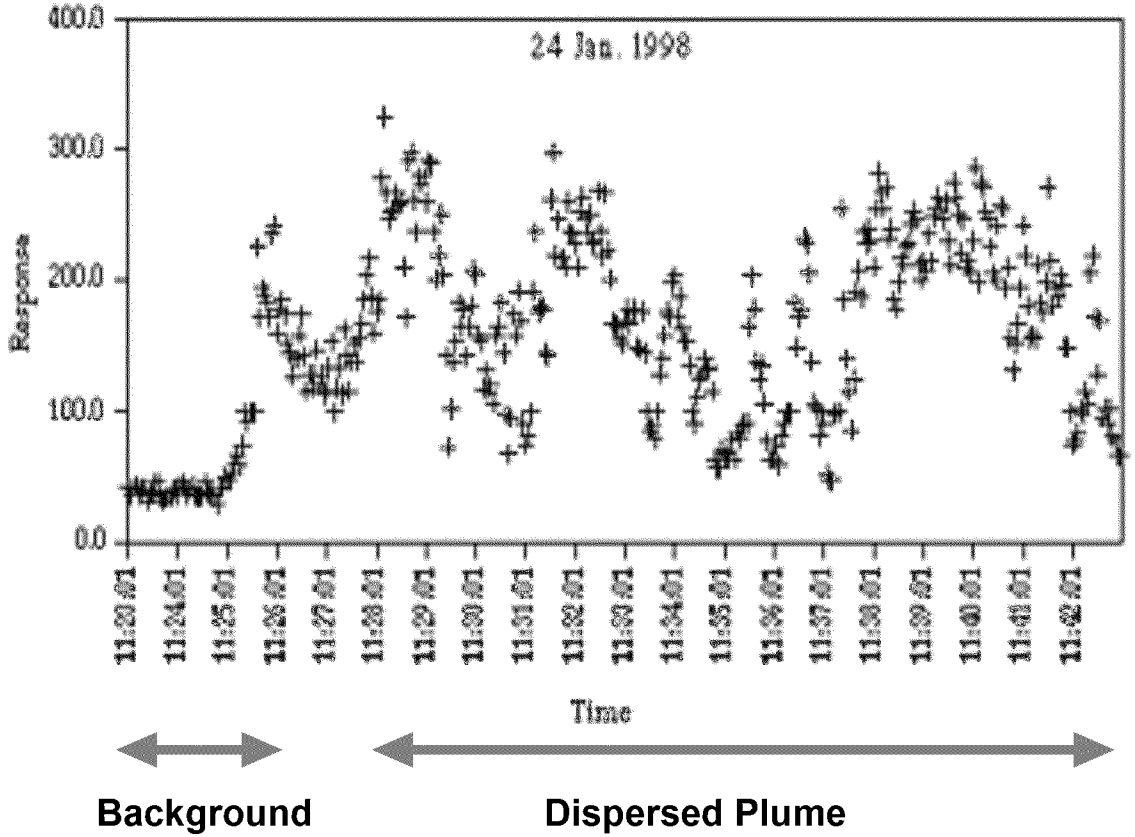
SMART Tier 2 – Fluorometry (cont'd.)

- Vessel tows fluorometer outside the oil plume and bisects the oil plume to get a baseline of natural dispersability.
- Aircraft applies dispersant over target area.
- Dispersant applications are judged to be effective if fluorometer readings under treated slicks are at least 5 times greater than under untreated slicks (i.e., under the slick prior to treatment).
- Grab samples are taken from the water stream or by Kemmerer at predetermined intervals for post-event calibration of the fluorometer using the actual oil spilled and for Tier 3 analysis if required.

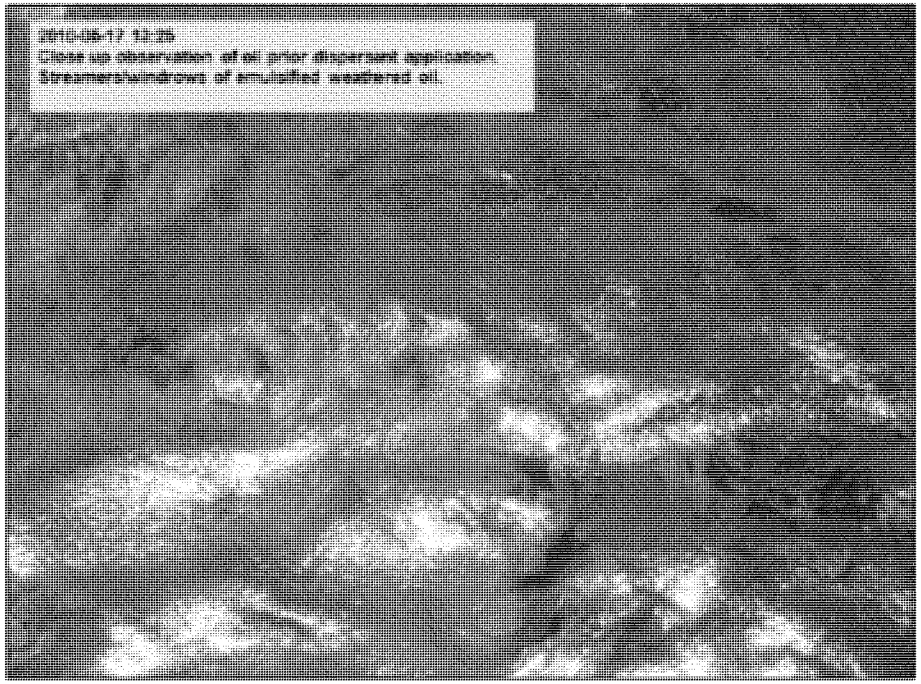
Steps for SMART Tier 2 - Fluorometry

- Vessel tows fluorometer thirty minutes after dispersant application at a starting position outside the oil plume and bisects the plume to determine the effectiveness of the dispersant application.
- Vessel tows fluorometer sixty minutes after dispersant application at a starting position outside the oil plume and bisects the plume to determine the effectiveness of the dispersant application.

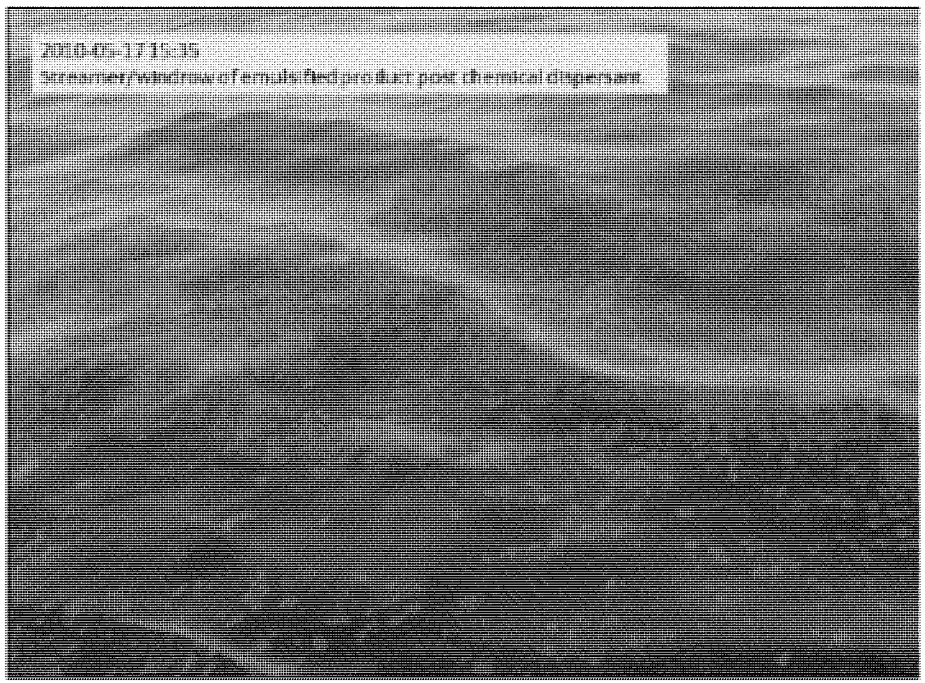
Ideal Surface Application of Dispersant



"Ideal" Fluorometry Trace from Historical Record



What does it look like?



Data to date show dispersant effectiveness is consistent with our expectations

Choosing your Weapons for SMART Tier 2

- Fluorometers
- Particle Counters
- Bubble Size Indicators

Turner AU 10 Fluorometer
The “Old”

Turner Cyclops C6 Fluorometer
The “New”

Turner C3 Fluorometer

"Weapon of Choice" in the Gulf

The Turner C3 fluorometer (excitation wavelength of 320 nm and emission wavelength of 400-600 nm) was towed by boat through the dispersed oil plume at 1-m and 2-m depths to make measurements of the dispersed oil plume both within the plume and up to 50-m outside the plume.

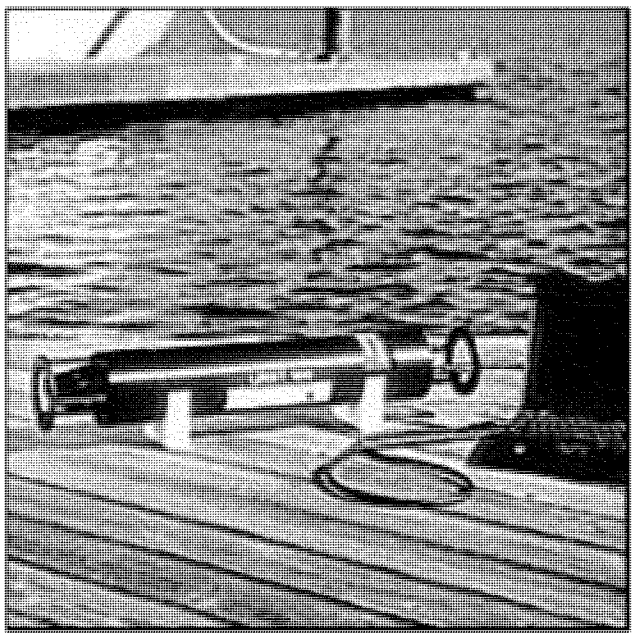
BUBA Buster / Wetstar x GPS

- In-situ fluorescence detector combined with GPS
- Simple setup
- Continuous monitoring along transects
- Provides spatially-registered estimates of concentrations

TAMU FL3 and LISST-100X at Ohmsett

Sequoia Particle and Particle-size Analyser

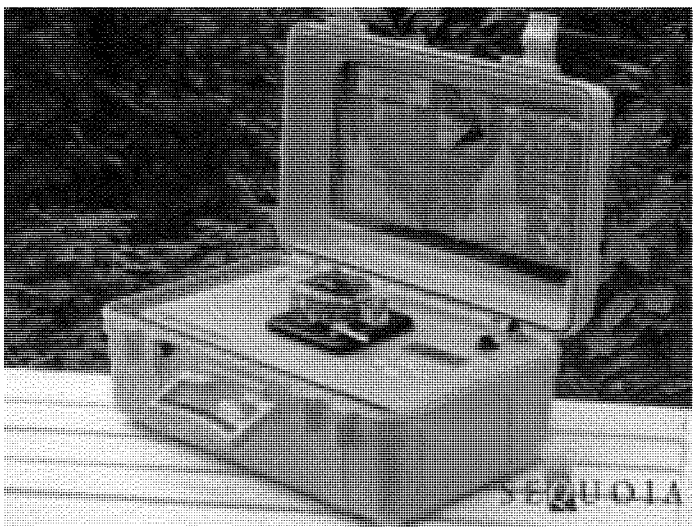
- Measures both oil droplet abundance and particle size in the range of 2.5 – 500 microns
- In-situ measurement
- Little set up needed
- Requires “blank”
- Needs clean water standard
- Continuous monitoring on transects
- Laser *In-Situ* Scattering and Transmissometry (LISST) instrument.



LISST–100X Type-C

Sequoia On-Board Analysis

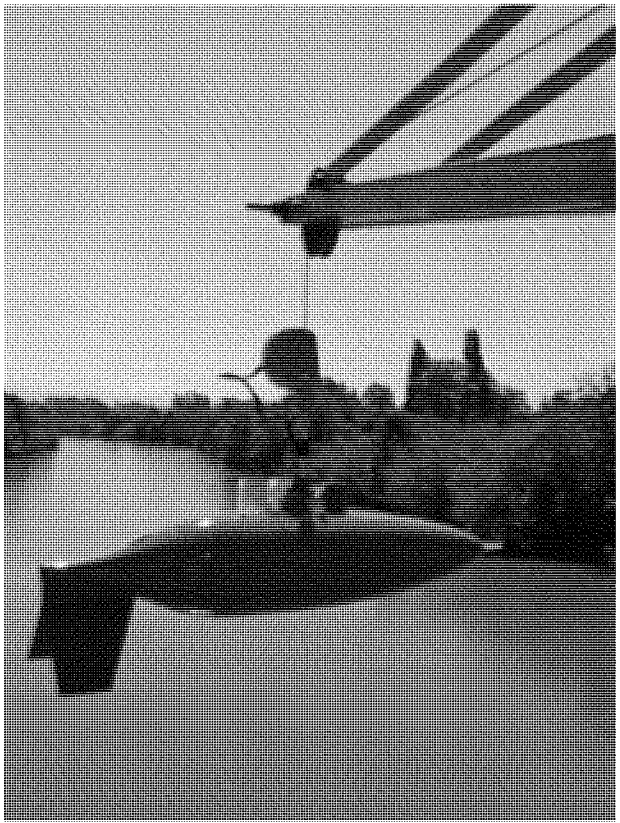
- Ex-situ particle-size analyser
- Analytical capability of LISST 100, but in ex-situ format
- Continuous monitoring
- Requires pump on effluent side
- Requires “blank”
- Amenable to post-calibration



Sequoia Steam-Side

Sequoia Towable

- Towable in-situ particle-size analyser
- Analytical capability of LISST 100, but in easily towable
- Designed for freshwater,but could be set up form marine use

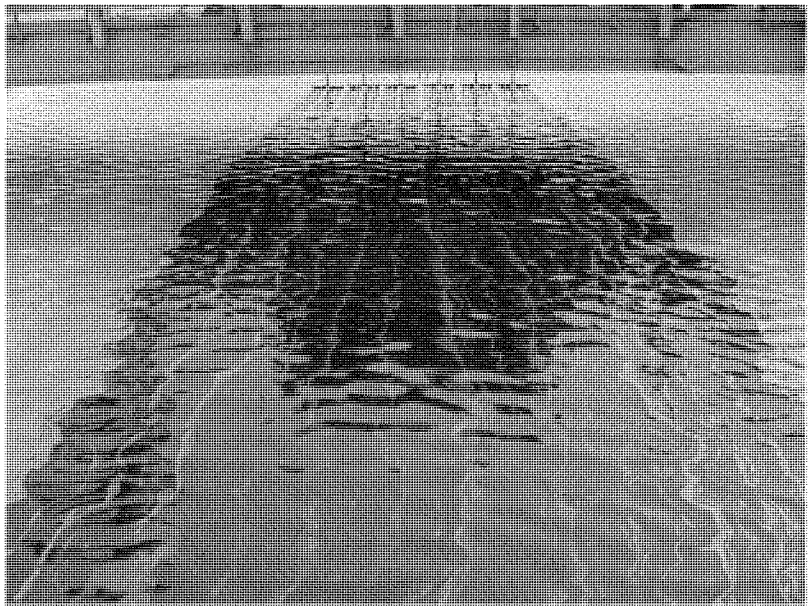


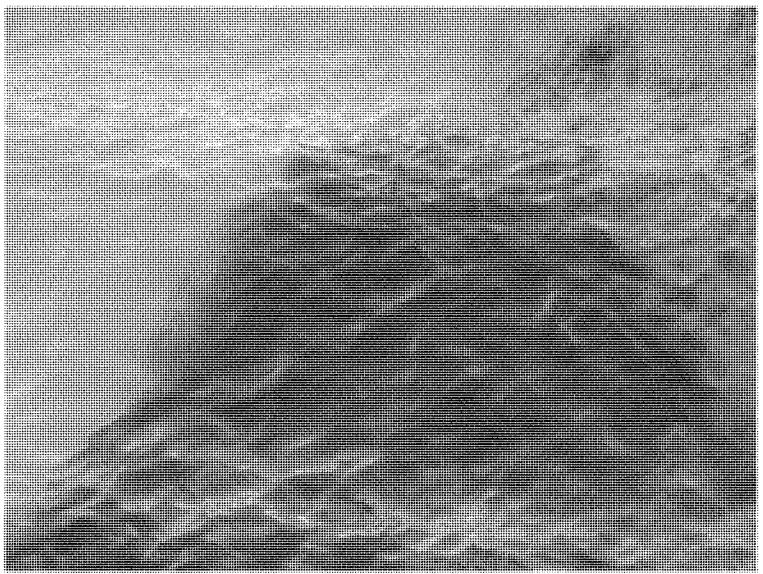
Sequoia SL

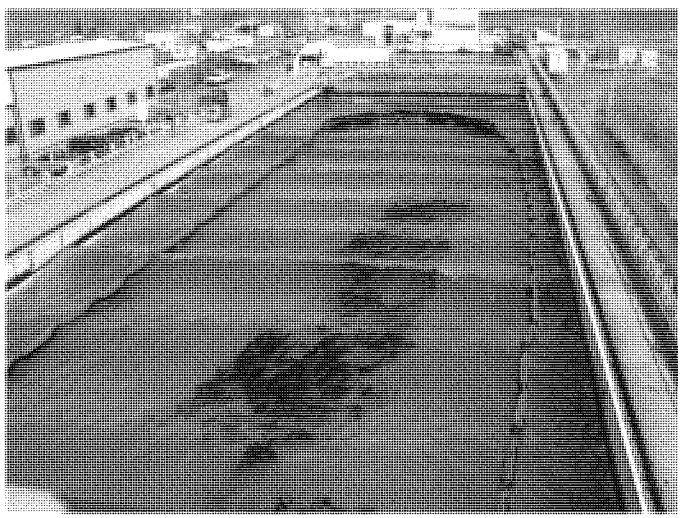
Summary of New Items
Based on a presentation by Ken Trudel

Instrument	Pre-Deployment Engineering & Peripherals	On-Site Set-up and Calibration	Weight	Cost	Global Positioning System
Turner 10AU	Pump, power,hose, down-rigger	Assembly, calib w dye and/or oil	35 lb Fluorometer only	$ 16 K	Extra
BUBA Buster	In-situ	Little set up; No user calib.; Diesel Standard		$ 4K/ Unit Based on CDOM cost	Included
LISST -100X	In-situ	Blank	25 lbs	$ 29.5 K/ Unit	Extra
LISST Stream-Side	Pump, power,hose, down-rigger	Blank	15 lbs	$ 15K/ Unit	Extra
LISST SL	In-situ	Blank	35 lbs	$ 35K/ Unit	Extra
Turner C3	In-situ	Intuitive Calibration	3.6 lbs	$ 8.5 K	Extra

Testing of Equipment at OHMSETT



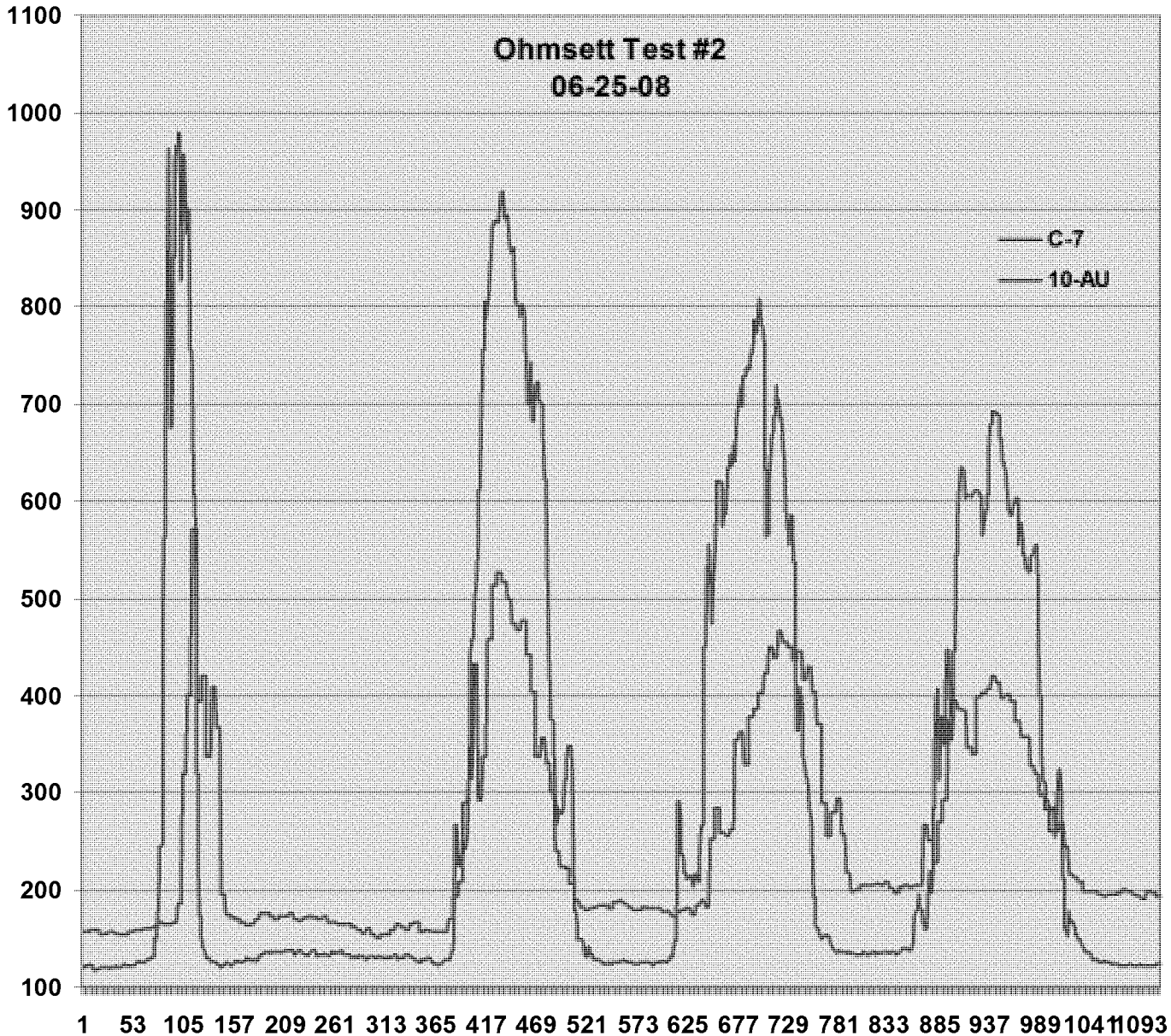




Results of AU-10/Cyclops Comparison at OHMSETT June 2008

Brian Parscal <brian@cleanislands.org>

- Two tests were conducted on June 25th.
- The 10-AU was calibrated according SMART protocol standards while the C-7 was set to collect raw data on the medium gain setting. That most likely explains the difference in amplitude between the two.
- The C-7 (Cyclops) can detect dissolved oil in sea water and considering its ease of use, may be a good candidate for the SMART program.


Ohmsett Test #2
06-25-08
C-7
10-AU
1100
1000
900
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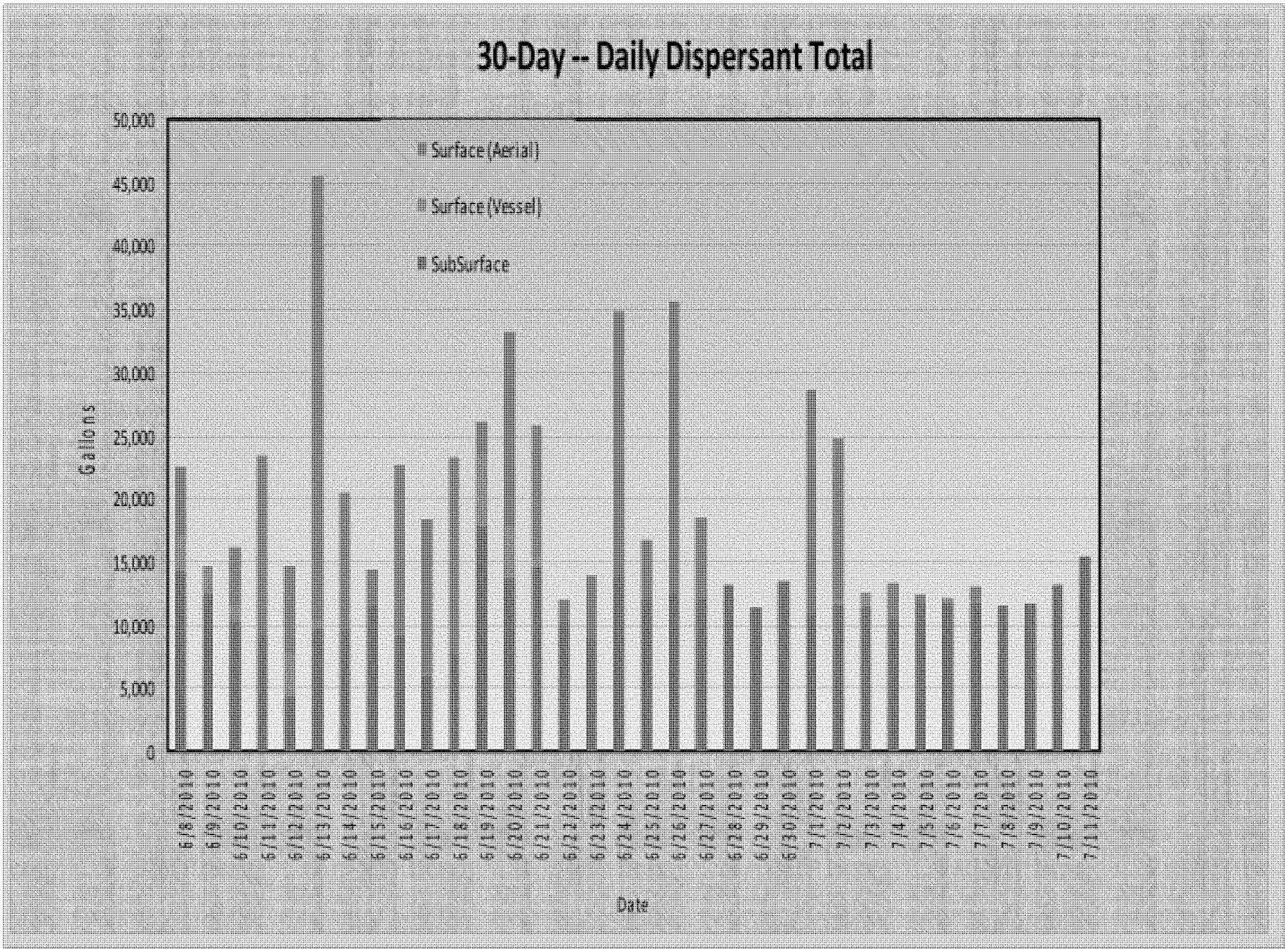
200
100
1 53 105 157 209 261 313 365 417 469 521 573 625 677 729 781 833 885 937 989 1041 1093

Pros and Cons of Tier 2

- Fluorometry using a fixed wavelength is useful since it responds well to the dispersant concentration.
- Dispersed oil concentration and droplet size distribution is a very good indicator of dispersion effectiveness.
- Fluorometry cannot determine how the oil fingerprint is changing and what oil fractions actually are being dispersed; multiple emission wavelengths would be a better indicator of dispersed fractions.
- Small droplet size (<70 microns on nm) indicates good dispersion, and research indicates very fine (20 nm) particles are a strong indicator of chemical dispersion at moderate turbulence.
- Under the turbulent conditions of an expanding HC gas release at 152 atm, a stable emulsion might be generated mechanically.

Surface Dispersant Application at the Deepwater Horizon

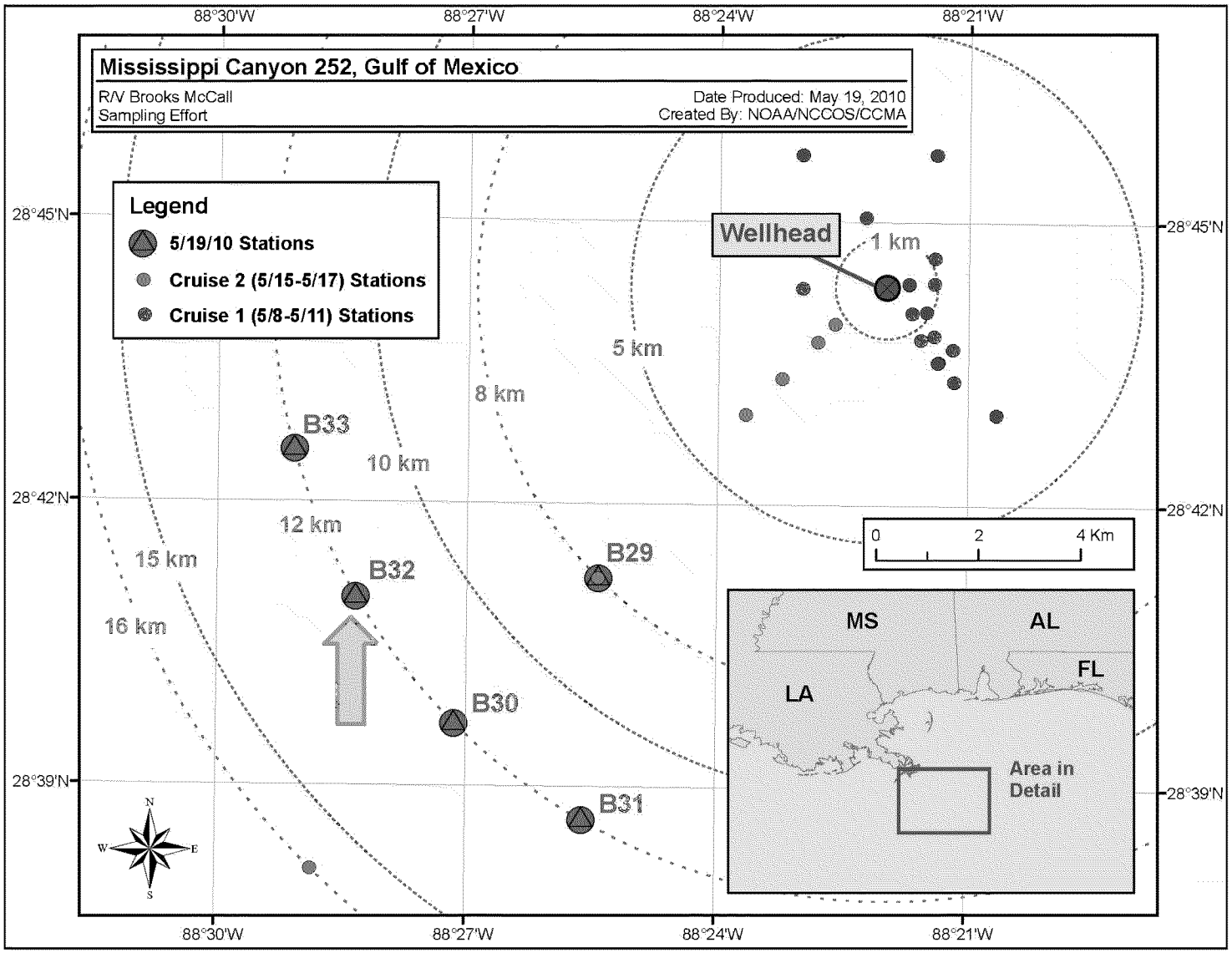
- Per RRT guidance application occurs >3 miles offshore and water depth of > 10 meters
- Applied primarily via aircraft
- As of 07/12/10
  - 404 sorties flown
  - 975,038 gallons sprayed
  - 305 sq miles covered (195,008 acres)


30-Day -- Daily Dispersant Total
Surface (Aerial)
Surface (Vessel)
SubSurface
Gallons
50,000
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
6/8/2010
6/9/2010
6/10/2010
6/11/2010
6/12/2010
6/13/2010
6/14/2010
6/15/2010
6/16/2010
6/17/2010
6/18/2010
6/19/2010
6/20/2010
6/21/2010
6/22/2010
6/23/2010
6/24/2010
6/25/2010
6/26/2010
6/27/2010
6/28/2010
6/29/2010
6/30/2010
7/1/2010
7/2/2010
7/3/2010
7/4/2010
7/5/2010
7/6/2010
7/7/2010
7/8/2010
7/9/2010
7/10/2010
7/11/2010
Date

Field Application
DWH Oil Spill
Brooks-McCall Cruise
May 19, 2011

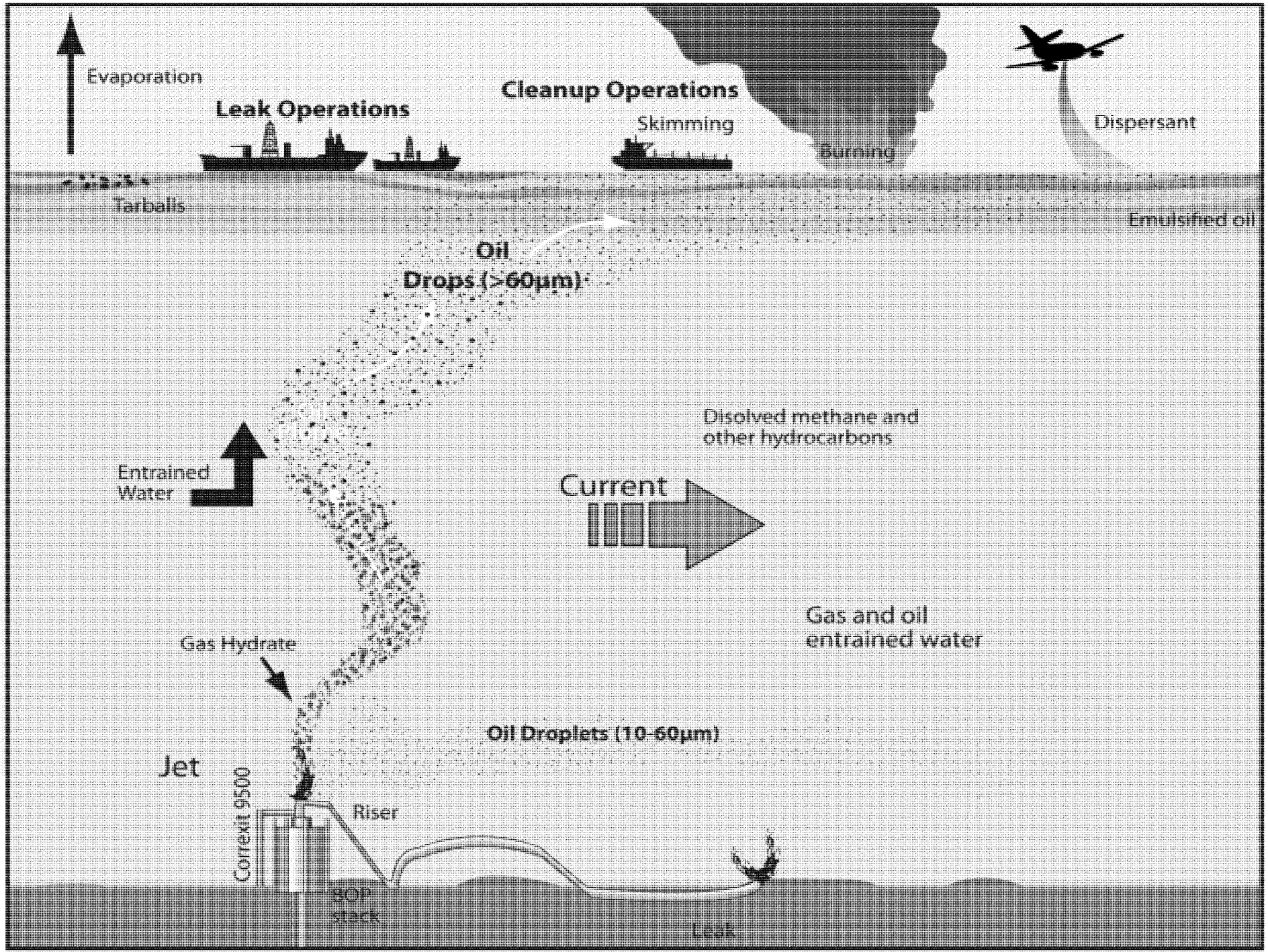
Conductivity, Temperature, Density (CDT) Data plus Fluorometry Traces

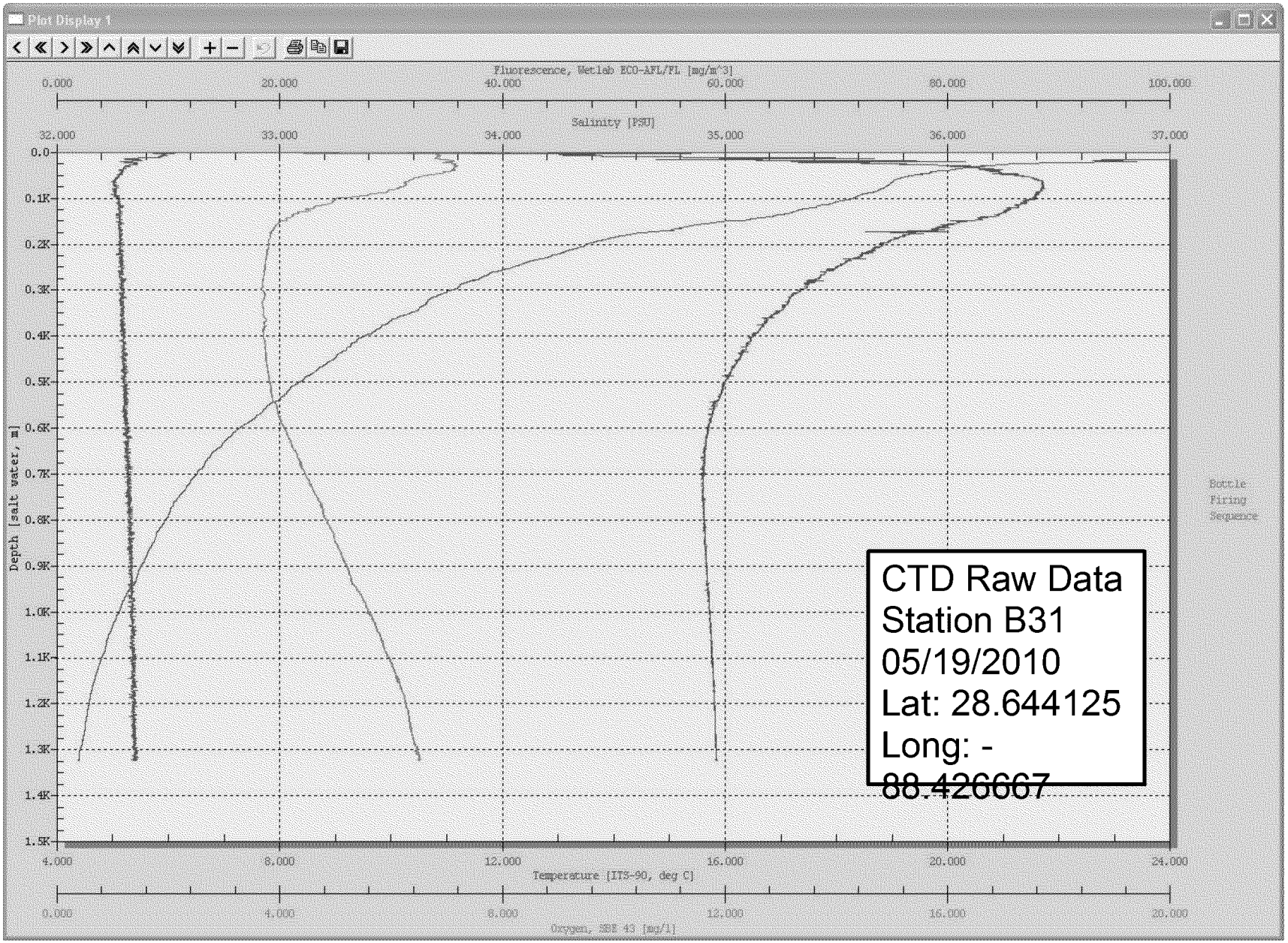
Sampling Locations

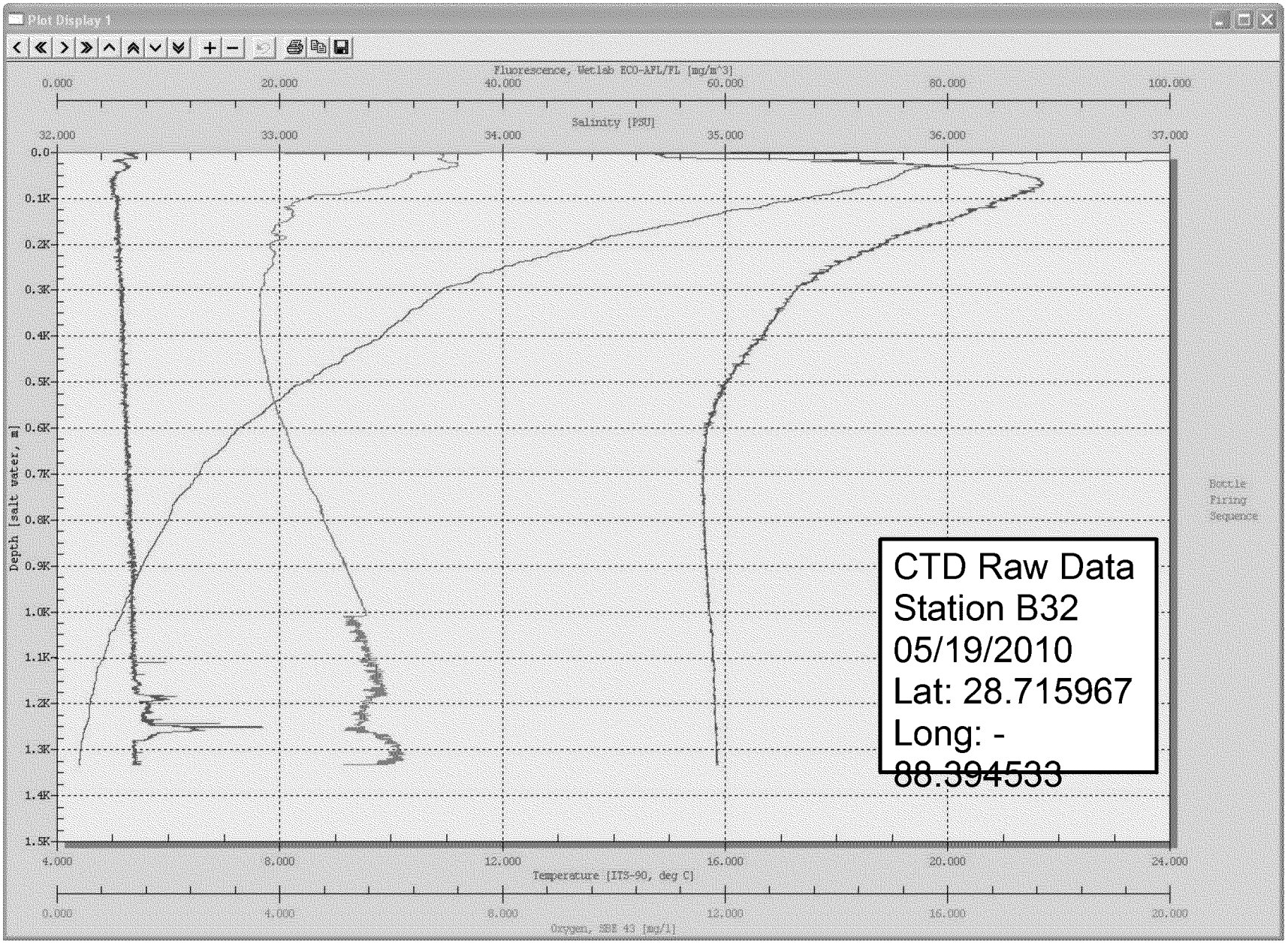


On-Board Fluorometry

- Two fixed wavelength UV fluorometers were employed in tandem to determine Fluorescence Intensity Ratios (FIRs).
- One fluorometer was equipped with a pair of wavelength filters allowing excitation at 280 nm and emission at 340 nm.
- The second fluorometer was equipped with the same 280 nm excitation filter and a longer (445 nm) wavelength.
- FIRs were then calculated from fluorescence intensity at 340 nm divided by intensity at 445 nm.

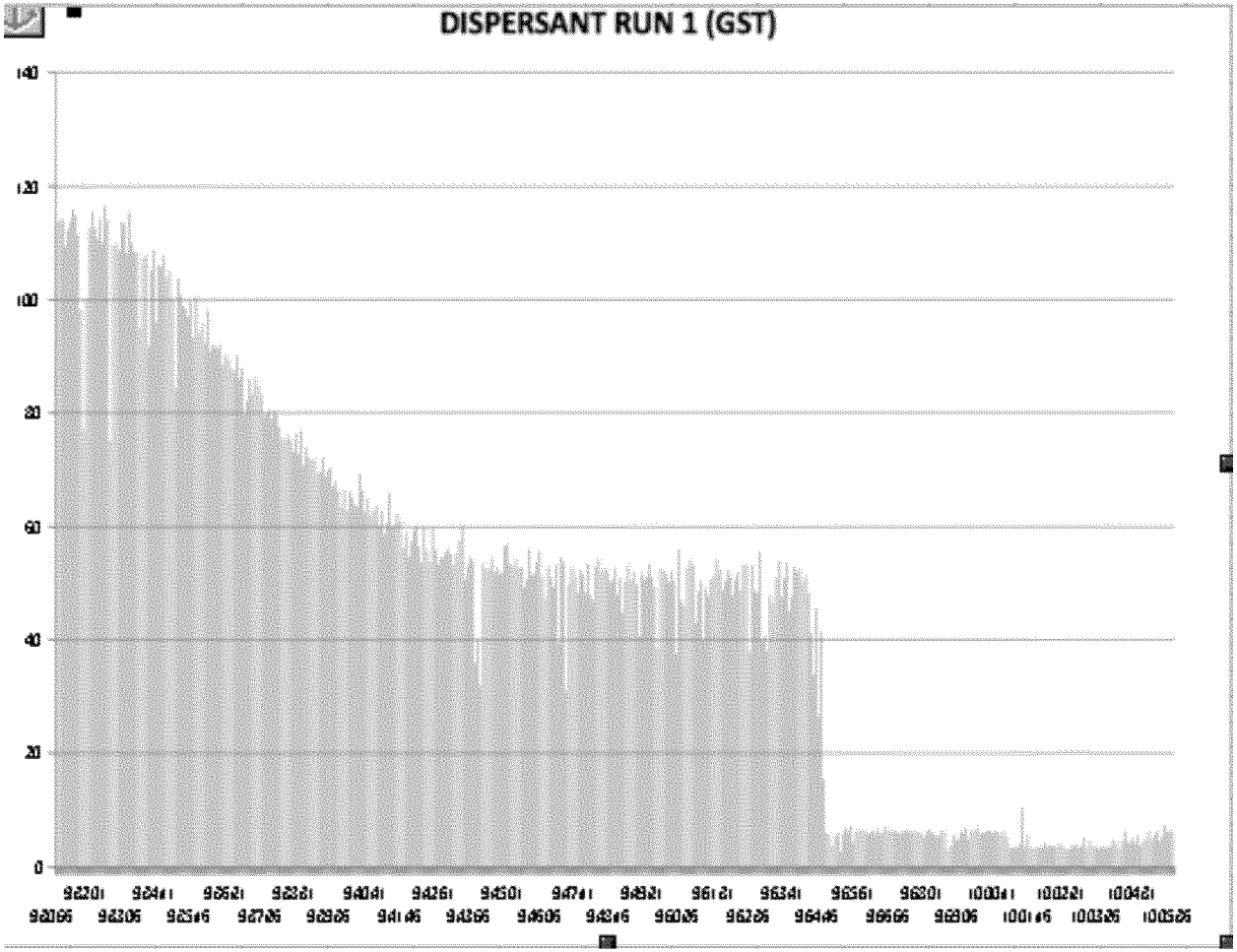

Evaporation
Leak Operations
Cleanup Operations
Skimming
Burning
Dispersant
Tarballs
Emulsified oil
Oil
Drops (>60µm)
Disolved methane and
other hydrocarbons
Entrained
Water
Current
Gas and oil
entrained water
Gas Hydrate
Oil Droplets (10-60µm)
Jet
Correxit 9500
Riser
BOP
stack
Leak


Plot Display 1
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
0.000
20.000
40.000
60.000
80.000
100.000
Salinity [PSU]
32.000
33.000
34.000
35.000
36.000
37.000
Depth [salt water, m]
0.0
0.1K
0.2K
0.3K
0.4K
0.5K
0.6K
0.7K
0.8K
0.9K
1.0K
1.1K
1.2K
1.3K
1.4K
1.5K
Bottle Firing Sequence
CTD Raw Data
Station B31
05/19/2010
Lat: 28.644125
Long: -88.426667
4.000
8.000
12.000
16.000
20.000
24.000
Temperature [ITS-90, deg C]
0.000
4.000
8.000
12.000
16.000
20.000
Oxygen, SBE 43 [mg/l]

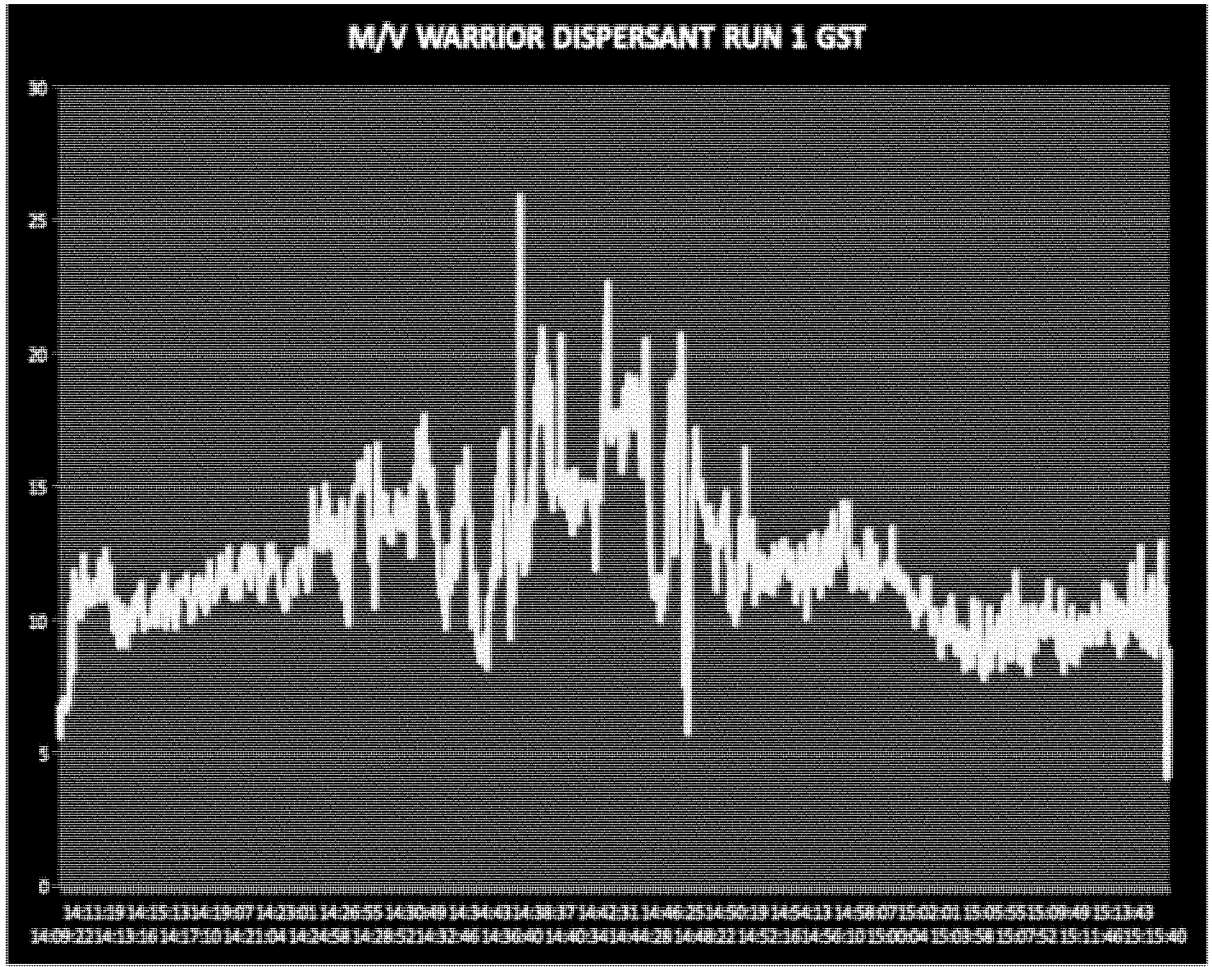

Plot Display 1
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
0.000
20.000
40.000
60.000
80.000
100.000
Salinity [PSU]
32.000
33.000
34.000
35.000
36.000
37.000
Depth [salt water, m]
0.0
0.1K
0.2K
0.3K
0.4K
0.5K
0.6K
0.7K
0.8K
0.9K
1.0K
1.1K
1.2K
1.3K
1.4K
1.5K
Bottle Firing Sequence
CTD Raw Data
Station B32
05/19/2010
Lat: 28.715967
Long: -88.394533
4.000
8.000
12.000
16.000
20.000
24.000
Temperature [ITS-90, deg C]
0.000
4.000
8.000
12.000
16.000
20.000
Oxygen, SBE 43 [mg/l]

SMART Tier 2
Monitoring of Surface Application of Dispersant

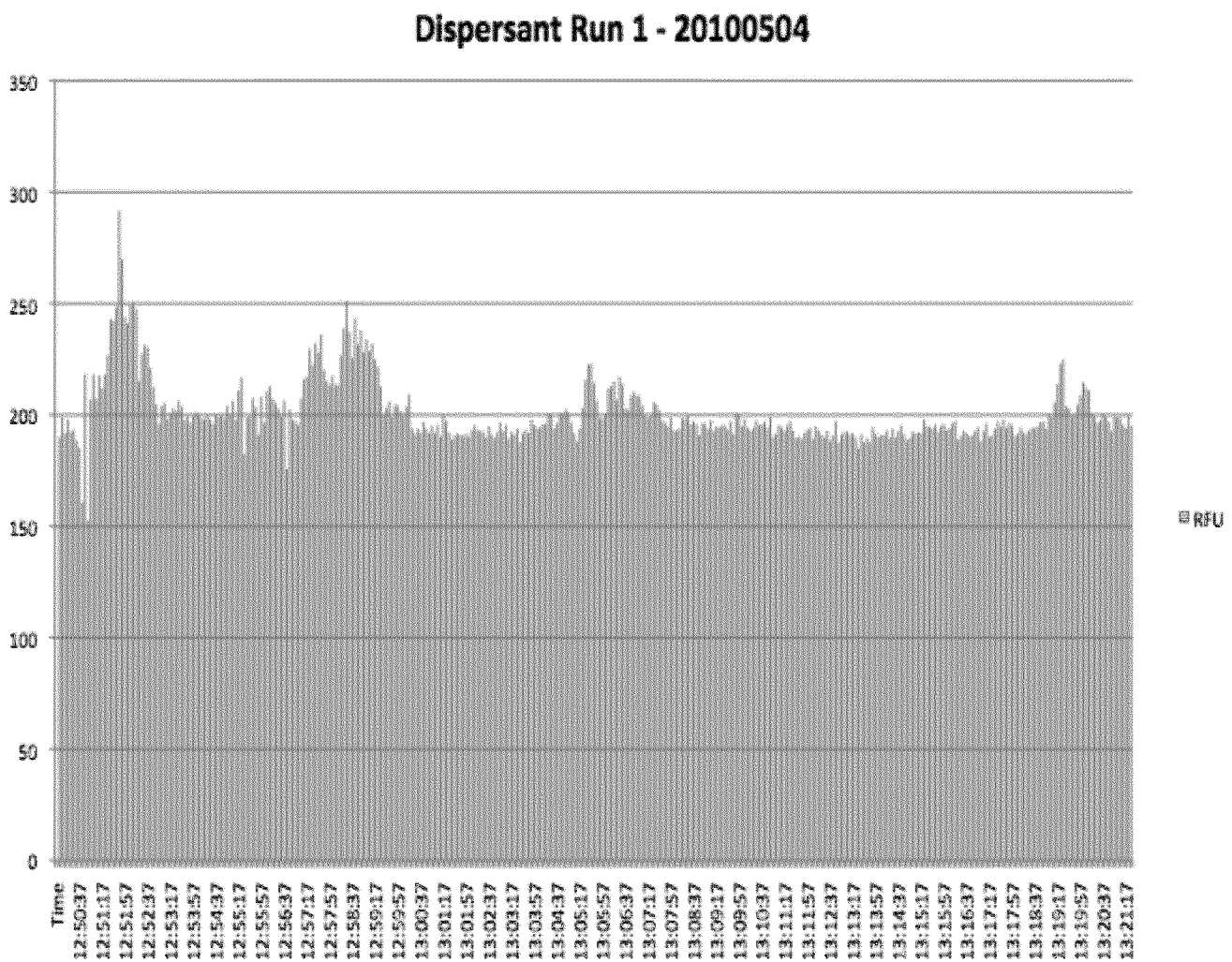
- A set of results was submitted to the HQ Science Group for assessment.
- The following 5 figures were used by EPA to determine that surface application of dispersant was not effective.
- The 6th figure is a good example of a fluorometry trace which compares mechanical and chemical dispersion near the surface.



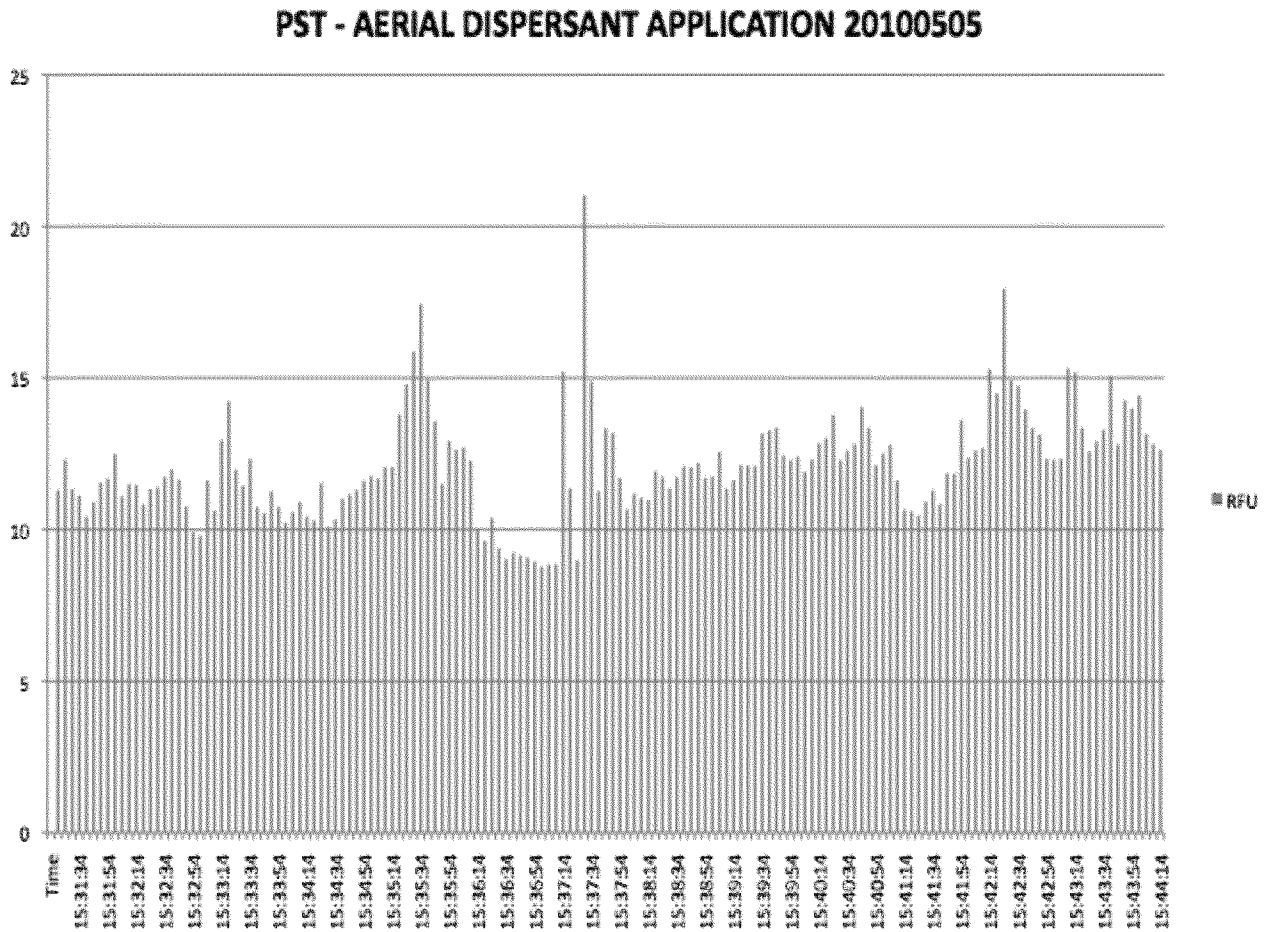
Increase of Fluorometry Reading >10x
(Almost 30x at Mid-plume)
Successful Application 4/28/2010



Unsuccessful Dispersant Application 4/28/2010

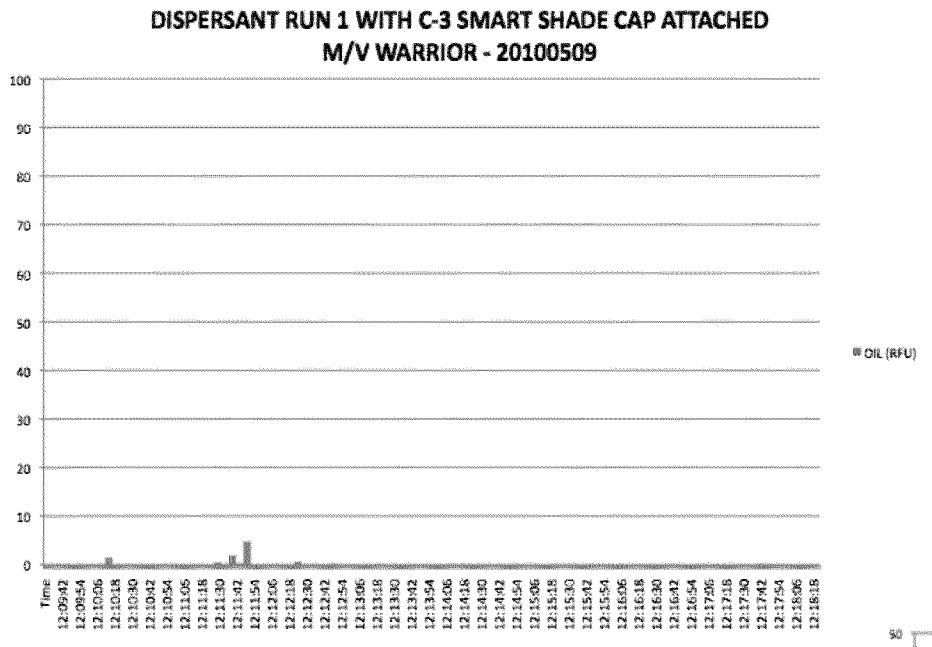


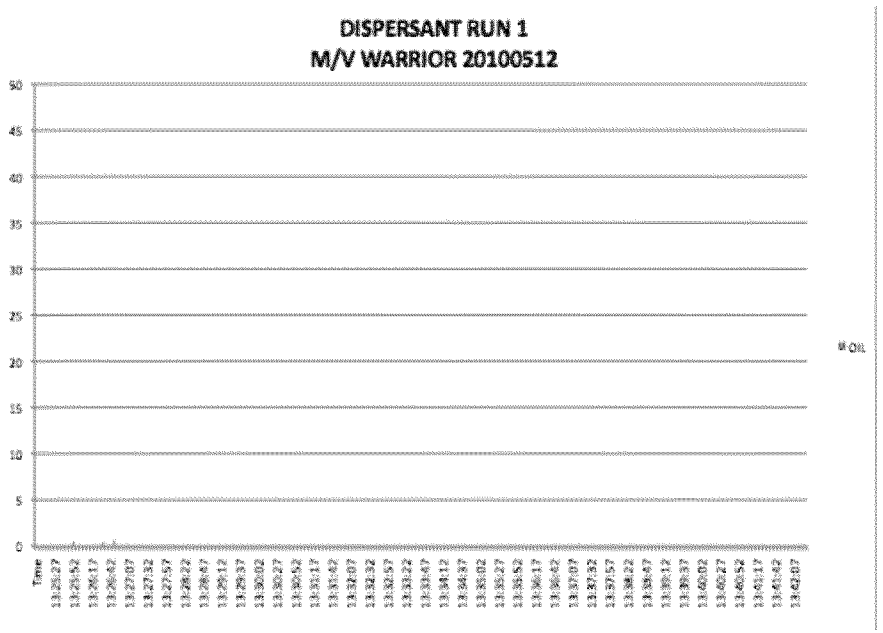
Unsuccessful Dispersant Application 5/4/2010

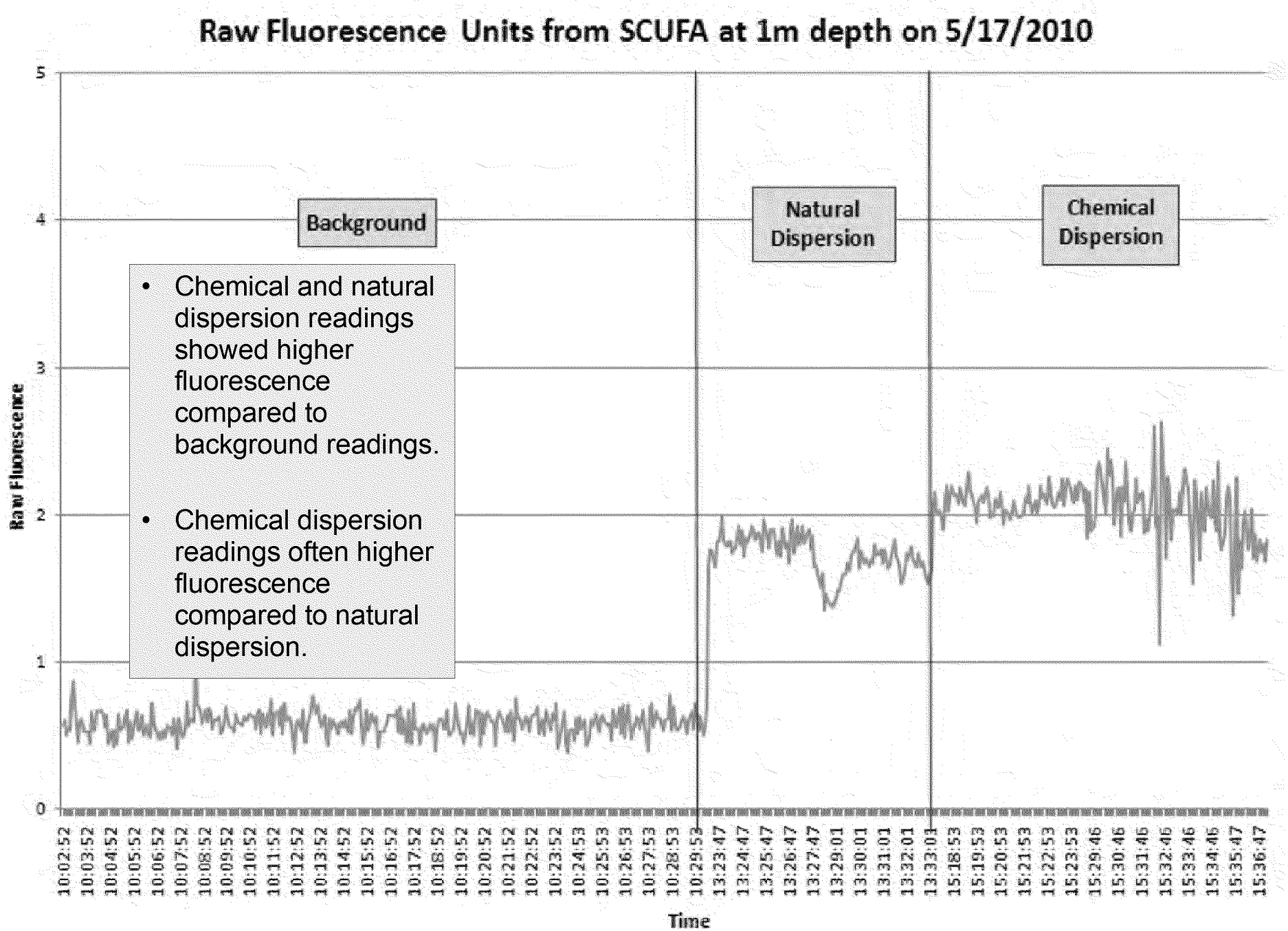


Unsuccessful Dispersant Application 5/5/2010

Incomplete Fluorometry Data Runs of 5/9-10/2010






Raw Fluorescence Units from SCUFA at 1m depth on 5/17/2010
Background
Natural Dispersion
Chemical Dispersion
• Chemical and natural dispersion readings showed higher fluorescence compared to background readings.
• Chemical dispersion readings often higher fluorescence compared to natural dispersion.
Raw Fluorescence
0
1
2
3
4
5
10:02:52
10:03:52
10:04:52
10:05:52
10:06:52
10:07:52
10:08:52
10:09:52
10:10:52
10:11:52
10:12:52
10:13:52
10:14:52
10:15:52
10:16:52
10:17:52
10:18:52
10:19:52
10:20:52
10:21:52
10:22:52
10:23:52
10:24:53
10:25:53
10:26:53
10:27:53
10:28:53
10:29:53
13:23:47
13:24:47
13:25:47
13:26:47
13:27:47
13:29:01
13:30:01
13:31:01
13:32:01
13:33:01
15:18:53
15:19:53
15:20:53
15:21:53
15:22:53
15:23:53
15:29:46
15:30:46
15:31:46
15:32:46
15:33:46
15:34:46
15:35:47
15:36:47
Time

So now we can judge for ourselves as to the "effectiveness" of dispersant application.

- How effective was the dispersant in removing the oil from the environment?
- How effective was the dispersant in reducing the environmental impact?
- In other words, where is the rest of the oil and dispersant and what kind of toxic residuals can we expect?

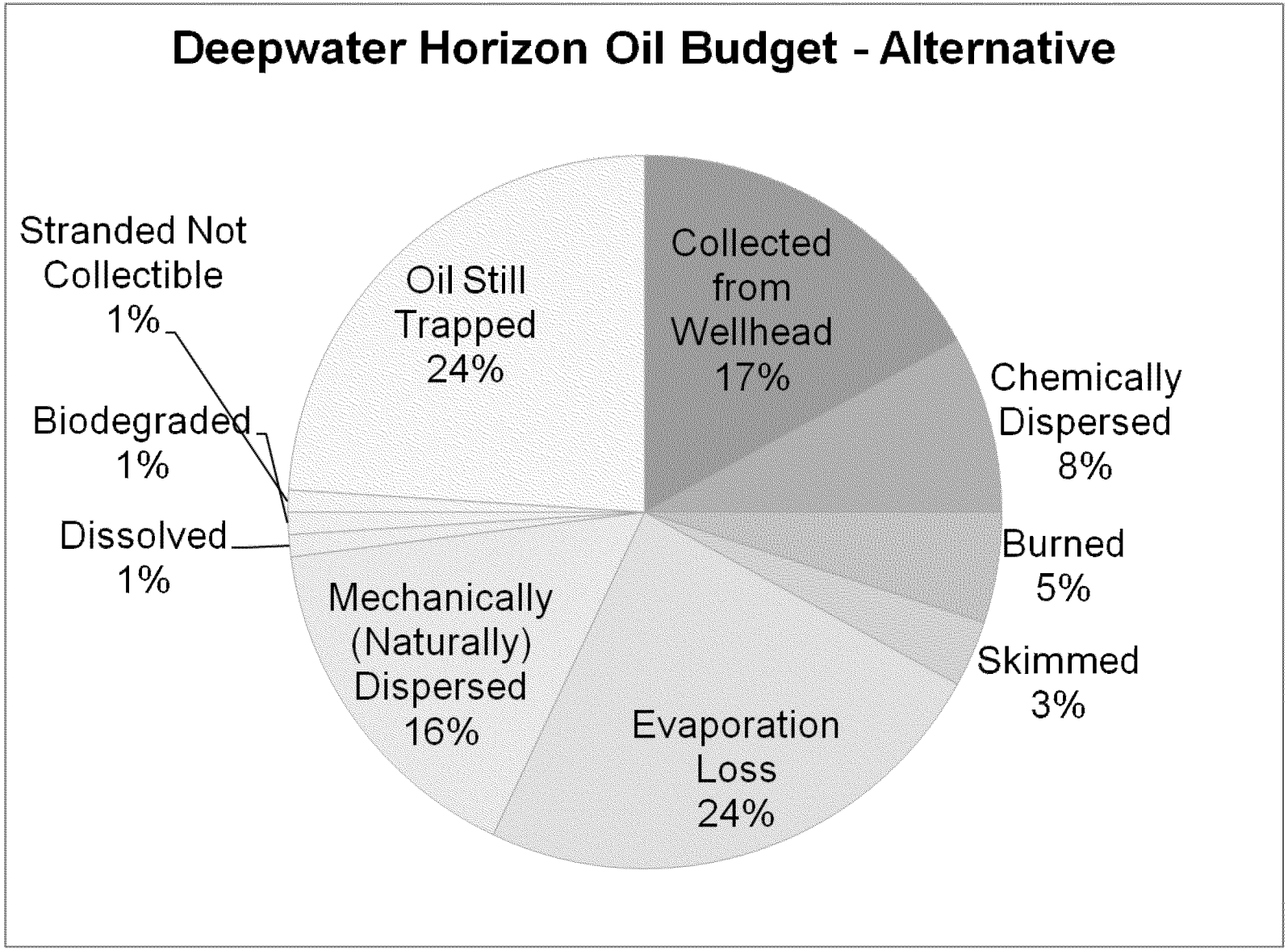
Deepwater Horizon Oil Budget Quantities

ERT Edition of NOAA/USGS Budget

	Fraction	MG
Collected from Wellhead	0.17	35.0
Chemically Dispersed	**0.08**	**16.5**
Burned	0.05	10.3
Skimmed	0.03	6.2
Evaporation Loss	0.24	49.4
Mechanically (Naturally) Dispersed	**0.16**	**32.9**
Dissolved	0.01	**2.1**
Biodegraded	0.01	2.1
Stranded Not Collectible	**0.01**	**2.1**
Oil Still Trapped	**0.24**	**49.4**
Residual Still in the Gulf System	0.50	**100.8**

Actually, a 25% recovery is remarkable, and if we count the 8% chemically dispersed, 33% mitigation is quite a feat!!

Modified Oil Budget



So why go to SMART Tier 3 and sample?

- The EPA and the Natural Resource Trustees need to be concerned with the oil spill impacts which are not caused by the “coating effect” of the oil itself.
- During the turbulence of many spills, including mixing from wind and wave action, oil can be dispersed mechanically, and soluble components of oil can partition into the water column.
- The EPA and the Natural Resource Trustees need to be concerned with the oil spill impacts which are not caused by the “coating effect” of the oil itself.
- This involves chemical analysis, which triggers the need for SMART Tier 3.

- The Canadians and EPA's ORD have taught us that the lighter and more soluble oil components are more easily dispersed chemically. These are also the more toxic and biodegradable components, thus these are the most likely to cause environmental impact. In a localized or confined area, concentrations could build up and either toxicity, oxygen deficiency, or both could exert undesirable effects.
- Biodegradation potential of the suspended and dispersed residual oil and dispersant is also related to the chemical components, rather than on the broad categories of petroleum hydrocarbons or fluorescible organics.

- The NOAA SQuIRTs anticipate these problems and provide parameters and analytical method citations to address them. Many of the chemicals listed do not relate to oil spills, but some refer to the volatile and semivolatile components of crude and refined products.

- Since different oils have different relative concentrations of these fractions, assessing the environmental risk from the dispersible fraction requires that we either know what is in the originally-spilled oil or measure the byproducts in solution or suspension. The Environment Canada Catalog of Oil Properties can help predict this fraction.

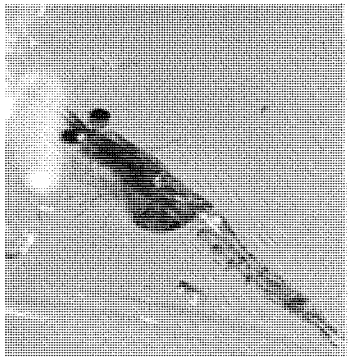
- National Academy of Sciences' 1972 Blue Book is still useful for water quality criteria relative to oil spills.

SQuiRTs are for NOAA Hazmat screening-level use, but…

- Screening levels are based on EPA's Water Quality Criteria for acute exposure (highest 1 hour average, not to exceed once every 3 years). (This is effectively a grab sample.)
- For Semivolatile PAH, the concentration ranges between 7.7 and 3,980 ppb (ug/L)
- For Volatile Aromatics (BTEX) ranges between 530 to32,000 ppb.
- For Total Petroleum Hydrocarbons, there is no SQuiRT listed, but EPA's Method 8015B (GC/FID) is specified.
- SQuiRTs, are available on NOAA's website:

http://response.restoration.noaa.gov

Results of 48 hour acute toxicity tests of 8 dispersants to the Gulf of Mexico invertebrate, mysid shrimp (*Americamysis bahia*)

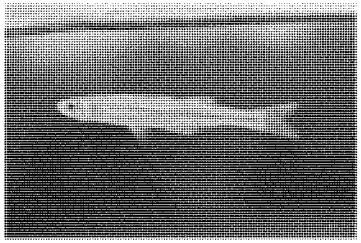


Dispersant	This Study LC50 (ppm) [95% CI]	Toxicity Category	NCP Product Schedule LC50 (ppm) [95% CI]
Dispersit SPC 1000	12 [10-14]	Slightly Toxic	16.6 [14.1-19.6]
Nokomis 3-AA	30 [27-34]	Slightly Toxic	20.2 [17.4-22.8]
Corexit 9500A	**42 [38-47]**	**Slightly Toxic**	**32.2 [26.5-39.2]**
Nokomis 3-F4	42 [38-47]	Slightly Toxic	32.2 [28.4-36.5]
ZI -400	55 [50-61]	Slightly Toxic	21.0 [17.9-24.5]
Sea Brat #4	65 [57-74]	Slightly Toxic	14.0 [±10.4]
Saf-Ron Gold	118 [104-133]	Practically Non-Toxic	63.0* [52.9-75.1]
JD-2000	788 [627-946]	Practically Non-Toxic	90.5* [76.1-108]

* Classified as slightly toxic according to values provided in NCP Product Schedule

http://www.epa.gov/bpspill/dispersants-testing.html

Results of 96 hour acute toxicity tests of 8 dispersants to the Gulf of Mexico fish, inland silverside (*Menidia beryllina)*



Dispersant	This Study LC50 (ppm) [95% CI]	Toxicity Category	NCP Product Schedule LC50 (ppm) [95% CI]
Dispersit SPC 1000	2.9 [2.5-3.2]	Moderately Toxic	3.5 [3.1-4.0]
Nokomis 3-F4	19 [16-21]	Slightly Toxic	29.8 [24.0-35.4]
Nokomis 3-AA	19 [17-21]	Slightly Toxic	34.2 [29.2-37.95]
ZI -400	21 [18-23]	Slightly Toxic	31.8 [28.7-35.1]
Saf-Ron Gold	44 [41-47]	Slightly Toxic	29.4 [25.2-34.3]
Sea Brat #4	55 [49-62]	Slightly Toxic	30.0 [±16.2]
Corexit 9500A	**130 [122-138]**	**Practically Non-Toxic**	**25.2* [13.6-46.6]**
JD-2000	>5,600	Practically Non-Toxic	407 [330-501]

* Classified as slightly toxic according to values provided in NCP Product Schedule

http://www.epa.gov/bpspill/dispersants-testing.html

SMARTer

- It is important to remember that in the rapidly changing conditions of spill response, flexibility and adaptability are essential for success. The sampling plan is dictated by many factors, including the availability of equipment and personnel, on-scene conditions, and the window of opportunity for dispersant application.
- The need for flexibility in sampling design, effort, and rapid deployment may dictate the nature and extent of the monitoring.
- To assist the monitoring efforts, it is important that the Unified Command agrees on the goals and objectives of monitoring and chooses the appropriate level of effort for the response.

SMART Sampling and Analysis for Dispersant Application – A Final Message from the Old Timers

- Ken Biglane, the architect of the NCP and ERT, once said “I trust the oil I can see more than the oil I can't see.”
- Dr. Joseph P. Lafornara, 12/10/2003, quoted Ken and remarked on the Need for a National Dispersant Use Policy.
- The BP Deepwater Horizon Response showed that this policy is still needed.
- SMART performance data will be needed to craft a rational policy.

Contact Information

- Allen.Harry@epa.gov
- www.epaosc.org/SMARTOSC/
- 732-321-6740 (ERT Main Number)
- 732-321-6660 (ERT Hotline)

To: Matthiessen, Craig[Matthiessen.Craig@epa.gov]; Brooks, Becky[Brooks.Becky@epa.gov]
Cc: Jennings, Kim[Jennings.Kim@epa.gov]; Principe, Vanessa[Principe.Vanessa@epa.gov]; DeHaven, Leigh[DeHaven.Leigh@epa.gov]; Wilson, Gregory[Wilson.Gregory@epa.gov]; Tulis, Dana[Tulis.Dana@epa.gov]; Cheatham, Reggie[cheatham.reggie@epa.gov]
From: Cohen, Nancy
Sent: Fri 1/9/2015 8:48:44 PM
Subject: RE: Subpart J Product Manufacturers - a few contacts for outreach

Thanks, Craig. I'll share with Mathy and be back in touch, nancy

Nancy Cohen

U.S. EPA OSWER

202.566.0171

From: Matthiessen, Craig
Sent: Friday, January 09, 2015 3:42 PM
To: Cohen, Nancy; Brooks, Becky
Cc: Jennings, Kim; Principe, Vanessa; DeHaven, Leigh; Wilson, Gregory; Tulis, Dana; Cheatham, Reggie
Subject: Subpart J Product Manufacturers - a few contacts for outreach

Here are some suggestions for manufacturers with whom you could contact for an outreach call next week. There are about 90 manufacturers; I chose these based on previous contacts; we can always provide more. Craig

Nalco Environmental Solutions LLC (Corexit dispersant)
7705 Highway 90-A
Sugar Land, TX 77478
Product Management:
Office: (281) 263-7709
Mobile: (832) 851-5164
E-mail: debby.theriot@nalco.com
(Ms. Debby Theriot)

TOTAL PETROCHEMICALS USA, INC. (Finasol dispersant)
1201 Louisiana St., Suite 1800
Houston, TX 77002
Phone: (713) 483-5712
Fax: (713) 483-5700
Web Site: www.totalspecialfluids.com Exit
(Mr. Peter Egan)

GlobeMark Resources Ltd. (JD 2000 dispersant0
1312 Mill Creek Drive
Salado, TX 76571
Mobile: (254) 231-2251
Email: joannie@globemarkresources.com or fiddler656@gmail.com
Web Site: http://www.globemarkresources.com Exit
(Ms. Joannie Docter)

International Environmental Products, LLC (bioremediation agent)
Two Villanova Center
795 E. Lancaster Ave., Suite 280
Villanova, PA 19085
Phone: (610) 520-7665
Fax: (610) 520-7663
Email: info@iepusa.com
(Mr. Jim Lynn)

OSEI Corporation (Formerly Sky Blue Chems) (enzymatic bioremediation agent)
P.O. Box 515429
Dallas, TX 75251-5429
Phone: (972) 669-3390
E-mail: oseicorp@msn.com
Web Site: www.osei.us Exit
(Mr. Steven Pedigo, Chairman, CEO, Inventor)

B.R.A.T. Microbial Products Inc. (surface wash and dispersant chems)
P.O. Box 7089
Pasadena, TX 77508
Phone: (713) 724-9226

E-mail: alabastercorp@gmail.com
(Mr. John Sheffield)

Sunshine Makers, Inc. (Simple Green surface wash agent)
15922 Pacific Coast Highway
Huntington Beach, CA 92649
Phone: (800) 228-0709
(562) 795-6000
Fax: (562) 592-3830
(Ms. Carol Chapin)

Opflex Solutions (miscellaneous oil spill control agent)
P.O. Box 355
West Hyannisport, MA 02672
Phone: (508) 776-2995
Fax: (508) 425-2990
E-mail: ssmith@opflex.com
Web site: www.opflex.com Exit
(Mr. Scott Smith)

John S. Brinkman, President (Imbiber beads sorbent)

<jsb@imbiberbeads.com>

Telephone (1) (905) - 641-2323.

NA - Toll free - 1-888-THE-BEAD (843-2323)

Website - www.imbiberbeads.com

To: Cohen, Nancy[Cohen.Nancy@epa.gov]; Brooks, Becky[Brooks.Becky@epa.gov]
Cc: Jennings, Kim[Jennings.Kim@epa.gov]; Principe, Vanessa[Principe.Vanessa@epa.gov]; DeHaven, Leigh[DeHaven.Leigh@epa.gov]; Wilson, Gregory[Wilson.Gregory@epa.gov]; Tulis, Dana[Tulis.Dana@epa.gov]; Cheatham, Reggie[cheatham.reggie@epa.gov]
From: Matthiessen, Craig
Sent: Fri 1/9/2015 8:42:15 PM
Subject: Subpart J Product Manufacturers - a few contacts for outreach

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7705 Highway 90-A
Sugar Land, TX 77478
Product Management:
Office: (281) 263-7709
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E-mail: debby.theriot@nalco.com
(Ms. Debby Theriot)

TOTAL PETROCHEMICALS USA, INC. (Finasol dispersant)
1201 Louisiana St., Suite 1800
Houston, TX 77002
Phone: (713) 483-5712
Fax: (713) 483-5700
Web Site: www.totalspecialfluids.com Exit
(Mr. Peter Egan)

GlobeMark Resources Ltd. (JD 2000 dispersant0
1312 Mill Creek Drive
Salado, TX 76571
Mobile: (254) 231-2251
Email: joannie@globemarkresources.com or fiddler656@gmail.com
Web Site: http://www.globemarkresources.com Exit
(Ms. Joannie Docter)

International Environmental Products, LLC (bioremediation agent)
Two Villanova Center

795 E. Lancaster Ave., Suite 280
Villanova, PA 19085
Phone: (610) 520-7665
Fax: (610) 520-7663
Email: info@iepusa.com
(Mr. Jim Lynn)

OSEI Corporation (Formerly Sky Blue Chems) (enzymatic bioremediation agent)
P.O. Box 515429
Dallas, TX 75251-5429
Phone: (972) 669-3390
E-mail: oseicorp@msn.com
Web Site: www.osei.us Exit
(Mr. Steven Pedigo, Chairman, CEO, Inventor)

B.R.A.T. Microbial Products Inc. (surface wash and dispersant chems)
P.O. Box 7089
Pasadena, TX 77508
Phone: (713) 724-9226
E-mail: alabastercorp@gmail.com
(Mr. John Sheffield)

Sunshine Makers, Inc. (Simple Green surface wash agent)
15922 Pacific Coast Highway
Huntington Beach, CA 92649
Phone: (800) 228-0709
(562) 795-6000
Fax: (562) 592-3830
(Ms. Carol Chapin)

Opflex Solutions (miscellaneous oil spill control agent)
P.O. Box 355
West Hyannisport, MA 02672
Phone: (508) 776-2995
Fax: (508) 425-2990
E-mail: ssmith@opflex.com
Web site: www.opflex.com Exit
(Mr. Scott Smith)

John S. Brinkman, President (Imbiber beads sorbent)

<jsb@imbiberbeads.com>

Telephone (1) (905) - 641-2323.

NA - Toll free - 1-888-THE-BEAD (843-2323)

Website - www.imbiberbeads.com

To: DeHaven, Leigh[DeHaven.Leigh@epa.gov]
From: Wilson, Gregory
Sent: Mon 12/14/2015 3:18:12 PM
Subject: FW: BSEE funded wave tank study of oil dispersion that was conducted by EPA, DFO Canada, NJIT, Dalhousie and USF.
E12PG00037_Draft Final Report_sept2015_OEM.docx

See attachment

From: Principe, Vanessa
Sent: Wednesday, December 09, 2015 2:57 PM
To: Conmy, Robyn <Conmy.Robyn@epa.gov>
Cc: Wilson, Gregory <Wilson.Gregory@epa.gov>
Subject: RE: BSEE funded wave tank study of oil dispersion that was conducted by EPA, DFO Canada, NJIT, Dalhousie and USF.

Robyn:

Sorry it took so long. Attached are comments on the main report. We did not comment on the attachments. If there is a particular one you think we should look at let us know.

After you get a chance to look at our comments let us know if you have any questions.

V

From: Conmy, Robyn
Sent: Monday, November 02, 2015 12:33 PM
To: Principe, Vanessa <Principe.Vanessa@epa.gov>; Wilson, Gregory <Wilson.Gregory@epa.gov>; Kremer, Fran <Kremer.Fran@epa.gov>; Weaver, Jim <Weaver.Jim@epa.gov>; McKernan, John <McKernan.John@epa.gov>; Holder, Edith <holder.edith@epa.gov>; Conmy, Robyn <Conmy.Robyn@epa.gov>
Cc: Conmy, Robyn <Conmy.Robyn@epa.gov>
Subject: Conmy, Robyn has invited you to 'ORD Oil Research Program'

Hello All,

I have created a SharePoint site to house all the documents which make up the BSEE funded wave tank study of oil dispersion that was conducted by EPA, DFO Canada, NJIT, Dalhousie and USF. You are either coauthors of this document or have been identified as stakeholders who can provide feedback on the document (or certain sections that align with your expertise).

This is a large, interdisciplinary document. Authors, please provide reviews of the document as it stands and let me know the names of other subject matter experts you would like to look at the document.

Stakeholders, please look at the TOC and (1) let me know which section(s) you are able to review or the name of someone else who is well suited to provide feedback and (2) contact me directly about which sections you are considering or to decline entirely.

BSEE has decided to not put the report out for their own review. Rather they will use the EPA ORD review and clearance process to stand in for their review. Therefore, this document needs to have a thorough peer-review.

If you have any questions, please contact me.
Thank you,
Robyn

Go to ORD Oil Research Program

Follow this site to get updates in your newsfeed.

To: Tirrell, Rebecca[Rebecca.Tirrell@csra.com]
Cc: Durbin, Luke[Luke.Durbin@csra.com]
From: DeHaven, Leigh
Sent: Fri 9/16/2016 12:18:38 PM
Subject: RE: TD#104 Product Schedule, Technical Notebook and Associated Webpages

Looking good in the NCP Product Schedule Hood! Ready to post.

Just call me and let me know what the grammatical tweaks were in case I get a call…

Leigh E. DeHaven
U.S. Environmental Protection Agency
Office of Emergency Management

Office of Land and Emergency Management
1200 Pennsylvania Ave., NW

Room 6450 CC WJC North (Mail code 5104A)
Washington, DC 20460
Tel.: (202) 564-1974

From: Tirrell, Rebecca [mailto:Rebecca.Tirrell@csra.com]
Sent: Thursday, September 15, 2016 6:37 PM
To: DeHaven, Leigh <DeHaven.Leigh@epa.gov>
Cc: Durbin, Luke <Luke.Durbin@csra.com>
Subject: TD#104 Product Schedule, Technical Notebook and Associated Webpages

Hi Leigh,

Please find attached the September 2016 updates to the NCP Product Schedule, Technical Notebook and associated OEM Webpages per TD#104. Updates include the following:

•□□□□□□□□ Addition of one product and technical bulletin development: WATER WORKS™ HEAVY DUTY DEGREASER CONCENTRATE (aka, HEAVY DUTY DEGREASER CONCENTRATE) (SW-69)

o Note: We made a few clarifying, grammatical tweaks to the Water Works bulletin in Section IV, Skin and Eye Contact and Section VI, Recommended Application Procedure.

•□□□□□□□□ Contact information changes: MARE CLEAN 200 (D-3) and WMI-2000 (B-19)

o This update deletes two more products from the "pending" list!

Attached review files include:

- NCP Product Schedule
- Technical Notebook
- Associated Web pages:
  - ○ Subpart J Page
  - ○ Alphabetical Listing Page
  - ○ WATER WORKS™ HEAVY DUTY DEGREASER CONCENTRATE Bulletin Page
  - ○ NCP Product Schedule Link Page
  - ○ NCP Product Schedule Technical Notebook Link Page
  - ○ Toxicity and Effectiveness Summary Table Page

Let us know if you have any questions.

Rebecca

Rebecca Tirrell

Program Manager – Emergency Management

SRA International, Inc., A CSRA Company

Science, Policy and Mission Programs

3434 Washington Boulevard, Room 2020E, Arlington, VA 22201

o: 571-290-4336 | **m:** (703) 801-6783 | **e:** Rebecca.Tirrell@csra.com | www.csra.com

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Planned absence: *None at this time*

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To: Tirrell, Rebecca[Rebecca.Tirrell@csra.com]; Durbin, Luke[Luke.Durbin@csra.com]
From: DeHaven, Leigh
Sent: Wed 9/14/2016 2:57:59 PM
Subject: FW: Mare Clean 200 Letter received 9_14_2016
image2016-09-14-105834.pdf

Nice work – it is great to finally hear from them after so long!!!! Please process changes for PS and TN. - Leigh

Leigh E. DeHaven
U.S. Environmental Protection Agency
Office of Emergency Management

Office of Land and Emergency Management
1200 Pennsylvania Ave., NW

Room 6450 CC WJC North (Mail code 5104A)
Washington, DC 20460
Tel.: (202) 564-1974

From: DC-WJCN-6450D-M@epa.gov [mailto:DC-WJCN-6450D-M@epa.gov]
Sent: Wednesday, September 14, 2016 10:59 AM
To: DeHaven, Leigh <DeHaven.Leigh@epa.gov>
Subject:

ICHINEN CHEMICALS CO.,LTD.

Ichinen Chemicals Co., Ltd.
Mita Twin Bldg., East 8F
4-2-8, Shibarura, Minato-Ku
Tokyo 108-0023 Japan
September 1, 2016

NCP Product Schedule Manager
U.S. Environmental Protection Agency
William Jefferson Clinton Building - 5104 A
Room 6450CC
1200 Pennsylvania Avenue NW
Washington, DC 20460

Dear Mr. Luke Durbin

Subject: Information change request for MARECLEAN 200

As of April 1, 2016, our company name was changed from TAIHOKOHZAI CO., LTD to ICHINEN CHEMICALS CO., LTD. (address and telephone number are no changes)due to owner's requirement. Owner of the company has been Ichinen Holding Co., Ltd. since 2006 (http://www.ichinenhd.co.jp/en/index.html). We would like to change your information on our company accordingly.

Our products MARECLEAN 200 has been sold by Marine Overseas Sales Division headed by Tsuyoshi Imai (Mr./ General manager of Marine Overseas Sales Division, Corporate Officer).

As for formulation of MARECLEAN 200 with CAS. No, please find attached sheet. Regarding distributor, we do not have any distributor in USA.

Sincerely yours,

Natsruo Kuboi (Mr.)
Sales Manger
Marine Oversens Divison

To: Tirrell, Rebecca[Rebecca.Tirrell@csra.com]
From: DeHaven, Leigh
Sent: Tue 8/23/2016 5:21:52 PM
Subject: RE: TD#102 WA 502 8_19_16 - Questions for You! -Time for a quick call this afternoon?

My Bad for not checking my calendar before! Locked and Loaded!

Leigh E. DeHaven
U.S. Environmental Protection Agency
Office of Emergency Management

Office of Land and Emergency Management
1200 Pennsylvania Ave., NW

Room 6450 CC WJC North (Mail code 5104A)
Washington, DC 20460
Tel.: (202) 564-1974

From: Tirrell, Rebecca [mailto:Rebecca.Tirrell@csra.com]
Sent: Tuesday, August 23, 2016 1:21 PM
To: DeHaven, Leigh <DeHaven.Leigh@epa.gov>
Subject: RE: TD#102 WA 502 8_19_16 - Questions for You! -Time for a quick call this afternoon?

I am grabbing your 3:00 PM while it is still open!

Rebecca Tirrell

Program Manager – Emergency Management

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o: 571-290-4336 | **m:** (703) 801-6783 | **e:** Rebecca.Tirrell@csra.com | www.csra.com

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Planned absence: August 26-September 6

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From: DeHaven, Leigh [mailto:DeHaven.Leigh@epa.gov]
Sent: Tuesday, August 23, 2016 1:16 PM
To: Tirrell, Rebecca
Subject: RE: TD#102 WA 502 8_19_16 - Questions for You! -Time for a quick call this afternoon?

I don't have an Oil Mgrs. Meeting at 3:00 if you are free to discuss questions. I looked at the questions a and they may require discussion.

Leigh E. DeHaven
U.S. Environmental Protection Agency
Office of Emergency Management

Office of Land and Emergency Management
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Tel.: (202) 564-1974

From: Tirrell, Rebecca [mailto:Rebecca.Tirrell@csra.com]
Sent: Tuesday, August 23, 2016 12:12 PM
To: DeHaven, Leigh <DeHaven.Leigh@epa.gov>
Subject: RE: TD#102 WA 502 8_19_16 - Questions for You! -Time for a quick call this afternoon?

Okay, thank you!

Rebecca Tirrell

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From: DeHaven, Leigh [mailto:DeHaven.Leigh@epa.gov]
Sent: Tuesday, August 23, 2016 12:07 PM
To: Tirrell, Rebecca
Subject: RE: TD#102 WA 502 8_19_16 - Questions for You! -Time for a quick call this afternoon?

I have a meeting and have some other things I need to get done this afternoon I will send you the answers in your email from yesterday for TD #101.

Leigh E. DeHaven
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Washington, DC 20460
Tel.: (202) 564-1974

From: Tirrell, Rebecca [mailto:Rebecca.Tirrell@csra.com]
Sent: Tuesday, August 23, 2016 12:04 PM
To: DeHaven, Leigh <DeHaven.Leigh@epa.gov>
Cc: Durbin, Luke <Luke.Durbin@csra.com>
Subject: FW: TD#102 WA 502 8_19_16 - Questions for You! -Time for a quick call this afternoon?

Hi Leigh,

Do you have time for a call this afternoon? I just want to go over some of our questions on TD101. Other than a training at 4, we have no other meetings this afternoon.

Thanks so much!

Rebecca

Rebecca Tirrell

Program Manager – Emergency Management

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From: Tirrell, Rebecca
Sent: Monday, August 22, 2016 12:31 PM
To: Leigh DeHaven
Cc: Durbin, Luke
Subject: RE: TD#102 WA 502 8_19_16 - Questions for You!

Hi Leigh,

We have some questions/acknowledgements on the PS-TN-Webpage updates, just want to make sure we have everything captured to date!

1) Provide Listing Information on PS and TN for new SWA ADP-7. List letter Date ???TBD???

- Acknowledge: Letter received and dated 8/22/2016

2) Remove Pristine Sea II BA-54 from PS and TN. In BA removal list on first page after

product name state "No Longer Manufactured - 2005"

- No additional clarification needed

- Acknowledge: Removal of Inipol EAP 22 (B-10) from PS and TN. In BA removal list, state "No Longer Manufactured – 2005" dated 8/22/2016

3) Include a copy of the Reminder to the Manufacturers on the EPA Website

- Question: Do you agree with placing the "Reminder to Manufacturers of Listed Products" on the following Webpage below the text "How to List a New Product on the NCP Product Schedule: **https://www.epa.gov/emergency-response/national-contingency-plan-subpart-j**

- Or, we could post it under the category "For More Information." However, it may get buried at the bottom of the page and would possibly benefit from following the "How to List a New Product on the NCP Product Schedule" section

- We are checking with the OEM Website Administration Team on the requirements for adding the information to the Website, EPA made some policy updates recently on PDF versus HTML page additions (i.e., can we provide the PDF and establish a link with a brief intro; or post the one pager as its own HTML text; or both)

o 8/22 Kristine – Eileen on Vacation from 8/30 to 9/14; Kristine has secured approval of posting for the 101 deliverable items

o 8/22 Kristine – We can post a single PDF, but there should be intro language. Or we can provide the complete text and a PDF link for download

4) Update fax number for PX-700™ (M-22)

- No additional clarification needed

5) Remove "EPA has not received updated information" from TX-Chem HE-1000 PS listing

- No additional clarification needed

6) For all products that have "EPA has not received updated information" and change it to: "Last Heard from Manufacturer insert DATE" and "Last Attempt insert DATE"

- Question for PS: How does this look (used the text "Last Communication…" to make it a little more formal, is that okay?)? For last communication, we used the last time the manufacturer provided confirmed updates; and last attempt as the most recent date of outreach to the manufacturer

PETROBIODISPERS)

Last Communication with Manufacturer: 9/20/2012

Last Attempt: 8/08/2016

130 William Street, Suite 802

New York, NY 10038

PHONE: (212) 933-9071, ext. 7001

FAX: (877) 226-4028

E-MAIL: Info@helpenvironmental.com

(Mr. Lawrence Gallo)

- Question for TN: We previously included the communication status at the top of the bulletin. Draft currently looks like the following, looking okay?

LAST COMMUNICATION WITH MANUFACTURER:
9/20/2012

LAST ATTEMPT:
8/08/2016

TECHNICAL PRODUCT BULLETIN #D-9

USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION

ORIGINAL LISTING DATE: JUNE 28, 2002

"BIODISPERS"

(formerly PETROBIODISPERS)

7) Process Changes for Bio Grass Extra SW-46. CBI was received and verified from Erich Wolf

- No additional clarification needed

Possibly Pending: Hydro Bond listing and any other updates received by Luke

- Acknowledge: Develop listing information on PS and TN for new MOSCA Hydro-Bond™ - letter received and dated 8/22/2016

- Acknowledge: EO ALL Purpose Soap – Lavender (SW-50) – information approved on 8/22/2016
- Acknowledge: Tulxa (SW-41) – information approved on 6/20/2016
- Acknowledge: Pro-Act (B-62) – information received on 8/22/2016

Thank you!

Rebecca

Rebecca Tirrell

Program Manager – Emergency Management

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From: DeHaven, Leigh [mailto:DeHaven.Leigh@epa.gov]
Sent: Friday, August 19, 2016 3:10 PM
To: Tirrell, Rebecca; Durbin, Luke
Cc: Perry, Portia
Subject: TD#102 WA 502 8_19_16

Let me know if you have any questions - Leigh

To: Tirrell, Rebecca[Rebecca.Tirrell@csra.com]
From: DeHaven, Leigh
Sent: Tue 8/23/2016 5:16:12 PM
Subject: RE: TD#102 WA 502 8_19_16 - Questions for You! -Time for a quick call this afternoon?

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Leigh E. DeHaven
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D-9	D	BIODISPERS (formerly PETROBIODISPERS) *Last Communication with Manufacturer: 9/20/2012* *Last Attempt: 8/08/2016*	Petrotech America Corporation 130 William Street, Suite 802 New York, NY 10038 PHONE: (212) 933-9071, ext. 7001 FAX: (877) 226-4028 E-MAIL: Info@helpenvironmental.com (Mr. Lawrence Gallo)	06/28/02

- Question for TN: We previously included the communication status at the top of the bulletin. Draft currently looks like the following, looking okay?

LAST COMMUNICATION WITH MANUFACTURER:

9/20/2012

LAST ATTEMPT:
8/08/2016

TECHNICAL PRODUCT BULLETIN #D-9

USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION

ORIGINAL LISTING DATE: JUNE 28, 2002

"BIODISPERS"

(formerly PETROBIODISPERS)

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Rebecca

Rebecca Tirrell

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Sent: Friday, August 19, 2016 3:10 PM
To: Tirrell, Rebecca; Durbin, Luke
Cc: Perry, Portia
Subject: TD#102 WA 502 8_19_16

Let me know if you have any questions - Leigh

Cc: Jennings, Kim[Jennings.Kim@epa.gov]
To: Matthiessen, Craig[Matthiessen.Craig@epa.gov]; Wilson, Gregory[Wilson.Gregory@epa.gov]; Principe, Vanessa[Principe.Vanessa@epa.gov]
From: DeHaven, Leigh
Sent: Wed 7/13/2016 12:31:23 PM
Subject: Discussion tomorrow: Activities/Results on the use of Chemical Dispersants for the Deepwater Horizon Oil Disaster
Tribal questions 7_12_16.docx

Attached are some answers to the questions posed by Amanda Hauff for the Tribal Meeting/NEJAC tomorrow (It was a good review after 6 years!). Most of the answers came from Deepwater Horizon websites. I highlighted a few areas that I did not have answers for 1) Did EPA conduct Tribal Consultations?, 2) Is ORD still conducting testing for monitoring in the Gulf? and 3) Human Health testing. Please add what you can if you get the chance and we can share this with Amanda tomorrow.

Thanks,

Leigh

Questions from Amanda Hauff

Discussion: Activities/Results on the use of Chemical Dispersants for the Deepwater Horizon Oil Disaster

When: Thu 7/14/2016 11:00a - 12:30p

Where: DCRoomEast3371C/DC-EPA-EAST-OCSPP-IO-OPMO

- Would you be able to provide us an overview of the Programmatic Damage Assessment and Restoration Plan and Final Programmatic Environmental Impact?

  Final Programmatic Damage Assessment and Restoration Plan (PDARP) and Final Programmatic Environmental Impact Statement (PEIS) http://www.gulfspillrestoration.noaa.gov/restoration-planning/gulf-plan

  NOAA Contact: Lisa Di Pinto

- Can you tell us more about the risk assessment? I understand the toxicity testing was conducted on aquatic species (e.g., shrimp, small fish, etc.); however, was there anything conducted on human health (such as consumption of fish or exposures)?

  NCP Product Schedule listed products like dispersants have to conduct toxicity and efficacy testing to be listed in the Product Schedule as stated in Subpart J of the NCP.

  June 30, 2010 - Results of the Phase I Testing

  Following BP's response to EPA's directive – and to ensure that decisions about ongoing dispersant use in the Gulf of Mexico are grounded in the best available science – EPA began its own scientific testing of eight dispersant products on the National Contingency Plan Product Schedule (NCP-PS). Those dispersant products are: Dispersit SPC 1000, Nokomis 3-F4, Nokomis 3-AA, ZI-400, SAF-RON GOLD, Sea Brat #4, Corexit 9500 A and JD-2000. On June 30, EPA released peer reviewed results from the first round of its own independent toxicity testing on eight oil dispersants.

  EPA's results indicated that none of the eight dispersants tested, including the product in use in the Gulf, displayed biologically significant endocrine disrupting activity. While the dispersant products alone – not mixed with oil - have roughly the same impact on aquatic life, JD-2000 and Corexit 9500 were generally less toxic to small fish and JD-2000 and SAF-RON GOLD were least toxic to mysid shrimp.

  August 2, 2010 - Results of the Phase II Testing

  EPA completed the second phase of dispersant testing to assess the acute toxicity of multiple concentrations of Louisiana Sweet Crude Oil alone, and combinations of Louisiana Sweet Crude Oil with each of the eight dispersants on the National Contingency Plan Product Schedule. The results indicate that the eight dispersants tested are similar to one another based on standard toxicity tests on sensitive aquatic organisms found in the Gulf. These results confirm that the dispersant used in response to the oil spill in the Gulf, Corexit 9500A, is generally no more or less toxic than the other available alternatives.

  The organisms tested were two Gulf of Mexico aquatic species: (1) the mysid shrimp,

Americamysis bahia, an aquatic invertebrate, and (2) the inland silverside, Menidia beryllina, a small estuarine fish. These species are standard test organisms used in toxicity tests for a variety of pollutants. The tests were conducted on mixtures of Louisiana Sweet Crude Oil and eight dispersant products found on the National Contingency Plan Product Schedule – Dispersit SPC 1000, Nokomis 3-F4, Nokomis 3-AA, ZI-400, SAFRON Gold, Sea Brat #4, Corexit 9500 A and JD 2000.

The results indicate that for all eight dispersants in both test species, the dispersants alone were less toxic than the dispersant-oil mixture. Oil alone was found to be more toxic to mysid shrimp than the eight dispersants when tested alone. Oil alone had similar toxicity to mysid shrimp as the dispersant-oil mixtures, with exception of the mixture of Nokomis 3-AA and oil, which was found to be more toxic.

These toxicity tests were conducted as part of an overall assessment of BP's use of Corexit 9500 in response to the oil spill in the Gulf. These tests, coupled with EPA's first round of dispersant tests show that dispersants are not distinguishable from one another based on the acute toxicity tests for sensitive aquatic organisms.

EPA's first phase of test results, released on June 30th, indicated that none of the eight dispersants displayed biologically significant endocrine disrupting activity. While the dispersant products alone – not mixed with oil - are roughly the same, JD-2000 and Corexit 9500 were generally less toxic to small fish and JD-2000 and SAF-RON GOLD were least toxic to mysid shrimp.

EPA believes dispersants should only be used sparingly and when absolutely necessary. The results of the two phases of tests are helping to inform the Administration as the Federal Response Team evaluates the Congressionally-legislated oil spill response practices for future scenarios.

September 2010 update to the toxicity testing

EPA's results from the oil-only test for small fish in the second round of dispersant testing were inconclusive. EPA has repeated the tests and has updated the report to include the acute toxicity of Louisiana sweet crude to the inland silverside fish, Menidia beryllina, and includes the second phase of reference toxicant testing conducted with both Menidia and the mysid shrimp, Americamysis bahia (see page 13, Table 3, for new results).

The additional data are consistent with the original findings of the second round of dispersant testing. They show Louisiana Sweet Crude Oil alone to be more toxic to the silverside fish than the eight dispersants alone, as also indicated by the mysid tests. Additionally, the oil alone had similar toxicity to the silverside fish as the dispersant-oil mixtures, with the exception of the mixture of Dispersit SPC 1000 and Nokomis 3-AA, which were found to be more toxic than oil alone.

Human Health: *ADD: NAS meeting on dispersants, woman from Tulane worked with ???CDC??? to conduct testing on fish consumption and human health issues after spill.*

- In addition, I know that the emergency response data collection has ended and results may still

be updating. However, does that mean EPA/trustees are no longer going to collect data in the future? Also, if results identify high levels of toxins would that trigger additional EPA activities?

National Coastal Condition Reports

The National Coastal Condition Reports (NCCR), prepared by EPA's Office of Research and Development and Office of Water, describe the ecological and environmental conditions in U.S. coastal waters. They summarize the condition of ecological resources in the coastal waters of the United States and highlight several exemplary federal, state, tribal, and local programs that assess coastal ecological and water quality conditions. The NCCR series rate the overall condition of the U.S. coastal waters as fair, varying from region to region. Preparation of these reports represent a coordinated effort among EPA, the National Oceanic and Atmospheric Administration, the U.S. Geological Survey, the U.S. Fish and Wildlife Service, coastal states, and the National Estuary Programs.

For NOAA restoration plans see: http://www.gulfspillrestoration.noaa.gov/

Is EPA ORD conducting any ongoing testing at the Gulf?

- Does EPA have records on how they worked with tribes within the region beyond Tribal Consultation?

Were there any tribes in LA or states along the gulf that were consulted?

- Is there still funding available to implement restoration?

Natural Resource Damage Assessment (NRDA) which is managed by NOAA had a settlement that will include restoration activities. States may be involved in restoration activities. The record-setting settlement with BP Exploration & Production for an unprecedented $5.5 billion Clean Water Act penalty and up to $8.8 billion in natural resource damages.

In July 2012, the Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States Act (RESTORE Act) established the Gulf Coast Ecosystem Restoration Council (Council), which is comprised of governors from the five affected Gulf States, the Secretaries from the U.S. Departments of the Interior, Commerce, Agriculture, and Homeland Security as well as the Secretary of the Army and the Administrator of the U.S. Environmental Protection Agency. The Gulf States recommended and President Obama appointed the Secretary of Commerce as the Council's Chair. The Gulf Coast Ecosystem Restoration Council, through its Initial Funded Priorities List (approved Dec. 9, 2015), is using funds from the settlement with Transocean Deepwater Inc. to provide near-term, on-the-ground ecosystem benefits, while also conducting planning activities designed to build a foundation for future success as additional funds become available from other parties.

- Does EPA have any current activities still being conducted that is connected to this disaster?

Subpart J has been revised due to many lessons learned during the Deepwater Horizon Spill. A proposed rule was released in January 2015 and over 81,000 public comments were collected and are being reviewed and incorporated into the Final Rule.

Work is being conducted by Gulf Coast Ecosystem Restoration Council, which is comprised of governors from the five affected Gulf States, the Secretaries from the U.S. Departments of the Interior, Commerce, Agriculture, and Homeland Security as well as the Secretary of the Army and the Administrator of the U.S. Environmental Protection Agency.

National Coastal Condition Reports (see above)

Is EPA ORD conducting any other ongoing testing at the Gulf?

To: Tirrell, Rebecca[Rebecca.Tirrell@csra.com]; Durbin, Luke[Luke.Durbin@csra.com]
From: DeHaven, Leigh
Sent: Mon 6/20/2016 12:29:32 PM
Subject: FW: FYI from BNA - Canada Approves Corexit Products for Treating Oil Spills

Leigh E. DeHaven
U.S. Environmental Protection Agency
Office of Emergency Management

Office of Land and Emergency Management
1200 Pennsylvania Ave., NW

Room 6450 CC WJC North (Mail code 5104A)
Washington, DC 20460
Tel.: (202) 564-1974

From: Matthiessen, Craig
Sent: Friday, June 17, 2016 7:50 AM
To: Cheatham, Reggie <cheatham.reggie@epa.gov>; Clark, Becki <Clark.Becki@epa.gov>; DeHaven, Leigh <DeHaven.Leigh@epa.gov>; Principe, Vanessa <Principe.Vanessa@epa.gov>; Wilson, Gregory <Wilson.Gregory@epa.gov>; Bove, James <Bove.James@epa.gov>; Conmy, Robyn <Conmy.Robyn@epa.gov>; Woodyard, Josh <Woodyard.Joshua@epa.gov>; Irizarry, Gilberto <Irizarry.Gilberto@epa.gov>
Cc: Jennings, Kim <Jennings.Kim@epa.gov>
Subject: FYI from BNA - Canada Approves Corexit Products for Treating Oil Spills

FYI from BNA Report:

Oil Spills

Canada Approves Corexit Products for Treating Oil Spills

BNA Snapshot

Canada Approves Oil Spill Treatments

Key Development: Canada publishes regulations confirming the use of Corexit EC9500A and Corexit EC9580A to treat major oil spills from offshore production facilities.

Potential Impact: Although most public comment oppose authorization of the Corexit dispersant on the basis that it is toxic to humans and marine life, Environment and Climate Change Canada says it offers "best-in-class" performance.

By Peter Menyasz

June 16 — Canada published regulations confirming the use of two oil-treating agents for major spills from offshore production facilities.

The federal government's conclusion that the products are the best-available alternatives to address major offshore spills did not ease environmental groups' concerns about their potential toxicity, while industry warned that conditions on their use would hinder their effectiveness in emergencies.

Nalco Co.'s Corexit EC9500A dispersant and Corexit EC9580A surface washing agent are acceptable for offshore use because they offer "best-in-class" performance while posing a low risk of environmental harm, Environment and Climate Change Canada said June 15.

The regulations replace a July 2015 Cabinet order to apply an exemption under the Energy Safety and Security Act to existing legal prohibitions against the use of spill-treating agents in Canadian waters, the department said in the June 15 Canada Gazette, Part I. They go into effect immediately.

“The inclusion of spill-treating agents to expand the available response options is necessary to enable a spill to be addressed to the maximum possible extent in order to protect the overall integrity of the environment,” it said.

The department acknowledged that the majority of comments it received in July 2015, after publishing draft regulations, opposed authorization of the Corexit dispersant on the basis that it is toxic to humans and marine life and safer alternatives are available. Some comments noted that the product is banned in some jurisdictions and may soon be banned in the U.S., the department said.

But Environment and Climate Change Canada said, based on current evidence, it is satisfied that the product is suitable for Canadian offshore waters because there is no known alternative that is safer, more effective and has undergone rigorous study and real-world testing.

Corexit EC9500A is listed on the U.S. National Contingency Plan, so the possibility of that changing is speculation, and in any event decisions by other jurisdictions do not preclude Canada from taking action it deems appropriate, it said.

Environmental Groups' Opposition

Greenpeace Canada, along with other environmental and aboriginal groups, opposes authorization of Corexit for offshore spills and is unhappy that the government continues to support its use, Greenpeace spokesman Alex Speers-Roesch said June 16. “The concerns basically stand,” he told Bloomberg BNA. “It's a toxic chemical.”

There is significant evidence from the disaster following the explosion of BP Plc's Deepwater Horizon that dispersants add to environmental damage caused by major oil spills, according to Speers-Roesch. “There's no evidence it can produce a positive result,” he said.

The conditions the regulations impose before an approved product can be used set a “fairly low

bar" and the regulations overall don't set clear criteria for how the products should be used, he said.

The Canadian Association of Petroleum Producers was unable to respond June 16 to a request from Bloomberg BNA for comment on the regulations, but Environment and Climate Change Canada acknowledged in its regulatory impact analysis the concerns the oil industry raised during the July 2015 public comment period.

Industry questioned the need to rely on regulatory decision-makers to determine the appropriate use of spill-treating agents in emergency situations and to consult with federal and provincial officials before they are used because it could delay decisions and impede optimal spill response, the department said.

Leaving final approval until a spill has occurred and requiring consultation with federal and provincial officials provides flexibility to ensure that decisions are based on the facts at the time, Environment and Climate Change Canada said.

Regulations Impose Conditions

The regulations impose the following conditions:

• authorization by an offshore oil and gas regulator such as the Canada-Nova Scotia Offshore Petroleum Board, Canada-Newfoundland and Labrador Offshore Petroleum Board or the National Energy Board;

• approval by the regulator's chief conservation officer, based on a finding that it will likely provide a net environmental benefit;

• use of the product under conditions imposed by regulations or stipulated by the regulator at the time of the spill; and

• in the period through 2020, during which regulations specifying conditions of use may be developed, consultation at the time of a spill with the federal ministers of environment and natural resources and the appropriate provincial minister.

In addition, monitoring dispersed oil in the environment following the dispersant's use is an obligation of the party responsible for an oil spill, the department said.

Oil dispersant Corexit EC9500A was used in the 2010 Deepwater Horizon well blowout, while Corexit EC9580A, a surface washing agent used on shorelines and manufactured structures, was used in the 1994 Morris J. Berman spill in Puerto Rico, Environment and Climate Change Canada said. No ingredient in either product is listed as toxic under the Canadian Environmental Protection Act, it said.

For More Information

The Regulations Establishing a List of Spill-treating Agents (Canada Oil and Gas Operations Act) are available at http://src.bna.com/fZj.

To: Conmy, Robyn[Conmy.Robyn@epa.gov]; Principe, Vanessa[Principe.Vanessa@epa.gov]; Matthiessen, Craig[Matthiessen.Craig@epa.gov]; Bove, James[Bove.James@epa.gov]
Cc: Wilson, Gregory[Wilson.Gregory@epa.gov]
From: DeHaven, Leigh
Sent: Mon 4/25/2016 12:49:58 PM
Subject: RE: Availability of COREXIT Products for Testing
TD79 Item 1_PS Maintenance POC Verification_3-23-2016_v2 LED 4_25_16.docx

Robyn,

Here are Luke's notes from the Dispersant POC check in. There are some new details that may be helpful to you. After our POC verification, manufactures send EPA letters signed by the manufacturer stating changes, then we officially make changes in the PS and TN, so here is an extra special preview for you ☺. Hope this helps!

Leigh

Leigh E. DeHaven
U.S. Environmental Protection Agency
Office of Emergency Management

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1200 Pennsylvania Ave., NW

Room 6450 CC WJC North (Mail code 5104A)
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From: Conmy, Robyn
Sent: Monday, April 25, 2016 8:29 AM
To: DeHaven, Leigh <DeHaven.Leigh@epa.gov>; Principe, Vanessa <Principe.Vanessa@epa.gov>; Matthiessen, Craig <Matthiessen.Craig@epa.gov>; Bove, James <Bove.James@epa.gov>
Cc: Wilson, Gregory <Wilson.Gregory@epa.gov>
Subject: RE: Availability of COREXIT Products for Testing

Thanks Leigh. I have tried both the manufacturer and the distributor (if provided) that was listed with the schedule. Hoping folks were just out of the office or too busy to respond last week – but are available this week.

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Robyn N. Conmy, Ph.D.

Research Ecologist

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conmy.robyn@epa.gov

From: DeHaven, Leigh
Sent: Monday, April 25, 2016 8:26 AM
To: Conmy, Robyn <Conmy.Robyn@epa.gov>; Principe, Vanessa <Principe.Vanessa@epa.gov>; Matthiessen, Craig <Matthiessen.Craig@epa.gov>; Bove, James <Bove.James@epa.gov>
Cc: Wilson, Gregory <Wilson.Gregory@epa.gov>
Subject: RE: Availability of COREXIT Products for Testing

Hi Robyn,

I am not certain if you are directly contacting manufacturers only or if you have tried the distributors (which are often the same entity). Anyway, the NCP Technical Notebook (TN) list distributors where the Product Schedule (PS) just lists manufacturers. CSRA just did an check on verifying POC data for the PS and TN, so you may (or may not) have more luck contacting folks if they provided updated information to us during the update. The link for the Technical

Notebook is https://www.epa.gov/sites/production/files/2013-08/documents/notebook.pdf. I can ask Luke Durbin from CSRA if he has any notes on contacting the manufactures you listed in your email below and if there were updates that I may not have received written verification from yet.

Leigh

-

Leigh E. DeHaven
U.S. Environmental Protection Agency
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Office of Land and Emergency Management
1200 Pennsylvania Ave., NW

Room 6450 CC WJC North (Mail code 5104A)
Washington, DC 20460
Tel.: (202) 564-1974

From: Conmy, Robyn
Sent: Monday, April 25, 2016 8:14 AM
To: Principe, Vanessa <Principe.Vanessa@epa.gov>; Matthiessen, Craig <Matthiessen.Craig@epa.gov>; Bove, James <Bove.James@epa.gov>
Cc: Wilson, Gregory <Wilson.Gregory@epa.gov>; DeHaven, Leigh <DeHaven.Leigh@epa.gov>
Subject: RE: Availability of COREXIT Products for Testing

It's crazy that the Nalco is turning out to be the easy product to procure. I have contacted the makers of Finasol, Dispersit and Accell via email and phone, but have not received back any calls or emails. Will be reaching out again this morning!

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conmy.robyn@epa.gov

From: Principe, Vanessa
Sent: Friday, April 22, 2016 4:22 PM
To: Matthiessen, Craig <Matthiessen.Craig@epa.gov>; Bove, James <Bove.James@epa.gov>
Cc: Wilson, Gregory <Wilson.Gregory@epa.gov>; Conmy, Robyn <Conmy.Robyn@epa.gov>; DeHaven, Leigh <DeHaven.Leigh@epa.gov>
Subject: RE: Availability of COREXIT Products for Testing

This is good news!

HOWEVER - We will need to purchase these, as we are purchasing the ones from TOTAL. The reason we gave TOTAL was that we want to be above board given we will be using results for regulatory purposes and do not want to in any way appear to be giving an advantage to any entity. So we didn't accept their offer for free samples.

Would like to circle back with everybody on Monday to see whether the next communication is from me or from ORD as the purchaser/receiver.

Have a good weekend, V

From: Theriot, Debby [mailto:Debby.Theriot@nalco.com]
Sent: Friday, April 22, 2016 4:01 PM
To: Principe, Vanessa <Principe.Vanessa@epa.gov>
Cc: Wilson, Gregory <Wilson.Gregory@epa.gov>; Conmy, Robyn <Conmy.Robyn@epa.gov>;

Matthiessen, Craig <Matthiessen.Craig@epa.gov>; DeHaven, Leigh <DeHaven.Leigh@epa.gov>
Subject: RE: Availability of COREXIT Products for Testing

Hi Vanessa,

I have approval from legal to proceed without the need for NDA. They just ask that we "confirm that the formulation will not be disclosed". I will have the sample team pull these for you and prepare for shipment. Please advise the shipping address.

Samples of products are provide at no cost.

Thanks,

Debby Theriot

Nalco Environmental Solutions LLC

7705 Highway 90-A

Sugar Land, TX 77478

832.851.5164 cell

debby.theriot@nalco.com

www.nalcoesllc.com

NALCO
Environmental
Solutions LLC

From: Principe, Vanessa [mailto:Principe.Vanessa@epa.gov]
Sent: Thursday, April 21, 2016 3:50 PM
To: Theriot, Debby
Cc: Wilson, Gregory; Conmy, Robyn; Matthiessen, Craig; DeHaven, Leigh
Subject: RE: Availability of COREXIT Products for Testing

Debby:

Thank you for providing us with the NDA form.

It appears that your concern is for the protection of Confidential Business Information (CBI) specific to the formulation of your products. EPA safeguards CBI information under the requirements in 40 CFR Part 2, Subpart B. Specifically, for the products we are seeking, and which are already listed in the Product Schedule, current regulatory requirements address CBI under 40 CFR Part 300, Subpart J. These provisions should address your CBI concerns. EPA cannot enter into an NDA addressing CBI as it is bound by its regulations on such matters.

We are still interested in purchasing samples of these products for the purposes of both toxicity and efficacy testing. Given that the product testing is intended to support both regulatory actions under Subpart J and our general research in the area of oil spill response, any toxicity and efficacy testing results would not be considered CBI.

Please advise on how to proceed with this purchase.

Again, thank you for your attention to this matter,

Vanessa

From: Theriot, Debby [mailto:Debby.Theriot@nalco.com]
Sent: Wednesday, April 20, 2016 1:09 PM
To: Principe, Vanessa <Principe.Vanessa@epa.gov>
Cc: Wilson, Gregory <Wilson.Gregory@epa.gov>; Conmy, Robyn <Conmy.Robyn@epa.gov>; Matthiessen, Craig <Matthiessen.Craig@epa.gov>; DeHaven, Leigh <DeHaven.Leigh@epa.gov>
Subject: RE: Availability of COREXIT Products for Testing

Hi Vanessa,

The standard format is attached. Details and scope are filled in by our paralegal once we receive from the requesting party.

debby

From: Principe, Vanessa [mailto:Principe.Vanessa@epa.gov]
Sent: Tuesday, April 19, 2016 1:33 PM
To: Theriot, Debby
Cc: Wilson, Gregory; Conmy, Robyn; Matthiessen, Craig; DeHaven, Leigh
Subject: RE: Availability of COREXIT Products for Testing

Ms. Theriot:

Thank you for getting back to me. My apologies, but my voice mail did not have any recorded messages from you.

Could you please send us a copy of your NDA for our Office of General Counsel to review?

Thank you for your attention to this matter,

Vanessa

From: Theriot, Debby [mailto:Debby.Theriot@nalco.com]
Sent: Tuesday, April 19, 2016 1:59 PM
To: Principe, Vanessa <Principe.Vanessa@epa.gov>
Cc: Wilson, Gregory <Wilson.Gregory@epa.gov>; Conmy, Robyn <Conmy.Robyn@epa.gov>; Matthiessen, Craig <Matthiessen.Craig@epa.gov>; DeHaven, Leigh <DeHaven.Leigh@epa.gov>
Subject: RE: Availability of COREXIT Products for Testing

Hi Vanessa,

I believe I left a voicemail in return last week. For the release of products for testing, we require testing details for each product to be disclosed and NDA to be executed. Are you able to assist in the process?

I will be able to release samples free of any cost to you once the NDA's are fully executed.

Debby Theriot

Nalco Environmental Solutions LLC

7705 Highway 90-A

Sugar Land, TX 77478

832.851.5164 cell

debby.theriot@nalco.com

www.nalcoesllc.com

From: Principe, Vanessa [mailto:Principe.Vanessa@epa.gov]
Sent: Monday, April 18, 2016 11:10 AM
To: Theriot, Debby
Cc: Wilson, Gregory; Conmy, Robyn; Matthiessen, Craig; DeHaven, Leigh
Subject: Availability of COREXIT Products for Testing

Ms. Theriot,

This follows up my voice mails of last week and today.

Per my message, EPA is seeking to acquire a number of dispersant products listed on the NCP Subpart J Product Schedule for the purposes of both toxicity and efficacy testing. The product testing is intended to further inform currently proposed regulatory actions under Subpart J of the

National Contingency Plan. The products will in addition be used to support our general research in the area of oil spill response.

Three of your products [COREXIT EC9527A, EC9500A and EC9500B] have been identified as of interest, as they are commonly stockpiled in the U.S. Not only could these products be encountered when presented with a response situation, but including these dispersant products in toxicity and efficacy testing studies will also allow for comparison and consistency with other existing and ongoing studies by EPA and other federal agencies. EPA's Office of Research and Development (ORD) will be conducting the dispersant studies.

At this time we are seeking 2 U.S. gallons of each of the products.

You can contact either me or Greg Wilson at 202-564-7989. We appreciate your time and attention to this request and look forward to talking to you.

Respectfully,

Vanessa Principe

Vanessa Principe

202-564-7913

Chemical Engineer

Office Of Emergency Management

Office of Land and Emergency Management

U.S. EPA

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To: Conmy, Robyn[Conmy.Robyn@epa.gov]; Principe, Vanessa[Principe.Vanessa@epa.gov]; Matthiessen, Craig[Matthiessen.Craig@epa.gov]; Bove, James[Bove.James@epa.gov]
Cc: Wilson, Gregory[Wilson.Gregory@epa.gov]
From: DeHaven, Leigh
Sent: Mon 4/25/2016 12:26:10 PM
Subject: RE: Availability of COREXIT Products for Testing

Hi Robyn,

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Cc: Wilson, Gregory <Wilson.Gregory@epa.gov>; DeHaven, Leigh <DeHaven.Leigh@epa.gov>

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Subject: RE: Availability of COREXIT Products for Testing

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HOWEVER - We will need to purchase these, as we are purchasing the ones from TOTAL. The reason we gave TOTAL was that we want to be above board given we will be using results for

regulatory purposes and do not want to in any way appear to be giving an advantage to any entity. So we didn't accept their offer for free samples.

Would like to circle back with everybody on Monday to see whether the next communication is from me or from ORD as the purchaser/receiver.

Have a good weekend, V

From: Theriot, Debby [mailto:Debby.Theriot@nalco.com]
Sent: Friday, April 22, 2016 4:01 PM
To: Principe, Vanessa <Principe.Vanessa@epa.gov>
Cc: Wilson, Gregory <Wilson.Gregory@epa.gov>; Conmy, Robyn <Conmy.Robyn@epa.gov>; Matthiessen, Craig <Matthiessen.Craig@epa.gov>; DeHaven, Leigh <DeHaven.Leigh@epa.gov>
Subject: RE: Availability of COREXIT Products for Testing

Hi Vanessa,

I have approval from legal to proceed without the need for NDA. They just ask that we "confirm that the formulation will not be disclosed". I will have the sample team pull these for you and prepare for shipment. Please advise the shipping address.

Samples of products are provide at no cost.

Thanks,

Debby Theriot

Nalco Environmental Solutions LLC

7705 Highway 90-A

Sugar Land, TX 77478

832.851.5164 cell

debby.theriot@nalco.com

www.nalcoesllc.com

NALCO
Environmental
Solutions LLC

From: Principe, Vanessa [mailto:Principe.Vanessa@epa.gov]
Sent: Thursday, April 21, 2016 3:50 PM
To: Theriot, Debby
Cc: Wilson, Gregory; Conmy, Robyn; Matthiessen, Craig; DeHaven, Leigh
Subject: RE: Availability of COREXIT Products for Testing

Debby:

Thank you for providing us with the NDA form.

It appears that your concern is for the protection of Confidential Business Information (CBI) specific to the formulation of your products. EPA safeguards CBI information under the requirements in 40 CFR Part 2, Subpart B. Specifically, for the products we are seeking, and which are already listed in the Product Schedule, current regulatory requirements address CBI under 40 CFR Part 300, Subpart J. These provisions should address your CBI concerns. EPA cannot enter into an NDA addressing CBI as it is bound by its regulations on such matters.

We are still interested in purchasing samples of these products for the purposes of both toxicity and efficacy testing. Given that the product testing is intended to support both regulatory actions under Subpart J and our general research in the area of oil spill response, any toxicity and efficacy testing results would not be considered CBI.

Please advise on how to proceed with this purchase.

Again, thank you for your attention to this matter,

Vanessa

From: Theriot, Debby [mailto:Debby.Theriot@nalco.com]
Sent: Wednesday, April 20, 2016 1:09 PM
To: Principe, Vanessa <Principe.Vanessa@epa.gov>
Cc: Wilson, Gregory <Wilson.Gregory@epa.gov>; Conmy, Robyn <Conmy.Robyn@epa.gov>; Matthiessen, Craig <Matthiessen.Craig@epa.gov>; DeHaven, Leigh <DeHaven.Leigh@epa.gov>
Subject: RE: Availability of COREXIT Products for Testing

Hi Vanessa,

The standard format is attached. Details and scope are filled in by our paralegal once we receive from the requesting party.

debby

From: Principe, Vanessa [mailto:Principe.Vanessa@epa.gov]
Sent: Tuesday, April 19, 2016 1:33 PM
To: Theriot, Debby
Cc: Wilson, Gregory; Conmy, Robyn; Matthiessen, Craig; DeHaven, Leigh
Subject: RE: Availability of COREXIT Products for Testing

Ms. Theriot:

Thank you for getting back to me. My apologies, but my voice mail did not have any recorded messages from you.

Could you please send us a copy of your NDA for our Office of General Counsel to review?

Thank you for your attention to this matter,

Vanessa

From: Theriot, Debby [mailto:Debby.Theriot@nalco.com]
Sent: Tuesday, April 19, 2016 1:59 PM
To: Principe, Vanessa <Principe.Vanessa@epa.gov>
Cc: Wilson, Gregory <Wilson.Gregory@epa.gov>; Conmy, Robyn <Conmy.Robyn@epa.gov>; Matthiessen, Craig <Matthiessen.Craig@epa.gov>; DeHaven, Leigh <DeHaven.Leigh@epa.gov>
Subject: RE: Availability of COREXIT Products for Testing

Hi Vanessa,

I believe I left a voicemail in return last week. For the release of products for testing, we require testing details for each product to be disclosed and NDA to be executed. Are you able to assist in the process?

I will be able to release samples free of any cost to you once the NDA's are fully executed.

Debby Theriot

Nalco Environmental Solutions LLC

7705 Highway 90-A

Sugar Land, TX 77478

832.851.5164 cell

debby.theriot@nalco.com

www.nalcoesllc.com

NALCO
Environmental
Solutions LLC

From: Principe, Vanessa [mailto:Principe.Vanessa@epa.gov]
Sent: Monday, April 18, 2016 11:10 AM
To: Theriot, Debby
Cc: Wilson, Gregory; Conmy, Robyn; Matthiessen, Craig; DeHaven, Leigh
Subject: Availability of COREXIT Products for Testing

Ms. Theriot,

This follows up my voice mails of last week and today.

Per my message, EPA is seeking to acquire a number of dispersant products listed on the NCP Subpart J Product Schedule for the purposes of both toxicity and efficacy testing. The product testing is intended to further inform currently proposed regulatory actions under Subpart J of the National Contingency Plan. The products will in addition be used to support our general research in the area of oil spill response.

Three of your products [COREXIT EC9527A, EC9500A and EC9500B] have been identified as of interest, as they are commonly stockpiled in the U.S. Not only could these products be encountered when presented with a response situation, but including these dispersant products in toxicity and efficacy testing studies will also allow for comparison and consistency with other existing and ongoing studies by EPA and other federal agencies. EPA's Office of Research and Development (ORD) will be conducting the dispersant studies.

At this time we are seeking 2 U.S. gallons of each of the products.

You can contact either me or Greg Wilson at 202-564-7989. We appreciate your time and attention to this request and look forward to talking to you.

Respectfully,

Vanessa Principe

Vanessa Principe

202-564-7913

Chemical Engineer

Office Of Emergency Management

Office of Land and Emergency Management

U.S. EPA

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Cc: Tirrell, Rebecca[Rebecca.Tirrell@csra.com]
To: Durbin, Luke[Luke.Durbin@csra.com]
From: DeHaven, Leigh
Sent: Tue 3/29/2016 7:49:24 PM
Subject: Re: TD#79 Item 1: PS Maintenance & POC Verification - Leigh Comments - Read and make changes before posting
TN_Mar16_DRAFT UPDATE_v3 (DeHaven, Leigh).docx

The PS is ready to post but check the page numbering in the TN and revise (there is a page 0 before D-1)before posting on the website.

From: Durbin, Luke <Luke.Durbin@csra.com>
Sent: Tuesday, March 29, 2016 1:07 PM
To: DeHaven, Leigh
Cc: Tirrell, Rebecca
Subject: RE: TD#79 Item 1: PS Maintenance & POC Verification - Leigh Comments - Read and make changes before posting

Leigh,

Attached for your approval, are the revised PS and TN draft files with changes per your previous email.

Luke

From: DeHaven, Leigh [mailto:DeHaven.Leigh@epa.gov]
Sent: Tuesday, March 29, 2016 10:19 AM
To: Tirrell, Rebecca
Cc: Durbin, Luke
Subject: Re: TD#79 Item 1: PS Maintenance & POC Verification - Leigh Comments - Read and make changes before posting

Please remove the product entry information from the PS and TN draft website provided in the attached document. I added comments in red in the first column of the attached table. It was disappointing that some of the long existing protocols for changing product manufacturers/owners and companies were not followed. These are situations where EPA could be sued if information was not completely verified and signed off by the product manufacturer.

For the entries in attachment on the PS and TN, use heading stating "LISTING CHANGES PENDING FOLLOWING VERIFICATION BY MANUFACTURER AND EPA".

From: Tirrell, Rebecca <Rebecca.Tirrell@csra.com>
Sent: Monday, March 28, 2016 9:05 PM
To: DeHaven, Leigh
Cc: Durbin, Luke
Subject: RE: TD#79 Item 1: PS Maintenance & POC Verification - Version 2

Leigh,

Attached for your approval, please find the revised March 2016 Product Schedule, March 2016 Technical Notebook, and PS Maintenance POC Verification per your request below. The CSRA OEM Website Administrator will begin making the changes using the verification document to the associated OEM NCP Subpart J Product Schedule web pages upon your approval.

Please let us know if you have any questions.

Rebecca

Rebecca Tirrell

Program Director, Emergency Management

SRA International, Inc., A CSRA Company

3434 Washington Boulevard, Room 2020E, Arlington, VA 22201

o: 703-284-6643 | c: (703) 801-6783 | NEW EMAIL: Rebecca.Tirrell@csra.com | www.csra.com

Follow us on Facebook, Twitter, and LinkedIn

Out of office dates: Wednesday, March 30 – Friday, April 1

Please update your contact list with new email address: Rebecca.Tirrell@csra.com

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From: DeHaven, Leigh [mailto:DeHaven.Leigh@epa.gov]
Sent: Monday, March 28, 2016 11:04 AM
To: Tirrell, Rebecca
Cc: Durbin, Luke
Subject: RE: TD#79 Item 1: PS Maintenance & POC Verification

PS and TN revisions for Website.:

The only letter I have received to make any changes to the PS dealing with product no longer being manufactured is Supersperse WAO2500 (as of today). You can remove this product from the PS and TN as voluntary removal by Baker Hughes/Baker Petrolite.

No other changes stating a product is "no longer manufactured" should be posted until we hear from the manufacturer in writing to officially close out the file (Ex: Verusolve, JE105BS, Split Decision). Products should not have names changed until we here from manufacturers in writing also.

Please don't send the PDF of the Supporting Statement document I sent you on Wednesday to be PDF. I will take care of it.

Leigh E. DeHaven
U.S. Environmental Protection Agency
Office of Emergency Management

Office of Land and Emergency Management
1200 Pennsylvania Ave., NW

Room 6450 CC WJC North (Mail code 5104A)
Washington, DC 20460
Tel.: (202) 564-1974

From: Tirrell, Rebecca [mailto:Rebecca.Tirrell@csra.com]
Sent: Wednesday, March 23, 2016 11:58 PM
To: DeHaven, Leigh <DeHaven.Leigh@epa.gov>
Cc: Durbin, Luke <Luke.Durbin@csra.com>
Subject: TD#79 Item 1: PS Maintenance & POC Verification

Leigh,

Attached for your review, please find the findings of the Product Schedule POC Verification. Attached files include the following:

- TD79 Item 1_PS Maintenance POC Verification_3-23-2016 (Matrix of updates, pending actions, and manufacturer responses)
- March 2016 NCP Product Schedule
- March 2016 NCP Product Schedule Technical Notebook
- NCP Subpart J Alphabetical Listing Checklist (Website Administrator use with verification matrix)

Let Luke know if you have any questions.

Rebecca

Rebecca Tirrell

Program Director, Emergency Management

SRA International, Inc., A CSRA Company

3434 Washington Boulevard, Room 2020E, Arlington, VA 22201

o: 703-284-6643 | c: (703) 801-6783 | NEW EMAIL: Rebecca.Tirrell@csra.com | www.csra.com

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Effective Immediately, please update your contact list with new email address: Rebecca.Tirrell@csra.com

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GUIDE TO USING THE NCP SUBPART J PRODUCT SCHEDULE TECHNICAL NOTEBOOK

MARCH 2016
(3/29/2016)

FOREWORD

The U.S. Environmental Protection Agency's (EPA) Office of Emergency Management (OEM) Regulations Implementation Division (RID) compiled the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) Product Schedule, as required by the Clean Water Act, the Oil Pollution Act of 1990 (OPA 90), and the NCP. This NCP Product Schedule Technical Notebook contains a compilation of product bulletins summarizing data requirements and test results for those products listed on EPA's NCP Product Schedule.

Manufacturers/contacts of products on the Schedule are required to amend their technical product bulletins whenever there are changes in product formulation, application rates, and handling procedures. Updates to this Notebook, such as the addition of new products to the Schedule, or modifications and/or deletions of listed products, will be indicated in bold.

For additional information, please leave a message on EPA's NCP Subpart J Information Line at (202) 260-2342.

Written requests may be mailed to:

NCP Product Schedule Manager
U.S. Environmental Protection Agency
Office of Emergency Management (OEM)
Regulations Implementation Division (RID)
William Jefferson Clinton Building
1200 Pennsylvania Avenue, NW (Mail Code 5104A, Room 6450CC)
Washington, DC 20460

Currently Listed Products by Category:	
Dispersants	**18**
Surface Washing Agents	55
Surface Collecting Agents	2
Bioremediation Agents	27
Biological Additives (20)	
Microbiological Cultures (19)	
Enzyme Additives (1)	
Nutrient Additives (7)	
Miscellaneous Oil Spill Control Agents	15
Solidifiers (10)	
Total Products	**117**

Changes to the Schedule:	Product manufacturer and distributor contact information updates
New listings to the Schedule:	None
New deletions from the Schedule:	**SUPERSPERSE™ WAO2500 DISPERSANT (D-15)**
Products no longer manufactured:	INIPOL EAP (B-10); PRISTINE SEA II (B-54)
Contact information and product availability cannot be verified (no response to queries as of 3/23/2016):	**BIODISPERS (D-9)**; CN-110 (SW-9); **PETROTECH 25 (SW-21)**; **DO-ALL #18 (SW-24); TXCHEM HE-1000™ (SW-37)**; SOC-10 (SW-45); **ENVIRONMENTAL 1 CRUDE OIL CLEANER (SW-47)**; **ETHOS CLEAN (SW-58); OSR-10 (SW-59); EPA OIL FIELD SOLUTION ™ (SW-61);** INIPOL EAP (B-10); **WMI-2000 (B-19);** BET BIOPETRO (B-48); PRISTINE SEA II (B-54); LAND AND SEA RESTORATION PRODUCT 001 (VELITE) (B-55); **ERGOFIT MICRO MIX AQUA (B-67)**; SUMP SAFE BIO-RECLAIM (B-69); WASTE-SET #3200® (M-19); and WASTE-SET #3400® (M-20)

All changes and additions to the NCP Product Schedule Technical Notebook are indicated in bold under the applicable product listing.

Updated: 3/29/2016

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ALPHABETICAL LISTING - NCP PRODUCT SCHEDULE NOTEBOOK

PRODUCT	PRODUCT NUMBER
ACCELL CLEAN® DWD	D-16
ACCELL CLEAN® SWA	SW-60
ACT TERRA FIRMA	B-71
ACT-TF (see ACT TERRA FIRMA)	B-71
AGROREMED (see SPILLREMED (MARINE)®)	B-57
ALL PURPOSE CLEANER & REMEDIATOR (see GREEN BEAST™ OIL SPILL & ODOR REMEDIATOR)	SW-40
ALSOCUP	M-23
AQUACLEAN	SW-16
AQUA N-CAP™ POLYMER (see OIL SOLUTIONS POWDER)	M-25
AWAN PRA OIL FIELD SOLUTION™ (see EPA OIL FIELD SOLUTION™)	SW-61
B&S INDUSTRIAL (see STEP-ONE)	B-43
BET BIOPETRO (formerly BET BIOPETRO HEAVY)	B-48
BG-CLEAN™ 401	SW-32
BIODISPERS (formerly PETROBIODISPERS)	D-9
BIOGRASS EXTRA®	SW-46
BIO-REGEN HYDROCARBON (see SOIL RX)	B-61
BIOREM-2000 OIL DIGESTER™	B-63
BIOREM-2000 SC (see BIOREM-2000 OIL DIGESTER™)	B-63
BIOSOLVE® HYDROCARBON MITIGATION™ AGENT	SW-20
BIOWORLD BIOREMEDIATION HYDROCARBON TREATMENT PRODUCTS	B-59
CAS 100©	M-31
CAST OFF™ (see FORMULA 206-1x BIO-WASH™)	SW-66
CIAGENT (formerly CI AGENT, CHEAP INSURANCE, & PETRO-CAPTURE)	M-17
CLEAN GREEN	SW-44
CLEANGREEN® PLANET WASH (see CLEAN GREEN)	SW-44
CLEAN SPLIT (see SPLIT DECISION SC)	SW-22
CN-110	SW-9
COREXIT® EC9500A (formerly COREXIT 9500)	D-4
COREXIT® EC9500B	D-19
COREXIT® EC9527A (formerly COREXIT 9527)	D-1
COREXIT® EC9580A (formerly COREXIT 9580 SHORELINE CLEANER)	SW-10
CORIBA 700 ER (see CORIBA 700 SR)	SW-55
CORIBA 700 OS (see CORIBA 700 R)	SW-55
CORIBA 700 SR	SW-55
CORIBA 713 ER (see CORIBA 7013SR)	SW-56
CORIBA 713 OS (see CORIBA 713 SR)	SW-56
CORIBA 713 SR	SW-56
CYTOSOL	SW-19
DE-SOLV-IT CLEAN AWAY APC SUPER CONCENTRATE	SW-49
DE-SOLV-IT INDUSTRIAL FORMULA	SW-11

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DISPERSIT SPC 1000™ D-5
DO-ALL #18 SW-24
DRYLET™ MB BIOREMEDIATION B-64
DUALZORB® B-65
DUO-SPLIT (see SPLIT DECISION) SW-22
DYNAMIC GREEN™ SW-51
ECOVOOM-MARINE (see JEP-MARINE CLEAN) SW-57
ELASTOL M-26
ENVIROCLEAN (formerly ENVIRO CLEAN 165) SW-31
ENVIRONMENTAL 1 CRUDE OIL CLEANER SW-47
ENVIRONMENTAL 1 WASHING AGENT (see ENVIRONMENTAL 1 CRUDE OIL CLEANER) SW-47
EO ALL PURPOSE SOAP-LAVENDER SW-50
EPA OIL FIELD SOLUTION™ SW-61
ERGOFIT MICRO MIX AQUA B-67
E-SAFE© SW-33
ETHOS CLEAN SW-58
F-500 SW-30
FFT-SOLUTION® D-17
FINASOL® OSR 52 D-11
FIREMAN'S BRAND SPILLCLEAN (see SPILLCLEAN) SW-36
FORMULA 206-1x (see FORMULA 206-1x BIO-WASH™) SW-66
FORMULA 206-1x BIO-WASH™ SW-66
G-CLEAN OSC-1809 SW-39
GELCO 200 M-29
GLOBAL ENVIRONMENTAL CLEANER™ (see EPA OIL FIELD SOLUTION™) SW-61
GOLD CREW SW SW-26
GREEN BEAST OIL SPILL & ODOR REMEDIATOR SW-40
GREEN BEAST WASHING AGENT (see GREEN BEAST OIL SPILL & ODOR REMEDIATOR) SW-40
GREEN TECHNOLOGIES SOLUTIONS-OIL RECOVERY (GTS-OR) SW-63
HYDRO-CLEAN™ (see EPA OIL FIELD SOLUTION™) SW-61
HYDROREMED (see SPILLREMED (MARINE)®) B-57
INIPOL EAP 22 (No Longer Manufactured) B-10
JD-109 D-6
JD-2000™ D-7
JEP-MARINE CLEAN SW-57
JE1058BS B-58
LAND AND SEA RESTORATION PRODUCT 001 B-55
LIQUID ELASTOL (see ELASTOL) M-26
MARE CLEAN 200 (formerly MARE CLEAN 505) D-3
MARINE D-BLUE CLEAN™ D-18
MARINE GREEN CLEAN™ SW-42
MARINE GREEN CLEAN PLUS™ SW-43
MARI-ZYME (see ZYME-FLOW) M-18

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MICRO-BLAZE® B-41
MICRO CLEAN (see NATURE'S WAY HS) SW-18
MICROSORB SC (see OPPENHEIMER FORMULA) B-36
MUNOX SR® B-60
NALE-IT SW-28
NATURAMA G3 A-5 SW-53
NATURE'S WAY HS SW-18
NATURE'S WAY PC (see NATURE'S WAY HS) SW-18
NEOS AB3000 D-2
NOKOMIS 3-AA D-14
NOKOMIS 3-F4 D-8
NOKOMIS 5-W SW-38
NONTOX™ SURFACE WASHING AGENT SW-64
NORSOREX® APX M-30
OIL BOND® M-27
OILCLEAN w/ACTIVATOR (see PRO-ACT) B-62
OIL SOLUTIONS POWDER M-25
OIL SPILL CLEANUP (see G-CLEAN OSC-1809) SW-39
OIL SPILL EATER II (OSE II) B-53
OPFLEX® M-28
OPPENHEIMER FORMULA B-36
OSR-10 SW-59
PES-51 M-12
PETRO-CLEAN

SW-23
PETROMAX PSC 3

SW-62
PETROMAX SOIL CLEANING AND WASHING AGENT (see PETROMAX PSC 3)

SW-62
PETROTECH 25

SW-21
POWERCLEAN (see NATURE'S WAY HS)

SW-18
PREMIER 99

SW-12
PRISTINE SEA II (formerly MICROPRO D; No Longer Manufactured) B-54
PRO-ACT B-62
PROCLEANS SW-35

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PX-700™	M-22
RAPIDGRAB 2000™	M-24
REMEDIADE™	B-66
RHAMNOWASH 10	SW-67
S-200C (formerly S-200)	B-56
SAFE KLEEN	SW-54
SAF-RON GOLD	D-12
SANDKLENE 950	SW-48
SC-1000™	SW-25
SEA BRAT #4	D-10
SEACARE ECOSPERSE 52 (see FINASOL® OSR 52)	D-11
SEACARE E.P.A. (see DISPERSIT SPC 1000™)	D-5
SEPARATE (see ELASTOL)	M-26
SF-GOLD DISPERSANT (see SAF-RON GOLD)	D-12
SHAMANTRA BIO (see SHAMANTRA GREEN)	B-68
SHAMANTRA GREEN	B-68
SHEEN-MAGIC©	SW-34
SILTECH OP-40	S-6
SIMPLE GREEN®	SW-15
SIMPLE GREEN® 2013 Reformulation	SW-65
SOC-10	SW-45
SOIL RX	B-61
SP 7010 (see REMEDIADE™)	B-66
SPILLCLEAN	SW-36
SPILLCLEAN ["CONCENTRATE"] (see SPILLCLEAN)	SW-36
SPILLREMED (INDUSTRIAL; see SPILLREMED (MARINE)®)	B-57
SPILLREMED (MARINE)®	B-57
SPLIT DECISION SC (formerly SPLIT DECISION)	SW-22
STEP ONE	B-43
SUMP SAFE BIO-RECLAIM	B-69
SUPERALL #38 (see TOPSALL #30)	SW-2
SYSTEM E.T. 20 (formerly MCW.B 20)	B-45
THE OPPENHEIMER FORMULA 1 (see OPPENHEIMER FORMULA)	B-36
THICKSLICK 6535	S-5
TOPSALL #30	SW-2
TRAILZORB (see DUALZORB®)	B-65
TULXA	SW-41
TXCHEM HE-1000™	SW-37
UNITED 658 PETRO-ZYME (see ZYME-FLOW)	M-18
VAPORREMED (see SPILLREMED (MARINE)®)	B-57
VB591™, VB997™, BINUTRIX®	B-42
VERU-SOLVE™ MARINE 200 HP	SW-52
WASTE AWAY®	B-70
WASTE-SET #3200®	M-19
WASTE-SET #3400®	M-20

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WHITZORB (see DUALZORB®) B-65
WMI-2000 B-19
ZI-400 D-13
ZI-400 OIL SPILL DISPERSANT (see ZI-400) D-13
ZYME-FLOW M-18
ZYME-TREAT (see ZYME-FLOW) M-18

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NCP PRODUCT SCHEDULE NOTEBOOK LISTING BY PRODUCT TYPE

DISPERSANTS	PRODUCT NUMBER
ACCELL CLEAN® DWD	D-16
BIODISPERS (formerly PETROBIODISPERS)	D-9
COREXIT® EC9500A (formerly COREXIT 9500)	D-4
COREXIT® EC9500B	D-19
COREXIT® EC9527A (formerly COREXIT 9527)	D-1
DISPERSIT SPC 1000™	D-5
FFT-SOLUTION®	D-17
FINASOL® OSR 52	D-11
JD-109	D-6
JD-2000™	D-7
MARE CLEAN 200 (formerly MARE CLEAN 505)	D-3
MARINE D-BLUE CLEAN™	D-18
NEOS AB3000	D-2
NOKOMIS 3-AA	D-14
NOKOMIS 3-F4	D-8
SAF-RON GOLD	D-12
SEA BRAT #4	D-10
SEACARE ECOSPERSE 52 (see FINASOL® OSR 52)	D-11
SEACARE E.P.A. (see DISPERSIT SPC 1000™)	D-5
SF-GOLD DISPERSANT (see SAF-RON GOLD)	D-12
ZI-400	D-13
ZI-400 OIL SPILL DISPERSANT (see ZI-400)	D-13

SURFACE WASHING AGENTS	PRODUCT NUMBER
ACCELL CLEAN® SWA	SW-60
ALL PURPOSE CLEANER & REMEDIATOR (see GREEN BEAST™ OIL SPILL & ODOR REMEDIATOR)	SW-40
AQUACLEAN	SW-16
AWAN PRA OIL FIELD CLEANER™ (see EPA OIL FIELD SOLUTION™)	SW-61
BG-CLEAN™ 401	SW-32
BIOGRASS EXTRA®	SW-46
BIOSOLVE® HYDROCARBON MITIGATION™ AGENT	SW-20
CAST OFF™ (see FORMULA 206-1x BIO-WASH™)	SW-66
CLEAN GREEN	SW-44
CLEANGREEN® PLANET WASH (see CLEAN GREEN)	SW-44
CLEAN SPLIT (see SPLIT DECISON SC)	SW-22
CN-110	SW-9
COREXIT® EC9580A (formerly COREXIT 9580 SHORELINE CLEANER)	SW-10
CORIBA 700 ER (see CORIBA 700 SR)	SW-55
CORIBA 700 OS (see CORIBA 700 SR)	SW-55
CORIBA 700 SR	SW-55
CORIBA 713 ER (see CORIBA 7013SR)	SW-56

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CORIBA 713 OS (see CORIBA 713 SR) SW-56
CORIBA 713 SR SW-56
CYTOSOL SW-19
DE-SOLV-IT CLEAN AWAY APC SUPER CONCENTRATE SW-49
DE-SOLV-IT INDUSTRIAL FORMULA SW-11
DO-ALL #18 SW-24
DUO-SPLIT (see SPLIT DECISION) SW-22
DYNAMIC GREEN™ SW-51
ECOVOOM-MARINE (see JEP-MARINE CLEAN)

SW-57
ENVIROCLEAN (formerly ENVIRO CLEAN 165)

SW-31
ENVIRONMENTAL 1 CRUDE OIL CLEANER SW-47
ENVIRONMENTAL 1 WASHING AGENT (see ENVIRONMENTAL 1 CRUDE OIL CLEANER) SW-47
EO ALL PURPOSE SOAP-LAVENDER SW-50
EPA OIL FIELD SOLUTION™ SW-61

E-SAFE© SW-33
ETHOS CLEAN SW-58
F-500 SW-30
FIREMAN'S BRAND SPILLCLEAN (see SPILLCLEAN) SW-36
FORMULA 206-1x (see FORMULA 206-1x BIO-WASH™) SW-66
FORMULA 206-1x BIO-WASH™ SW-66
G-CLEAN OSC-1809 SW-39
GLOBAL ENVIRONMENTAL CLEANER™ (see EPA OIL FIELD SOLUTION™) SW-61
GOLD CREW SW SW-26
GREEN BEAST OIL SPILL & ODOR REMEDIATOR SW-40
GREEN BEAST WASHING AGENT (see GREEN BEAST OIL SPILL & ODOR REMEDIATOR) SW-40
GREEN TECHNOLOGIES SOLUTIONS-OIL RECOVERY (GTS-OR) SW-63
HYDRO-CLEAN™ (see EPA OIL FIELD SOLUTION™) SW-61
JEP-MARINE CLEAN SW-57
MARINE GREEN CLEAN™ SW-42
MARINE GREEN CLEAN PLUS™ SW-43
MICRO CLEAN (see NATURE'S WAY HS) SW-18
NALE-IT SW-28
NATURAMA G3 A-5 SW-53
NATURE'S WAY HS SW-18
NATURE'S WAY PC (see NATURE'S WAY HS) SW-18
NONTOX™ SURFACE WASHING AGENT SW-64
NOKOMIS 5-W SW-38

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OIL SPILL CLEANUP (see G-CLEAN OSC-1809) SW-39
OSR-10 SW-59
PETRO-CLEAN SW-23
PETROTECH 25 SW-21
POWERCLEAN (see NATURE'S WAY HS) SW-18
PREMIER 99 SW-12
PETROMAX PSC 3

SW-62
PETROMAX SOIL CLEANING AND WASHING AGENT (see PETROMAX PSC 3)

SW-62
PROCLEANS SW-35
RHAMNOWASH 10 SW-67
SAFE KLEEN SW-54
SANDKLENE 950 SW-48
SC-1000™ SW-25
SHEEN-MAGIC© SW-34
SIMPLE GREEN® SW-15
SIMPLE GREEN® 2013 Reformulation SW-65
SOC-10 SW-45
SPILLCLEAN SW-36
SPILLCLEAN ["CONCENTRATE"] (see SPILLCLEAN) SW-36
SPLIT DECISION SC (formerly SPLIT DECISION) SW-22
SUPERALL #38 (see TOPSALL #30) SW-2
TOPSALL #30 SW-2
TULXA SW-41
TXCHEM HE-1000™ SW-37
VERU-SOLVE™ MARINE 200 HP SW-52

SURFACE COLLECTING AGENTS **PRODUCT NUMBER**
SILTECH OP-40 S-6
THICKSLICK 6535 S-5

BIOREMEDIATION AGENTS **PRODUCT NUMBER**
ACT TERRA FIRMA B-71
ACT-TF (see ACT TERRA FIRMA) B-71
AGROREMED (see SPILLREMED (MARINE)®) B-57
B&S INDUSTRIAL (see STEP ONE) B-43
BET BIOPETRO (BET BIOPETRO HEAVY) B-48
BIOREM-2000 OIL DIGESTER™ B-63
BIOREM-2000 SC (see BIOREM-2000 OIL DIGESTER™) B-63
BIO-REGEN HYDROCARBON (see SOIL RX) B-61
BIOWORLD BIOREMEDIATION HYDROCARBON TREATMENT PRODUCTS B-59
DRYLET™ MB BIOREMEDIATION B-64

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DUALZORB® B-65
ERGOFIT MICRO MIX AQUA B-67
HYDROREMED (see SPILLREMED (MARINE)®) B-57
INIPOL EAP 22 (No Longer Manufactured) B-10
JE1058BS B-58
LAND AND SEA RESTORATION PRODUCT 001 B-55
MICRO-BLAZE® B-41
MICROSORB SC (see OPPENHEIMER FORMULA) B-36
MUNOX SR® B-60
OILCLEAN w/ACTIVATOR (see PRO-ACT) B-62
OIL SPILL EATER II (OSE II) B-53
OPPENHEIMER FORMULA B-36
PRISTINE SEA II (formerly MICROPRO D; No Longer Manufactured) B-54
PRO-ACT B-62
REMEDIADE™ B-66
S-200C (formerly S-200) B-56
SHAMANTRA BIO (see SHAMANTRA GREEN) B-68
SHAMANTRA GREEN B-68
SP 7010 (see REMEDIADE™) B-66
SPILLREMED (INDUSTRIAL; see SPILLREMED (MARINE)®) B-57
SPILLREMED (MARINE)® B-57
SOIL RX B-61
STEP ONE B-43
SUMP SAFE BIO-RECLAIM B-69
SYSTEM E.T. 20 (formerly MCW.B.20) B-45
THE OPPENHEIMER FORMULA 1 (see OPPENHEIMER FORMULA) B-36
TRAILZORB (see DUALZORB®) B-65
VAPORREMED (see SPILLREMED (MARINE)®) B-57
VB591™, VB997™, BINUTRIX® B-42
WASTE AWAY® B-70
WHITZORB (see DUALZORB®) B-65
WMI-2000 B-19

MISCELLANEOUS OIL SPILL CONTROL AGENTS **PRODUCT NUMBER**
ALSOCUP M-23
AQUA N-CAP™ POLYMER (see OIL SOLUTIONS POWDER) M-25
CAS 100© M-31
CIAGENT (formerly CI AGENT, CHEAP INSURANCE, & PETRO-CAPTURE) M-17
ELASTOL M-26
GELCO 200 M-29
LIQUID ELASTOL (see ELASTOL) M-26
MARI-ZYME (see ZYME-FLOW) M-18
NORSOREX® APX M-30
OIL BOND® M-27

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OIL SOLUTIONS POWDER M-25
OPFLEX® M-28
PES-51 M-12
PX-700™ M-22
RAPIDGRAB 2000™ M-24
SEPARATE (see ELASTOL) M-26
UNITED 658 PETRO-ZYME (see ZYME-FLOW) M-18
WASTE-SET 3200® M-19
WASTE-SET 3400® M-20
ZYME-FLOW M-18
ZYME-TREAT (see ZYME-FLOW) M-18

TECHNICAL PRODUCT BULLETIN #D-1
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: MARCH 10, 1978
REVISED LISTING DATE: DECEMBER 18, 1995
"COREXIT® EC9527A"
(formerly COREXIT 9527)

I. NAME, BRAND, OR TRADEMARK
COREXIT® EC9527A
Type of Product: Dispersant

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Nalco Environmental Solutions LLC
7705 Highway 90-A
Sugar Land, TX 77478
Product Management:
Office: (281) 263-7709
Mobile: (832) 851-5164
E-mail: debby.theriot@nalco.com
(Ms. Debby Theriot)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Nalco Environmental Solutions LLC
7705 Highway 90-A
Sugar Land, TX 77478
Product Management:
Office: (281) 263-7709
Mobile: (832) 851-5164
E-mail: debby.theriot@nalco.com
(Ms. Debby Theriot)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: COREXIT® EC9527A is not classified as flammable by either DOT or IMO

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regulations.
2. Ventilation: Avoid prolonged breathing of vapors. Use with ventilation equal to unobstructed outdoors in moderate breeze.
3. Skin and eye contact; protective clothing; treatment in case of contact: Avoid eye contact. In case of eye contact, immediately flush eyes with large amounts of water for at least 15 minutes. Get prompt medical attention. Avoid contact with skin and clothing. In case of skin contact, immediately flush with large amounts of water, and soap if available. Remove contaminated clothing, including shoes, after flushing has begun. If irritation persists, seek medical attention. For open systems where contact is likely, wear long sleeve shirt, chemical resistant gloves, and chemical protective goggles.
4.a. Maximum storage temperature: 170°F
4.b. Minimum storage temperature: -30°F
4.c. Optimum storage temperature range: 40°F to 100°F
4.d. Temperatures of phase separations and chemical changes: COREXIT® EC9527A is not adversely affected by changes in storage temperature unless evaporation is allowed to occur.

V. SHELF LIFE
The shelf life of unopened drums of COREXIT® EC9527A is unlimited. Containers should always be capped when not in use to prevent contamination and evaporation of solvents.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method: COREXIT® EC9527A is most effectively applied by aircraft, however, application with boat spray booms, boat fire monitors, and by hand held sprayers and back packs has been successfully done on a number of spills and trials.

Aerial Spraying - Aircraft provide the most rapid method of applying dispersants to an oil spill and a variety of aircraft can be used for spraying. For aerial spraying, COREXIT® EC9527A is applied undiluted. Typical application altitudes of 30 to 50 feet have been used, although higher altitudes may be effective under certain conditions. Actual effective altitudes will depend on the application equipment, weather and aircraft. Careful selection of spray nozzles is critical to achieve desired dose levels, since droplet size must be controlled. Many nozzles used for agricultural spraying are of low capacity and produce too fine a spray. A quarter-inch open pipe may be all that is necessary if the aircraft travels at 120 mph (104 knots) or more, since the air shear at these speeds will be sufficient to break the dispersant into the proper sized droplets.

Boat Spraying - COREXIT® EC9527A may be applied by workboats equipped with spray booms mounted ahead of the bow wake or as far forward as possible. The preferred and most effective method of application from a workboat is to use a low-volume, low-pressure pump so the chemical can be applied undiluted. Spray equipment designed to provide a five to ten percent diluted dispersant solution to the spray booms can also be used. COREXIT® EC9527A should be applied as droplets, not fogged or atomized. Natural wave or boat wake action usually provides adequate mixing energy to disperse the oil.

Recent tests have indicated that a fire monitor modified with a screen cap for droplet size may

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also be useful for applying COREXIT® EC9527A. Due to the increased volume output and the greater reach of the fire monitor, significantly more area can be covered in a shorter period of time.

System Calibration - Spray systems should be calibrated at temperatures anticipated to insure successful application and dosage control.
2. Concentration/Application Rate: A treatment rate of about 2 to 10 U.S. gallons per acre, or a dispersant to oil ratio of 1:50 to 1: 10 is recommended. This rate varies depending on the type of oil, degree of weathering, temperature, and thickness of the slick.
3. Conditions for Use: As with all dispersants, timely application ensures the highest degree of success. Early treatment with COREXIT® EC9527A, even at reduced treat rates, can reduce the "mousse" forming tendencies of the spilled oil. COREXIT® EC9527A is useful on oil spills in salt water.

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity:

Material Tested	Species	LC50 (ppm)
COREXIT® EC9527A	Menidia beryllina	14.57 96-hr
	Mysidopsis bahia	24.14 48-hr
No. 2 Fuel Oil	Menidia beryllina	10.72 96-hr
	Mysidopsis bahia	16.12 48-hr
COREXIT® EC9527A &	Menidia beryllina	4.49 96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	6.60 48-hr
Reference Toxicant (DSS)	Menidia beryllina	7.07 96-hr
	Mysidopsis bahia	9.82 48-hr

NOTE: This toxicity data was derived using the concentrated product. See Section VI of this bulletin for information regarding the manufacturer's recommendations for concentrations and application rates for field use.
b. Effectiveness:
SWIRLING FLASK DISPERSANT EFFECTIVENESS TEST WITH SOUTH LOUISIANA (S/L) AND PRUDHOE BAY (P/B) CRUDE OIL

Oil	Effectiveness (%)
Prudhoe Bay Crude	37.4
South Louisiana Crude	63.4
Average of Prudhoe Bay and South Louisiana Crudes	50.4

VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point: 163°F
2. Pour Point: < - 40°F
3. Viscosity: 160 cSt at 32°F
4. Specific Gravity: 0.98 - 1.02
5. pH: 6.1

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6. Surface Active Agents: CONFIDENTIAL
7. Solvents: Water, Propylene Glycol, 2-Butoxyethanol
8. Additives: CONFIDENTIAL
9. Solubility: Complete

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X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

	Compound Concentration (ppm)
Arsenic	<0.005
Cadmium	<0.01
Chromium	1.0
Copper	<0.2
Lead	<0.1
Mercury	<0.003
Nickel	<0.1
Zinc	0.1
Cyanide	<0.01
Chlorinated Hydrocarbons	<0.01

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LISTING CHANGES PENDING, FOLLOWING VERIFICATION BY MANUFACTURER AND EPA

TECHNICAL PRODUCT BULLETIN #D-2
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: APRIL 22, 1985
REVISED LISTING DATE: JANUARY 26, 1996
"NEOS AB3000"

I. NAME, BRAND, OR TRADEMARK
NEOS AB3000
Type of Product: Dispersant (Hydrocarbon Solvent Based)

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
NEOS Company Limited
Daisan Kendai Building
1-2, 3-chome Isobedori
Chuo-ku, Kobe, 651-0084 Japan
Phone: (81) 78-331-9384
(Mr. T. Ishii, Manager)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
NEOS Company Limited
Daisan Kendai Building
1-2, 3-chome Isobedori
Chuo-ku, Kobe, Japan
Phone: (81) 78-331-9384
(Mr. T. Ishii, Manager)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: NEOS AB3000 is flammable; keep away from open flame.
2. Ventilation: Special ventilation is not required; however, natural ventilation is recommended.
3. Skin and eye contact; protective clothing; treatment in case of contact: Contact may cause skin and eye irritation. Goggles and rubber clothing are recommended during application.
In case of contact with skin or eye, flush with copious amounts of fresh water. If severe, consult a doctor.
4.a. Maximum storage temperature: 158°F
4.b. Minimum storage temperature: 32°F
4.c. Optimum storage temperature range: 50°F to 140°F
4.d. Temperatures of phase separations and chemical changes: Phase separation and chemical changes do not appear between the temperature range of 32°F to 158°F.

V. SHELF LIFE

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The shelf life is five (5) years.

VI. RECOMMENDED APPLICATION PROCEDURE

1. Application Method: Spray neat concentrate on the oil slick in atomized form by means of a manual pump, or spray with a pump system incorporating an ejector system for drawing concentrate from the drum or stock tank.

For aerial application, use a spray boom with pressure nozzles or rotating atomizers mounted on helicopters or airplanes.

2. Concentration/Application Rate: The application rate is 65 gallons of dispersant per ton of oil. Five (5) to fifteen (15) parts of dispersant to suctioned water is recommended for ejector systems.

For aerial application, 75 to 125 gallons per ton of oil is recommended.

3. Conditions for Use: NEOS AB3000 can be used in salt water. It is effective with crude and residual heavy oil. The dispersant is also effective at controlling volatile emissions from the oil.

VII. TOXICITY AND EFFECTIVENESS

a. Toxicity:

Material Tested	Species	LC50 (ppm)
NEOS AB3000	Menidia beryllina	91.1 96-hr
	Mysidopsis bahia	33.0 48-hr
No. 2 Fuel Oil	Menidia beryllina	201.8 96-hr
	Mysidopsis bahia	11.5 48-hr
NEOS AB3000 &	Menidia beryllina	57.0 96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	25.0 48-hr
Reference Toxicant (DSS)	Menidia beryllina	1.5 96-hr
	Mysidopsis bahia	9.3 48-hr

NOTE: This toxicity data was derived using the concentrated product. See Section VI of this bulletin for information regarding the manufacturer's recommendations for concentrations and application rates for field use.

b. Effectiveness:

SWIRLING FLASK DISPERSANT EFFECTIVENESS TEST WITH SOUTH LOUISIANA (S/L) AND PRUDHOE BAY (P/B) CRUDE OIL

Oil	Effectiveness (%)
Prudhoe Bay Crude	19.7
South Louisiana Crude	89.8
Average of Prudhoe Bay and South Louisiana Crudes	54.8

VIII. MICROBIOLOGICAL ANALYSIS

NA

IX. PHYSICAL PROPERTIES

1. Flash Point: No flash point to 212°F

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2. Pour Point: Less than 32°F
3. Viscosity: 30.7 cSt at 104°F
4. Specific Gravity: 0.924 at 59°F
5. pH: 8.0 (5wt % aq., at 77°F)
6. Surface Active Agents: Nonionic and Cationic surfactants
7. Solvents: Paraffin
8. Additives: None
9. Solubility: NA

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<0.1
Cadmium	<0.1
Chromium	0.26
Copper	<0.05
Lead	0.21
Mercury	<0.001
Nickel	0.076
Zinc	1.1
Cyanide	<0.05
Chlorinated Hydrocarbons	<0.10

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LISTING CHANGES PENDING, FOLLOWING VERIFICATION BY MANUFACTURER AND EPA

TECHNICAL PRODUCT BULLETIN #D-3
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: FEBRUARY 23, 1988
REVISED LISTING DATE: JANUARY 26, 1996
"MARE CLEAN 200"
(formerly MARE CLEAN 505)

I. NAME, BRAND, OR TRADEMARK
MARE CLEAN 200
Type of Product: Dispersant (Solvent-Based)

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Taihokohzai Company, Ltd.
Mita Twin Building
East Wing 8F, 4-2-8 Shibaura
Minatoku, Tokyo, Japan
Phone: (81) 3-6414-5601
Fax: (81) 3-6414-5621
(Mr. Y. Imai)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Klinview Corporation
8001 Irvine Center Drive, Suite 450
Irvine, CA 92618
Phone: (949) 753-0821
Fax: (949) 753-0812
(Mr. T. Tanaka)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: The flash point is 212°F @ 20°F
2. Ventilation: Is required. Use in closed room is not recommended.
3. Skin and eye contact; protective clothing; treatment in case of contact: Use protective goggles to avoid eye contact. In case of eye contact, wash immediately with plenty of water and consult with physician.
4.a. Maximum storage temperature: 122°F
4.b. Minimum storage temperature: 21°F
4.c. Optimum storage temperature range: 32°F to 86°F
4.d. Temperatures of phase separations and chemical changes: Phase separation does not relate to temperatures. Chemical changes may occur at temperatures above 194°F.

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V. SHELF LIFE
The shelf life of MARE CLEAN 200 is 10 years when stored indoors. (Container will deteriorate before contents.)

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method: Sprinkle the dispersant on the oil spill, then 5-10 minutes later stir the surface intensively. For convenience, MARE CLEAN 200 may be diluted with water if desired.
2. Concentration/Application Rate: Use 53-66 gallons of MARE CLEAN 200 per ton of oil
3. Conditions for Use: The performance of MARE CLEAN 200 is not affected by water salinity. At temperatures below 40°F or in case of heavy crude oil spill, MARE CLEAN 200 should be used without dilution. MARE CLEAN 200 is an effective dispersant for any liquid hydrocarbon.

VII. TOXICITY AND EFFECTIVENESS
1. Toxicity:

Material Tested	Species	LC50 (ppm)	
MARE CLEAN 200	Menidia beryllina	1996.00	96-hr
	Mysidopsis bahia	938.00	48-hr
No. 2 Fuel Oil	Menidia beryllina	10.72	96-hr
	Mysidopsis bahia	16.12	48-hr
MARE CLEAN 200 and	Menidia beryllina	42.00	96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	9.84	48-hr
Reference Toxicant (SDS)	Menidia beryllina	7.07	96-hr
	Mysidopsis bahia	9.82	48-hr

NOTE: This toxicity data was derived using the concentrated product. See Section VI of this bulletin for information regarding the manufacturer's recommendations for concentrations and application rates for field use.

b. Effectiveness:
SWIRLING FLASK DISPERSANT EFFECTIVENESS TEST WITH SOUTH LOUISIANA (S/L) AND PRUDHOE BAY (P/B) CRUDE OILS

Oil	Effectiveness (%)
Prudhoe Bay Crude	63.97
South Louisiana Crude	84.14
Average of Prudhoe Bay and South Louisiana Crudes	74.06

VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point: 212°F@ 20°F
2. Pour Point: 14 @ 10°F
3. Viscosity: 2.4 @ 5 cSt at 104°F
4. Specific Gravity: 0.95 @ 0.03 at 77°F

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5. pH: 7.7 @ 1.0 (10% solution)
6. Surface Active Agents: A mixture of sorbitan fatty acid esters, polysorbates, and polyoxyethylene fatty acid esters.
7. Solvents: Paraffinic hydrocarbons (CAS 74664-93-0)
8. Additives: None
9. Solubility: NA

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<0.50
Cadmium	<0.100
Chromium	<0.500
Copper	<0.250
Lead	<2.50
Mercury	<0.0200
Nickel	<0.250
Zinc	0.611
Cyanide	<0.01
Chlorinated Hydrocarbons	<0.10

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TECHNICAL PRODUCT BULLETIN #D-4
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: APRIL 13, 1994
REVISED LISTING DATE: DECEMBER 18, 1995
"COREXIT® EC9500A"
(formerly COREXIT 9500)

I. NAME, BRAND, OR TRADEMARK
COREXIT® EC9500A
Type of Product: Dispersant

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Nalco Environmental Solutions LLC
7705 Highway 90-A
Sugar Land, TX 77478
Product Management:
Office: (281) 263-7709
Mobile: (832) 851-5164
E-mail: debby.theriot@nalco.com
(Ms. Debby Theriot)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Nalco Environmental Solutions LLC
7705 Highway 90-A
Sugar Land, TX 77478
Product Management:
Office: (281) 263-7709
Mobile: (832) 851-5164
E-mail: debby.theriot@nalco.com
(Ms. Debby Theriot)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: IMO - Non-flammable; DOT - Non-hazardous.
2. Ventilation: Use with ventilation equal to unobstructed outdoors in moderate breeze.
3. Skin and eye contact; protective clothing; treatment in case of contact: Avoid eye contact. In case of eye contact, immediately flush eyes with large amounts of water for at least 15 minutes. Get prompt medical attention. Avoid contact with skin and clothing. In case of skin contact, immediately flush with large amounts of water, and soap if available. Remove contaminated clothing, including shoes, after flushing has begun. If irritation persists, seek medical attention. For open systems where contact is likely, wear long sleeve shirt, chemical resistant gloves, and chemical protective goggles.
4.a. Maximum storage temperature: 170°F
4.b. Minimum storage temperature: -30°F

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4.c. Optimum storage temperature range: 40°F to 100°F
4.d. Temperatures of phase separations and chemical changes: None

V. SHELF LIFE
The shelf life of unopened drums of COREXIT® EC9500A is unlimited. Containers should always be capped when not in use to prevent contamination and evaporation of solvents.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method: COREXIT® EC9500A contains the same surfactants present in COREXIT® EC9527A and a new improved oleophilic solvent delivery system.

Aerial Spraying - Aircraft provide the most rapid method of applying dispersants to an oil spill and a variety of aircraft can be used for spraying. For aerial spraying, COREXIT® EC9500A is applied undiluted. Typical application altitudes of 30 to 50 feet have been used, although higher altitudes may be effective under certain conditions. Actual effective altitudes will depend on the application equipment, weather and aircraft. Careful selection of spray nozzles is critical to achieve desired dose levels, since droplet size must be controlled. Many nozzles used for agricultural spraying are of low capacity and produce too fine a spray. A quarter-inch open pipe may be all that is necessary if the aircraft travels at 120 mph (104 knots) or more, since the air shear at these speeds will be sufficient to break the dispersant into the proper sized droplets.

Boat Spraying - COREXIT® EC9500A may also be applied by workboats equipped with spray booms mounted ahead of the bow wake or as far forward as possible. The preferred and most effective method of application from a workboat is to use a low-volume, low-pressure pump so the chemical can be applied undiluted. Spray equipment designed to provide a five to ten percent diluted dispersant solution to the spray booms can also be used. COREXIT® EC9500A should be applied as droplets, not fogged or atomized. Natural wave or boat wake action usually provides adequate mixing energy to disperse the oil.

Recent tests have indicated that a fire monitor modified with a screen cap for droplet size control may also be useful for applying COREXIT® EC9500A. Due to the increased volume output and the greater reach of the fire monitor, significantly more area can be covered in a shorter period of time.

System Calibration - Spray systems should be calibrated at temperatures anticipated to insure successful application and dosage control. Application at sub-freezing temperatures may require larger nozzle, supply lines and orifices due to higher product viscosity.
2. Concentration/Application Rate: A treatment rate of about 2 to 10 U.S. gallons per acre, or a dispersant to oil ratio of 1:50 to 1:10 is recommended. This rate varies depending on the type of oil, degree of weathering, temperature, and thickness of the slick.

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3. Conditions for Use: As with all dispersants, timely application ensures the highest degree of success. Early treatment with COREXIT® EC9500A, even at reduced treat rates, can also counter the "mousse" forming tendencies of the spilled oil. COREXIT® EC9500A is useful on oil spills in salt water.

VII. TOXICITY AND EFFECTIVENESS

a. Toxicity

Material Tested	Species	LC50 (ppm)
COREXIT® EC9500A	Menidia beryllina	25.20 96-hr
	Mysidopsis bahia	32.23 48-hr
No. 2 Fuel Oil	Menidia beryllina	10.72 96-hr
	Mysidopsis bahia	16.12 48-hr
COREXIT® EC9500A &	Menidia beryllina	2.61 96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	3.40 48-hr
Reference Toxicant (SDS)	Menidia beryllina	7.07 96-hr
	Mysidopsis bahia	9.82 48-hr

NOTE: This toxicity data was derived using the concentrated product. See Section VI of this bulletin for information regarding the manufacturer's recommendations for concentrations and application rates for field use.

b. Effectiveness:

SWIRLING FLASK DISPERSANT EFFECTIVENESS TEST WITH SOUTH LOUISIANA (S/L) AND PRUDHOE BAY (P/B) CRUDE OILS

Oil	Effectiveness (%)
Prudhoe Bay Crude	45.3
South Louisiana Crude	54.7
Average of Prudhoe Bay and South Louisiana Crudes	50.0

VIII. MICROBIOLOGICAL PROPERTIES

NA

IX. PHYSICAL PROPERTIES

1. Flash Point: 181.4°F
2. Pour Point: <-71°F
3. Viscosity: 22.5 cSt at 104°F
4. Specific Gravity: 0.95 at 60°F
5. pH: 6.2
6. Chemical Name and Percentage by Weight of the Total Formulation: CONFIDENTIAL
7. Surface Active Agents: CONFIDENTIAL
8. Solvents: CONFIDENTIAL
9. Additives: None
10. Solubility: Miscible

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X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	0.16
Cadmium	ND
Chromium	0.03
Copper	0.10
Lead	ND
Mercury	ND
Nickel	ND
Zinc	ND
Cyanide	ND
Chlorinated hydrocarbons	ND

ED_001324_00006005-00026

TECHNICAL PRODUCT BULLETIN #D-5USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: APRIL 22, 1999
"DISPERSIT SPC 1000™"
(aka, SEACARE E.P.A. (ECOSPERSE™ POLLUTION ABATEMENT))

I. NAME, BRAND, OR TRADEMARK
DISPERSIT SPC 1000™
(aka, SEACARE E.P.A. (ECOSPERSE™ POLLUTION ABATEMENT))
Type of Product: Dispersant (Water Based)

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
U.S. Polychemical Corp.
584 Chestnut Ridge Road
Chestnut Ridge, NY 10977
Phone: (845) 356-5530
Fax: (845) 356-6656
E-mail: bruceg@uspoly.com
(Mr. Bruce Gebhardt)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Maritime Solutions, Inc.
17 Battery Place, Suite 913
New York, NY 10004
Phone: (201) 541-0939
(212) 747-9044
Fax: (212) 747-9240
(Mr. Chris Constantine or Mr. Richard Fredricks)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: IMO: Non-flammable; DOT: Non-hazardous
2. Ventilation: None normally required. Adequate to maintain fume levels below the TLV.
3. Skin and eye contact; protective clothing; treatment in case of contact: Avoid prolonged contact with skin and eyes. Flush eyes with plenty of water for at least 15 minutes. Get medical attention. Wear long sleeve shirt, chemical resistant gloves, and chemical protective goggles in case of exposure to mist.
4.a. Maximum storage temperature: 180°F
4.b. Minimum storage temperature: -25°F
4.c. Optimum storage temperature range: 40°F to 140°F
4.d. Temperatures of phase separations and chemical changes: None

ED_001324_00006005-00027

V. SHELF LIFE

The shelf life of DISPERSIT SPC 1000™ is unlimited in unopened containers. Containers must be kept closed when not in use to prevent contamination.

VI. RECOMMENDED APPLICATION PROCEDURE

1. Application Method: The dispersant may be applied by any conventional methods such as 1) aerial spraying and 2) boat spraying to accommodate weather conditions.
2. Concentration/Application Rate: A dispersant to oil ratio ranging from 1 part dispersant to 50 parts oil to 1 part dispersant to 10 parts oil; or an application rate of about 2-10 gallons (7.6 liters-37.9 liters) per acre (4840 square meters) is suggested. These rates will be dependent on the type of oil, degree of weathering, temperature and extent of oil slick.
3. Conditions for Use: Timely application ensures the highest degree of successful dispersion of the oil spill.

VII. TOXICITY AND EFFECTIVENESS

a. Toxicity:

Material Tested	Species	LC50 (ppm)
DISPERSIT SPC 1000™	Menidia beryllina	3.5 96-hr
	Mysidopsis bahia	16.6 48-hr
No. 2 Fuel Oil	Menidia beryllina	11.6 96-hr
	Mysidopsis bahia	11.7 48-hr
DISPERSIT SPC 1000™	Menidia beryllina	7.9 96-hr
& No. 2 Fuel Oil (1:10)	Mysidopsis bahia	8.2 48-hr
Reference Toxicant (SDS)	Menidia beryllina	6.3 96-hr
	Mysidopsis bahia	11.7 48-hr

b. Effectiveness:

SWIRLING FLASK DISPERSANT EFFECTIVENESS TEST WITH SOUTH LOUISIANA (S/L) AND PRUDHOE BAY (P/B) CRUDE OIL

Oil	Effectiveness (%)
Prudhoe Bay Crude	40
South Louisiana Crude	105
Average of Prudhoe Bay and South Louisiana Crudes	73

VIII. MICROBIOLOGICAL ANALYSIS

NA

IX. PHYSICAL PROPERTIES

1. Flash Point, ASTM D-56-87: 208°F
2. Pour Point, ASTM D-97-87: <-20°C
3. Viscosity, ASTM D-445-88: 144CPS, @ 68°F
4. Specific Gravity, ASTM D-1298-85(90): 0.995, @ 68°F
5. pH, ASTM D-1293-84(90): 10.0
6. Surface Active Agents: Anionic and non-ionic, proprietary, surfactants
7. Solvents: Proprietary, non-petroleum based
8. Additives: None

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9. Solubility in Water: Complete

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<1.00
Cadmium	<2.00
Chromium	<2.00
Copper	<2.00
Lead	<1.00
Mercury	<0.04
Nickel	<10.00
Zinc	<2.00
Cyanide	<2.00
Chlorinated Hydrocarbons	<5.00

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TECHNICAL PRODUCT BULLETIN #D-6
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: SEPTEMBER 20, 2000
"JD-109"

I. NAME, BRAND, OR TRADEMARK
JD-109
Type of Product: Dispersant

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
GlobeMark Resources Ltd.
1312 Mill Creek Drive
Salado, TX 76571
Mobile: (254) 231-2251
E-mail: joannie@globemarkresources.com or fiddler656@gmail.com
Website: www.globemarkresources.com
(Ms. Joannie Docter)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
GlobeMark Resources Ltd.
1312 Mill Creek Drive
Salado, TX 76571
Mobile: (254) 231-2251
E-mail: joannie@globemarkresources.com or fiddler656@gmail.com
Website: www.globemarkresources.com
(Ms. Joannie Docter)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: IMO - Nonflammable; DOT - Nonhazardous
2. Ventilation: Use with ventilation equal to unobstructed outdoors in a moderate breeze.
3. Skin and eye contact, protective clothing, treatment in case of contact: Avoid skin and clothing contact. If skin contact occurs, immediately wash with large amounts of soap and water (if possible). Remove any contaminated clothing and shoes. Launder before reusing. If irritation persists, seek medical assistance. For areas where contact is likely, wear long sleeve shirt, chemical resistant gloves, and chemical resistant goggles.
4.a. Maximum storage temperature: 120°F
4.b. Minimum storage temperature: - 4°F
4.c. Optimum storage temperature range: 32°F to 90°F
4.d. Temperatures of phase separations and chemical changes: None

V. SHELF LIFE
The shelf life of unopened drums of JD-109 in unlimited. Containers should be capped when not being used to prevent contamination and evaporation.

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VI. RECOMMENDED APPLICATION PROCEDURE

1. Application Method: The most rapid and effective method of applying JD-109 to a oil spill is by spraying. Temperature ranges for application should not drop below 32°F or exceed 120°F.

Aerial Spraying - Typical application altitudes of 30 to 50 feet are advised although higher altitudes may be used if conditions warrant. Spray nozzle should be about ¼ inches in diameter flying at 104 knots or more to create enough water shear sufficient to break the dispersant into proper sized droplets. A ½ inch diameter nozzle may be needed for temperatures below 50EF.

Boat Spraying - JD-109 can also be applied by workboats with spray booms mounted as far forward as possible of the bow or wake. The most effective application from a workboat is a low-volume, low-pressure pump.

2. Concentration/Application Rate: A treatment rate of about 2 to 10 US gallons (7.6 to 37.9 liters) per acre (4,840 square meters) or a dispersant to oil ratio of 1:50 to 1:10 is recommended. The rate may vary depending on the type of oil, degree of weathering, temperature and thickness of slick.

3. Conditions for Use: As with any oil related spill, timely application of a dispersant will ensure the highest degree of success. Timely treatment with JD-109, even at low application rates, can counter the "mousse" forming effect of the spilled oil.

VII. TOXICITY AND EFFECTIVENESS

a. Toxicity:

Material Tested	Species	LC50 (ppm)
JD-109	Menidia beryllina	1.90 96-hr
	Mysidopsis bahia	1.18 48-hr
No. 2 Fuel Oil	Menidia beryllina	9.35 96-hr
	Mysidopsis bahia	3.13 48-hr
JD-109 & No. 2 Fuel Oil	Menidia beryllina	3.84 96-hr
(1:10)	Mysidopsis bahia	3.51 48-hr
Reference Toxicant (SRT)	Menidia beryllina	2.63 96-hr
	Mysidopsis bahia	8.06 48-hr

b. Effectiveness:

SWIRLING FLASK DISPERSANT EFFECTIVENESS TEST WITH SOUTH LOUISIANA (S/L) AND PRUDHOE BAY (P/B) CRUDE OIL

Oil	Effectiveness (%)
Prudhoe Bay Crude	26
South Louisiana Crude	91
Average of Prudhoe Bay and South Louisiana Crudes	58.5

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VIII. MICROBIOLOGICAL ANALYSISNA

IX. PHYSICAL PROPERTIES
1. Flash Point, ASTM D3278-89: 93°C
2. Pour Point, ASTM D97-87: -19°C
3. Viscosity, ASTM D445-88: 202.9 cSt
4. Specific Gravity, ASTM D1298-85 (90): 1.02
5. pH, ASTM D1293-84 (90): 9.45
6. Surface Active Agents: Anionic and nonionic, proprietary, surfactants
7. Solvents: Proprietary, ester based
8. Additives: None
9. Solubility in Water: Miscible in oil, water, and solvents

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<10
Cadmium	<10
Chromium	<10
Copper	<10
Lead	<10
Mercury	<1
Nickel	<10
Zinc	<10
Cyanide	<0.5
Chlorinated Hydrocarbons	<1.4

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TECHNICAL PRODUCT BULLETIN #D-7
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: AUGUST 06, 2001
"JD-2000™"

I. NAME, BRAND, OR TRADEMARK
JD-2000™
Type of Product: Dispersant

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
GlobeMark Resources Ltd.
1312 Mill Creek Drive
Salado, TX 76571
Mobile: (254) 231-2251
E-mail: joannie@globemarkresources.com or fiddler656@gmail.com
Website: www.globemarkresources.com
(Ms. Joannie Docter)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
GlobeMark Resources Ltd.
1312 Mill Creek Drive
Salado, TX 76571
Mobile: (254) 231-2251
E-mail: joannie@globemarkresources.com or fiddler656@gmail.com
Website: www.globemarkresources.com
(Ms. Joannie Docter)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: IMO - Non-flammable. This product is not regulated by DOT when shipped domestically by land.
2. Ventilation: Use with ventilation equal to unobstructed outdoors in a moderate breeze.
3. Skin and eye contact; protective clothing; treatment in case of contact: Avoid skin and clothing contact. If skin contact occurs, immediately wash with large amounts of soap and water (if possible). Remove any contaminated clothing and shoes. Launder before reusing. If irritation persists, seek medical assistance. For areas where contact is likely, wear long sleeve shirt, chemical resistant gloves, and chemical resistant goggles.
4.a. Maximum storage temperature: 120°F
4.b. Minimum storage temperature: -30°F
4.c. Optimum storage temperature range: 30°F to 90°F
4.d. Temperatures of phase separations and chemical changes: None

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V. SHELF LIFE

The shelf life of unopened drums of JD-2000™ is unlimited. Containers should be capped when not being used to prevent contamination and evaporation. Opened container should be used within 1 year for optimal performance. Poly containers are recommended for storage near wet environments, i.e., ships, harbors, ports, etc.

VI. RECOMMENDED APPLICATION PROCEDURE

1. Application Method: JD-2000™ is free of phosphates, aromatic chlorinated solvents, branched ethoxylated alcohols, and hydrotreated distillates. Optimum temperature for application is above 30°F.

Aerial Spraying - Typical application altitudes of 30 to 50 feet are advised although higher altitudes may be used if conditions warrant. Spray nozzle should be about ¼ inch in diameter flying at 104 knots or more to create enough air shear sufficient to break the dispersant into proper sized droplets. A ½ inch diameter nozzle may be needed for temperatures from 30EF to 30°F.

Boat Spraying - JD-2000™ can also be applied by workboats with spray booms mounted as far forward as possible of the bow or wake. The most effective application from a workboat is a low-volume, low-pressure pump.

2. Concentration/Application Rate: JD-2000™ is an oil spill dispersant concentrate that may be diluted by 5 to 10 percent with water if needed. A treatment rate of about 2 to 10 U.S. gallons (7.6 to 37.9 liters) per acre (4,840 square meters) or a dispersant to oil ratio of 1:50 to 1:10 is recommended. The rate may vary depending on the type of oil, degree of weathering, temperature, and thickness of slick.

3. Conditions for Use: As with any oil related spill, timely (preferably within 48 hours) application of a dispersant will ensure the highest degree of success. Timely treatment with JD-2000™, even at low application rates, can counter the "mousse" forming effect of the spilled oil.

VII. TOXICITY AND EFFECTIVENESS

a. Toxicity:

Material Tested	Species	LC50 (ppm)
JD-2000™	Menidia beryllina	407.00 96-hr
	Mysidopsis bahia	90.50 48-hr
No. 2 Fuel Oil	Menidia beryllina	8.39 96-hr
	Mysidopsis bahia	2.58 48-hr
JD-2000™ & No. 2 Fuel Oil	Menidia beryllina	3.59 96-hr
(1:10)	Mysidopsis bahia	2.19 48-hr
Reference Toxicant (SDS)	Menidia beryllina	2.22 96-hr
	Mysidopsis bahia	10.50 48-hr

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2. Effectiveness:SWIRLING FLASK DISPERSANT EFFECTIVENESS TEST WITH SOUTH LOUISIANA (S/L) AND PRUDHOE BAY (P/B) CRUDE OIL

Oil	Effectiveness (%)
Prudhoe Bay Crude	60.4
South Louisiana Crude	77.8
Average of Prudhoe Bay and South Louisiana Crudes	69.1

VIII. MICROBIOLOGICAL ANALYSIS

NA

IX. PHYSICAL PROPERTIES

1. Flash Point (SW1010): 212°F
2. Pour Point (ASTM D97): -36°F
3. Viscosity (ASTM D445):65.2 cSt
4. Specific Gravity 60/60 (ASTM D287): 0.99
5. pH (EPA 150.1): 7.54
6. Surface Active Agents: CONFIDENTIAL
7. Solvents: CONFIDENTIAL
8. Additives: None
9. Solubility in Water: Dispersible in fresh and salt water. Miscible in oil, water, and solvents

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<0.24
Cadmium	<0.10
Chromium	<0.10
Copper	<0.10
Lead	0.43
Mercury	<0.10
Nickel	<0.10
Zinc	0.11
Cyanide	<0.20
Chlorinated Hydrocarbons	<2.00

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TECHNICAL PRODUCT BULLETIN #D-8USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: MARCH 04, 2002
"NOKOMIS 3-F4"

I. NAME, BRAND, OR TRADEMARK
NOKOMIS 3-F4
Type of Product: Dispersant

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Mar-Len Supply, Inc.
23159 Kidder Street
Hayward, CA 94545
Phone: (510) 782-3555
Fax: (510) 782-2032
(Mr. Frank Winter)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Mar-Len Supply, Inc.
23159 Kidder Street
Hayward, CA 94545
Phone: (510) 782-3555
Fax: (510) 782-2032
(Mr. Frank Winter)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable (water based)
2. Ventilation: No special requirements
3. Skin and eye contact; protective clothing; treatment in case of contact: In case of eye contact, flush with water; in case of skin contact, wash with water; and if swallowed, drink water to dilute and induce vomiting.
4.a. Maximum storage temperature: 212°F
4.b. Minimum storage temperature: 32°F
4.c. Optimum storage temperature range: 50°F
4.d. Temperatures of phase separations and chemical changes: NA

V. SHELF LIFE
15 years or more if stored correctly in plastic drums.

VI. RECOMMENDED APPLICATION PROCEDURES
1. Application Method: Application of the product may be made directly from 33 and 35 gallon drums (marketing sizes) by fitting the drum with a "T" connection and pumping fresh or salt water across the junction, which will pull the dispersant from the drum into the water stream and onto the oil spill.

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2. Concentration/Application Rate: For heavy concentrations of crude or Bunker C oil, apply the product undiluted. Where lighter fractions of petroleum are involved, the product can be diluted up to one part dispersant to 30 parts water.
3. Conditions for Use: Effective in salt water, and can be used on water of any temperature.

VII. TOXICITY AND EFFECTIVENESS

a. Toxicity:

Material Tested	Species	LC50 (ppm)
NOKOMIS 3-F4	Menidia beryllina	29.80 96-hr
	Mysidopsis bahia	32.20 48-hr
No. 2 Fuel Oil	Menidia beryllina	100.00 96-hr
	Mysidopsis bahia	72.70 48-hr
NOKOMIS 3-F4 &	Menidia beryllina	100.00 96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	58.40 48-hr
Reference Toxicant (DSS)	Menidia beryllina	159.60 96-hr
	Mysidopsis bahia	267.70 48-hr

b. Effectiveness:

SWIRLING FLASK DISPERSANT EFFECTIVENESS TEST WITH SOUTH LOUISIANA (S/L) AND PRUDHOE BAY (P/B) CRUDE OIL

Oil	Effectiveness (%)
Prudhoe Bay Crude	62.20
South Louisiana Crude	64.90
Average of Prudhoe Bay and South Louisiana Crudes	63.55

VIII. MICROBIOLOGICAL ANALYSIS

NA

IX. PHYSICAL PROPERTIES

1. Flash Point: None
2. Pour Point: 28°F
3. Viscosity: 290 cps at 20°C (68°F)
4. Specific Gravity: 1.0065g/cc at 20°C (68°F)
5. pH: 10.3 (at room temperature)
6. Surface Active Agents: Confidential
7. Solvents: None
8. Additives: None
9. Solubility: Completely water soluble

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X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

	Compound Concentration (ppm)
Arsenic	0.30
Cadmium	<5.00
Chromium	<10.00
Copper	<10.00
Lead	<10.00
Mercury	<0.05
Nickel	<10.00
Zinc	<10.00
Cyanide	<2.00
Chlorinated Hydrocarbons	<1.00

ED_001324_00006005-00038

EPA HAS NOT RECEIVED UPDATED CONTACT INFORMATION FOR THIS PRODUCT: 3/23/16

TECHNICAL PRODUCT BULLETIN #D-9
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: JUNE 28, 2002
"BIODISPERS"
(formerly PETROBIODISPERS)

I. NAME, BRAND, OR TRADEMARK
BIODISPERS
Type of Product: Dispersant

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Petrotech America Corporation
130 William Street, Suite 802
New York, NY 10038
Phone: (212)933-9071, ext. 7001
Fax: (877) 226-4028
E-mail: Info@helpenvironmental.com
(Mr. Lawrence Gallo)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS

Petrotech America Corporation
130 William Street, Suite 802
New York, NY 10038
Phone: (212)933-9071, ext. 7001
Fax: (877) 226-4028
E-mail: Info@helpenvironmental.com
(Mr. Lawrence Gallo)

Manufacturing Plant:
Clariant Corp.
Charlotte, NC

H.E.L.P. Environmental
926 3rd Avenue
Brooklyn, NY 11232

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable
2. Ventilation: Use general ventilation to minimize exposure to vapor or mist.
3. Skin and eye contact; protective clothing; treatment in case of contact: Skin contact – immediately flush with copious amounts of water. Remove and wash contaminated clothing and shoes. If irritation persists, see a doctor. Eye contact – may cause eye irritation. In case of contact, immediately flush eyes with plenty of water. If irritation persists, immediately see a doctor. Hygienic practices – wear safety glasses. Wear gloves in accordance with routine

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laboratory safety precautions.
4.a. Maximum storage temperature: >70°C
4.b. Minimum storage temperature: -25°C
4.c. Optimum storage temperature range:
4.d. Temperatures of phase separations and chemical changes: No phase or chemical separation observed.

V. SHELF LIFE
The product has unlimited shelf life.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method: Recommended application is by aircraft, fireboat monitors or similar apparatus.
2. Concentration/Application Rate: Concentration varies with spilled material - Solvents at 5%, light oils at 10%, medium oils at 10%, and heavy oils at 10%.
3. Conditions for Use: Data is for water temperature of 40°F to 65°F. There are no known application restrictions.

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity:

Material Tested	Species	LC50 (ppm)
BIODIPSERS	Menidia beryllina	13.46 96-hr
	Mysidopsis bahia	78.90 48-hr
No. 2 Fuel Oil	Menidia beryllina	12.42 96-hr
	Mysidopsis bahia	2.82 48-hr
BIODIPSERS &	Menidia beryllina	5.95 96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	2.66 48-hr
Reference Toxicant (SDS)	Menidia beryllina	11.84 96-hr
	Mysidopsis bahia	21.81 48-hr

b. Effectiveness:
SWIRLING FLASK DISPERSANT EFFECTIVENESS TEST WITH SOUTH LOUISIANA (S/L) AND PRUDHOE BAY (P/B) CRUDE OIL

Oil	Effectiveness (%)
Prudhoe Bay Crude	51.0
South Louisiana Crude	63.0
Average of Prudhoe Bay and South Louisiana Crudes	57.0

VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point, ASTM Method D56: 193°F
2. Pour Point, ASTM Method D97: - 26°F
3. Viscosity at 40°C, ASTM Method D445: Initial boil point 104.2°C, at 50 mL 109°C, at 70 mL 111°C, at 80 mL 113.7°C, final temperature 307.1°C)

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4. Specific Gravity: 0.965
5. pH: 7
6. Surface Active Agents: CONFIDENTIAL
7. Solvents: Water
8. Additives: None
9. Solubility: Product is 100% soluble in water.

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<2.50
Cadmium	<0.75
Chromium	<0.75
Copper	<0.50
Lead	<5.00
Nickel	<1.20
Zinc	<0.50
Cyanide	3.90*
Chlorinated Hydrocarbons	<5.00

*During the analysis of cyanide on sample #V202057-01 (Petrotech Dispersant) analyst encountered interferences due to the matrix of sample. Soapy residue created a false positive for cyanide. Sample showed no traces of cyanide. Value related to the soap film turbidity.

ED_001324_00006005-00041

TECHNICAL PRODUCT BULLETIN #D-10
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: NOVEMBER 26, 2002
"SEA BRAT #4"

I. NAME, BRAND, OR TRADEMARK
SEA BRAT #4
Type of Product: Dispersant

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
B.R.A.T. Microbial Products Inc.
P.O. Box 7089
Pasadena, TX 77508
Phone: (713) 724-9226
E-mail: alabastercorp@gmail.com
(Mr. John Sheffield)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
B.R.A.T. Microbial Products Inc.
P.O. Box 7089
Pasadena, TX 77508
Phone: (713) 724-9226
E-mail: alabastercorp@gmail.com
(Mr. John Sheffield)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable
2. Ventilation: Normal.
3. Skin and eye contact; protective clothing; treatment in case of contact:
Wear safety glasses or goggles, gloves, and rubber boots. Wash after each shift. Remove and wash contaminated clothing before reuse. No respiratory protection is required. Local exhaust is desirable. Mechanical exhaust is helpful in congested areas. Skin contact – flush with water. Seek medical attention if irritation persists. Eye contact – flush with water using eye cup or fountain for 15 minutes. Seek medical attention if irritation persists. Ingestion - seek medical attention. Inhalation – no medical attention is required with inhalation.
4.a. Maximum storage temperature: 120°F
4.b. Minimum storage temperature: 35°F
4.c. Optimum storage temperature range: NA
4.d. Temperatures of phase separations and chemical changes: NA

V. SHELF LIFE
Indefinite when stored properly.

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VI. RECOMMENDED APPLICATION PROCEDURE

1. Application Method: Spray affected area with a high pressure pump. Always apply in compliance with federal, state, and local laws.
2. Concentration/Application Rate: Dilution ratios of 1 part SEA BRAT #4 to 9 parts water for a 10 percent solution.
3. Conditions for Use: May be applied to the coastal waters of the U.S. It is designed for hydrocarbon spills on water temperatures between 50°F and 90°F. It is best applied with nozzle pressure of between 80 psi and 100 psi, with a direct hard spray and continuously moving the stream of water over the entire surface.

VII. TOXICITY AND EFFECTIVENESS

a. Toxicity:

Material Tested	Species	LC50 (ppm)
SEA BRAT #4	Menidia beryllina	30.00 96-hr
	Mysidopsis bahia	14.00 48-hr
No. 2 Fuel Oil	Menidia beryllina	16.00 96-hr
	Mysidopsis bahia	14.00 48-hr
SEA BRAT #4 &	Menidia beryllina	23.00 96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	18.00 48-hr
Reference Toxicant (DSS)	Menidia beryllina	1.14 96-hr
	Mysidopsis bahia	0.98 48-hr

b. Effectiveness:

SWIRLING FLASK DISPERSANT EFFECTIVENESS TEST WITH SOUTH LOUISIANA (S/L) AND PRUDHOE BAY (P/B) CRUDE OIL

VENDOR LAB REPORT:

Oil	Effectiveness (%)
Prudhoe Bay Crude	53.55
South Louisiana Crude	60.65
Average of Prudhoe Bay and South Louisiana Crudes	57.10

VIII. MICROBIOLOGICAL ANALYSIS

NA

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IX. PHYSICAL PROPERTIES1. Flash Point, ASTM Method D56: 200°F
2. Pour Point, ASTM Method D97: 4°F
3. Viscosity (furol seconds): 380 at 77°F
4. Specific Gravity (g/cc): 0.994 at 70°F
5. pH: 9.45
6. Surface Active Agents: Surfactants
7. Solvents: Propylene glycol
8. Additives: None
9. Solubility: Soluble in all ratios.

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<0.05
Cadmium	<0.05
Chromium	<0.05
Copper	<0.05
Lead	<0.05
Mercury	<0.0002
Nickel	<0.05
Zinc	0.215
Cyanide	<0.05
Chlorinated Hydrocarbons	<0.05

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BULLETIN UPDATES IN BOLD

TECHNICAL PRODUCT BULLETIN #D-11
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: JANUARY 30, 2003
"FINASOL® OSR 52"
(aka, SEACARE ECOSPERSE 52)

I. NAME, BRAND, OR TRADEMARK
FINASOL® OSR 52
(aka, SEACARE ECOSPERSE 52)
Type of Product: Dispersant

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
TOTAL FLUIDES
24 cours Michelet La Défense 10
92069 Paris La Défense Cedex
France
Phone: +33-1-41-35-60-29
United States: (713) 297-4651
24-hour Emergency Number: (713) 297-1996
E-mail: david.doucet@total.com
Website: www.totalspecialfluids.com
(Mr. David Doucet)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Importer/U.S. Distributor
TOTAL SPECIALTIES USA, INC.
1201 Louisiana Street, Suite 1800
Houston, TX 77002
Phone: (713) 297-4651
Fax: (713) 297-4689
E-mail: peter.egan@total.com
Website: www.totalspecialfluids.com
(Mr. Peter Egan)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Keep well away from sources of ignition and heat. Avoid the accumulation of static electricity. Provide grounding.
2. Ventilation: Keep containers closed when not in use. Do not inhale vapors, fumes, or mists. In case of inhalation, take the person into fresh air. Ensure adequate ventilation is provided if there is any risk of vapors, mists, or aerosols forming. In the event of serious problems, call a doctor or summon medical assistance urgently.

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3. Skin and eye contact; protective clothing; treatment in case of contact: Wear appropriate long sleeve shirts, chemical resistant gloves and goggles. Avoid contact with skin and eyes. In case of contact, wash immediately with plenty of water. Avoid contact with clothing. In case of contact, wash immediately and remove contaminated clothing. Prolonged and repeated contact with the skin may cause skin disorders. In case of ingestion, do not induce vomiting to prevent aspiration into the respiratory tract.
4.a. Maximum storage temperature: 65°C
4.b. Minimum storage temperature: -20°C
4.c. Optimum storage temperature range: 5 - 35°C
4.d. Temperatures of phase separations and chemical changes: NA

V. SHELF LIFE
The shelf life of unopened drums of FINASOL® OSR 52 is potentially unlimited when the containers remain capped and sealed to prevent contamination and evaporation of solvents, and are stored in a place with stable temperatures and are unexposed to direct sunlight. After storage, stir the product and assure uniformity before use. Testing of FINASOL® OSR 52 is recommended every three years and then on a yearly basis to ensure it remains fit for its intended usage.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method: FINASOL® OSR 52 is applied effectively by aircraft or from boats. It can also be applied by hand held sprayers as well as with backpack spray units. Spraying must not give too fine or atomized droplets as in fog. It must be done as moderately coarse droplets, with diameters in the range of 500 - 1000 m, whether application is by surface vessel, aircraft, or land-based equipment.
2. Concentration/Application Rate: Use FINASOL® OSR 52 from 1:5 to 1:50, according to the nature of the oil, its state of weathering, temperature, thickness of the slick, and other circumstances of the spill. A 1:10 ratio would correspond appreciatively to 26 gallons per ton of oil.

Aerial spraying – FINASOL® OSR 52 is sprayed undiluted when applied from aircrafts, usually between 30 and 50 feet altitude, or at higher altitude in poor weather conditions.

Boat spraying – FINASOL® OSR 52 is sprayed undiluted using a low-pressure system. Spraying equipment providing 5 to 10% dilution of FINASOL® OSR 52 can also be used.
3. Conditions for Use: Diluted application in low salinity water is not recommended. Use only receptacles, joints, pipes, etc. which are resistant to hydrocarbons. Do not spray at high pressure (> 3 bar). FINASOL® OSR 52 is designed to treat spills in salt water.

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity:

Material Tested	Species	LC50 (ppm)
FINASOL® OSR 52	Menidia beryllina	11.66 96-hr
	Mysidopsis bahia	9.37 48-hr
No. 2 Fuel Oil	Menidia beryllina	5.95 96-hr

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	Mysidopsis bahia	2.37 48-hr
FINASOL® OSR 52 &	Menidia beryllina	5.40 96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	2.37 48-hr
Reference Toxicant (SDS)	Menidia beryllina	8.54 96-hr
	Mysidopsis bahia	21.81 48-hr

b. Effectiveness:

SWIRLING FLASK DISPERSANT EFFECTIVENESS TEST WITH SOUTH LOUISIANA (S/L) AND PRUDHOE BAY (P/B) CRUDE OIL

VENDOR LAB REPORT:

Oil	Effectiveness (%)
Prudhoe Bay Crude	32.50
South Louisiana Crude	71.60
Average of Prudhoe Bay and South Louisiana Crudes	52.10

VIII. MICROBIOLOGICAL ANALYSIS

NA

IX. PHYSICAL PROPERTIES

1. Flash Point, ASTM Method D-3278-89: 110°C
2. Pour Point, ASTM Method D-97-87: -27°C
3. Viscosity, ASTM Method D-445-88: 58.5 cSt
4. Specific Gravity, ASTM Method D-1298-85 (90): 1.01
5. pH, ASTM Method D-1293-84 (90): 8.57
6. Surface Active Agents: CONFIDENTIAL
7. Solvents: CONFIDENTIAL
8. Additives: CONFIDENTIAL
9. Solubility: Dispersible in water.

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Antimony	<10.0
Arsenic	<10.0
Barium	<10.0
Cadmium	<10.0
Chromium	<10.0
Copper	<10.0
Lead	<10.0
Mercury	<1.0
Nickel	<10.0
Selenium	<10.0
Silver	<10.0
Zinc	<10.0
Cyanide	<0.4

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Chlorinated Hydrocarbons	<4.4

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LISTING CHANGES PENDING, FOLLOWING VERIFICATION BY MANUFACTURER AND EPA

TECHNICAL PRODUCT BULLETIN #D-12
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: JANUARY 03, 2005
"SAF-RON GOLD"
(aka, SF-GOLD DISPERSANT)

I. NAME, BRAND, OR TRADEMARK
SAF-RON GOLD
(aka, SF-GOLD DISPERSANT)
Type of Product: Dispersant

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Sustainable Environmental Technologies Inc.
55 Ivan Allen Jr. Boulevard, Suite 850
Atlanta, GA 30308
Customer Service:
Phone: (404) 946-3585
24-hour Emergency Number:
Phone: (281) 845-9919
E-mail: support@sustainable-corp.com / bruce@sustainable-corp.com
Website: www.become-sustainable.com / www.sustainable-corp.com / www.saf-ron.com
(Mr. Bruce Richards)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Sustainable Environmental Technologies Inc.
55 Ivan Allen Jr. Boulevard, Suite 850
Atlanta, GA 30308
Customer Service:
Phone: (404) 946-3585
24-hour Emergency Number:
Phone: (281) 845-9919
E-mail: support@sustainable-corp.com / bruce@sustainable-corp.com
Website: www.become-sustainable.com / www.sustainable-corp.com / www.saf-ron.com
(Mr. Bruce Richards)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable.
2. Ventilation: Special ventilation is not required.
3. Skin and eye contact; protective clothing; treatment in case of contact: No special equipment required; however, goggles are recommended. Skin contact - if irritation occurs flush with

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water; seek medical attention if irritation persists. Eye contact - flush with plenty of water; seek medical attention if irritation persists.
4.a. Maximum storage temperature: 120°F
4.b. Minimum storage temperature: 32°F
4.c. Optimum storage temperature range: 40 - 120°F
4.d. Temperatures of phase separations and chemical changes: NA

V. SHELF LIFE
The shelf life is unlimited in unopened containers.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method: Sprayer, Boat, Aircraft.
2. Concentration/Application Rate: A dispersant to oil ratio ranging from 1:50 to 1:10 is recommended. For heavy high-viscosity oils - 8 gallons of SAF-RON GOLD will disperse approximately 70 gallons of crude oil or bunker C. Also for use with heavy high viscosity oils, SAF-RON GOLD can be used as a concentrate or diluted at a dispersant to water ratio of 1:10. For lighter oils, SAF-RON GOLD can be diluted at mixtures of 1:20 to 1:100. A recommended dispersant to water ratio of 1:40 can be used for most spills. Ratios are dependent upon type of oil and weather conditions.
3. Conditions for Use: Any applicable condition determined by authorities for dispersant use.

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity:

Material Tested	Species	LC50 (ppm)
SAF-RON GOLD	Menidia beryllina	29.43 96-hr
	Mysidopsis bahia	63.00 48-hr
No. 2 Fuel Oil	Menidia beryllina	16.76 96-hr
	Mysidopsis bahia	5.93 48-hr
SAF-RON GOLD	Menidia beryllina	9.25 96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	3.04 48-hr
Reference Toxicant (SLS)	Menidia beryllina	15.94 96-hr
	Mysidopsis bahia	9.83 48-hr

b. Effectiveness:
SWIRLING FLASK DISPERSANT EFFECTIVENESS TEST WITH SOUTH LOUISIANA (S/L) AND PRUDHOE BAY (P/B) CRUDE OIL
VENDOR LAB REPORT:

Oil	Effectiveness (%)
Prudhoe Bay Crude	84.80
South Louisiana Crude	53.80
Average of Prudhoe Bay and South Louisiana Crudes	69.30

VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES

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1. Flash Point, ASTM D-56: >100°C
2. Pour Point, ASTM D-97: -2.5°C
3. Viscosity @40°C, ASTM Method D-445: 1.42 cSt
4. Specific Gravity @60°F/60°F, ASTM Method D-287: 1.014
5. pH: 8.8
6. Surface Active Agents: Proprietary blend of surface-active agents.
7. Solvents: None.
8. Additives: None.
9. Solubility: Fully water soluble.

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<0.01
Cadmium	<0.005
Chromium	0.140
Copper	0.324
Lead	<0.005
Mercury	<0.020
Nickel	<0.005
Zinc	0.0671
Cyanide	<0.20
Chlorinated Hydrocarbons	<0.80

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TECHNICAL PRODUCT BULLETIN #D-13USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: JUNE 16, 2005
"ZI-400"
(aka, ZI-400 OIL SPILL DISPERSANT)

I. NAME, BRAND, OR TRADEMARK
ZI-400
(aka, ZI-400 OIL SPILL DISPERSANT)
Type of Product: Dispersant

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Z.I. Chemicals
8605 Santa Monica Boulevard, #38201
Los Angeles, CA 90069
Phone: (818) 827-1301
E-mail: admin@zichemicals.com; zichemicals@mac.com
Website: www.zichemicals.com
(Mr. Barnaby Zelman)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Z.I. Chemicals
8605 Santa Monica Boulevard, #38201
Los Angeles, CA 90069
Phone: (818) 827-1301
E-mail: admin@zichemicals.com; zichemicals@mac.com
Website: www.zichemicals.com
(Mr. Barnaby Zelman)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable (DOT: Non-Hazardous).
2. Ventilation: No special requirements.
3. Skin and eye contact; protective clothing; treatment in case of contact: No special equipment or clothing required; however, goggles are recommended. If eye or skin irritation occurs, flush with plenty of water.
4.a. Maximum storage temperature: 120°F continuous, 140°F up to 5 days
4.b. Minimum storage temperature: 35°F
4.c. Optimum storage temperature range: 40 - 120°F
4.d. Temperatures of phase separations and chemical changes: Stable

V. SHELF LIFE
Unlimited in sealed polydrums of totes (as delivered).

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VI. RECOMMENDED APPLICATION PROCEDURE

1. Application Method: ZI-400 may be applied by the usual method of aerial or boat spraying. For smaller spills a drum pump with sprayer may be used, mixing with water as required depending on the type and viscosity of oil being treated.
2. Concentration/Application Rate: On heavy oils use ZI-400 directly on the spill, or up to approximately a 1:10 dilution ratio (product:water). Lighter oils will require a 1:10 to 1:30 product to water dilution ratio. Warmer waters (greater than 78°F) and/or good agitation during application will require less product.
3. Conditions for Use: No limitations as to usage within optimum temperature parameters (application may be made at or above 35°F, with optimum above 48°F).

VII. TOXICITY AND EFFECTIVENESS

a. Toxicity:

Material Tested	Species	LC50 (ppm)
ZI-400	Menidia beryllina	31.76 96-hr
	Mysidopsis bahia	20.96 48-hr
No. 2 Fuel Oil	Menidia beryllina	18.05 96-hr
	Mysidopsis bahia	2.66 48-hr
ZI-400	Menidia beryllina	8.35 96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	1.77 48-hr
Reference Toxicant (SLS)	Menidia beryllina	16.13 96-hr
	Mysidopsis bahia	27.80 48-hr

b. Effectiveness:

SWIRLING FLASK DISPERSANT EFFECTIVENESS TEST WITH SOUTH LOUISIANA (S/L) AND PRUDHOE BAY (P/B) CRUDE OIL

VENDOR LAB REPORT:

Oil	Effectiveness (%)
Prudhoe Bay Crude	50.10
South Louisiana Crude	89.80
Average of Prudhoe Bay and South Louisiana Crudes	69.90

VIII. MICROBIOLOGICAL ANALYSIS

NA

IX. PHYSICAL PROPERTIES

1. Flash Point, ASTM D-56: >93°C
2. Pour Point, ASTM D-97: 12.6°F
3. Viscosity, ASTM D-445: 18.80 cSt @ 40°C
4. Specific Gravity, ASTM D-1298: 1.026 @ 60°F
5. pH, ASTM D-1293: 10.9
6. Surface Active Agents: Proprietary
7. Solvents: Proprietary
8. Additives: None.
9. Solubility: Miscible in oil, water, and solvents.

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X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<10
Cadmium	<10
Chromium	<10
Copper	<10
Lead	<10
Mercury	<1
Nickel	<10
Zinc	<10
Cyanide	<0.5
Chlorinated Hydrocarbons	<1.0

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TECHNICAL PRODUCT BULLETIN #D-14USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: JULY 31, 2008
"NOKOMIS 3-AA"

I. NAME, BRAND, OR TRADEMARK
NOKOMIS 3-AA
Type of Product: Water-Based Dispersant

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Mar-Len Supply, Inc.
23159 Kidder Street
Hayward, CA 94545
Phone: (510) 782-3555
Fax: (510) 782-2032
(Mr. Frank Winter)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Mar-Len Supply, Inc.
23159 Kidder Street
Hayward, CA 94545
Phone: (510) 782-3555
Fax: (510) 782-2032
(Mr. Frank Winter)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable (water based)
2. Ventilation: No special requirements
3. Skin and eye contact; protective clothing; treatment in case of contact: In case of eye contact, flush with water; in case of skin contact, wash with water; and if swallowed, drink water to dilute and induce vomiting.
4.a. Maximum storage temperature: 160°F
4.b. Minimum storage temperature: 32°F
4.c. Optimum storage temperature range: 32 - 140°F
4.d. Temperatures of phase separations and chemical changes: NA

V. SHELF LIFE
In excess of 24 months or more if stored correctly in plastic drums.

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VI. RECOMMENDED APPLICATION PROCEDURES1. Application Method:
Aerial applied dispersant – spray from an aircraft flying with a controllable speed at altitudes of 30 to 50 feet. Spray nozzles should be sized to cover an area using 5 gallons per surface acre.

Spray from boat: NOKOMIS 3-AA can be applied by ships of workboat with spray booms mounted as far forward as possible. NOKOMIS 3-AA will generally be marketed in 55 gallon plastic drums. Application of the products may be made directly from the drum. By using a direct connection from pump to drum NOKOMIS 3-AA can be applied at full strength to the oil spill. The determination of whether to use NOKOMIS 3-AA at full strength or diluted with water must be determined by observations and evaluations made on-site at the oil spill. Portable engine powered centrifugal water pumps are a satisfactory means of moving the dispersant from the container to the spill's surface. Diesel-powered larger capacity pump may also be used. If the spill is confined to a small area, a hand-pump connected directly to the 55 gallon drum can be used. Hose diameters and lengths will relate to capacities required for the specific situation and distances from the pump to container and the spill. Fire hose has been successfully used, and with hand pumps small diameter hose is adequate. Fog nozzles on the dispersing end of the hose provide a fine spray of NOKOMIS 3-AA full strength or diluted as appropriate. Any type of hose nozzle can be used, but preferable one with the ability to produce a spray rather than a coarse stream.
2. Concentration/Application Rate: NOKOMIS 3-AA may be applied to oil spills at full strength, or diluted with sea water. Where large areas of water may be covered with heavy concentrations of crude or Bunker C oil, it may be advantageous to apply NOKOMIS 3-AA at full strength. Where lighter fractions of petroleum are involved it is possible that dilutions of up to one part NOKOMIS 3-AA to 30 parts water may be applicable. Approximately 5 gallons of NOKOMIS 3-AA can be used for one surface acre of oil spill.
3. Conditions for Use: Once NOKOMIS 3-AA is applied to the water's surface, to obtain the most efficient emulsification of the oil it is necessary to agitate and mix dispersant, oil, and water thoroughly. In open unconfined areas, the use of ship propellers has been determined a practical way of accomplishing this purpose. By passing over the spill area on a grid system, the vessel's propellers will churn the water, causing the needed mixing. For a large spill, two or more vessels may be needed to apply the product and agitate the water. In and around piers and similar confined areas it is necessary to apply the product from small boats, the shore, or pier itself. Where it is impossible or impractical to supply agitation with propellers of a vessel it is necessary to use pumps and a hose, applying salt water in the coarse stream and under sufficient pressure to cause surface turbulences and subsequent mixing.

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VII. TOXICITY AND EFFECTIVENESSa. Toxicity:

Material Tested	Species	LC50 (ppm)
NOKOMIS 3-AA	Menidia beryllina	34.22 96-hr
	Mysidopsis bahia	20.16 48-hr
No. 2 Fuel Oil	Menidia beryllina	22.50 96-hr
	Mysidopsis bahia	11.07 48-hr
NOKOMIS 3-AA &	Menidia beryllina	7.03 96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	5.56 48-hr
Reference Toxicant ($CuSO_4$)	Menidia beryllina	5.36 96-hr
	Mysidopsis bahia	7.83 48-hr

b. Effectiveness:

SWIRLING FLASK DISPERSANT EFFECTIVENESS TEST WITH SOUTH LOUISIANA (S/L) AND PRUDHOE BAY (P/B) CRUDE OIL

Oil	Effectiveness (%)
Prudhoe Bay Crude	63.20
South Louisiana Crude	65.70
Average of Prudhoe Bay and South Louisiana Crudes	64.50

VIII. MICROBIOLOGICAL ANALYSIS

NA

IX. PHYSICAL PROPERTIES

1. Flash Point: None
2. Pour Point: 25 °F
3. Viscosity: 72.3 sus at 100°F
4. Specific Gravity: 1.031 at 60°F
5. pH: 9.0
6. Surface Active Agents: Confidential
7. Solvents: Propylene glycol and Water
8. Additives: None
9. Solubility: Completely water soluble

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X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<0.12
Cadmium	<0.25
Chromium	<0.25
Copper	<0.25
Lead	<0.12
Mercury	<0.0016
Nickel	<0.25
Zinc	<1.0
Cyanide	0.034
Chlorinated Hydrocarbons	<0.10

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TECHNICAL PRODUCT BULLETIN #D-16
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: JULY 18, 2011
"ACCELL CLEAN® DWD"

I. NAME, BRAND, OR TRADEMARK
ACCELL CLEAN® DWD
Type of Product: Dispersant

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Advanced BioCatalytics Corporation
18010 Skypark Circle, #130
Irvine, California 92614-6456
Office Phone: (949) 442-0880
General E-mail: info@abiocat.com
Website: www.abiocat.com
Product Management:
Mobile: (949) 981-6510
E-mail: cpodella@abiocat.com
(Mr. Carl Podella)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Advanced BioCatalytics Corporation
18010 Skypark Circle, #130
Irvine, California 92614-6456
Office Phone: (949) 442-0880
General E-mail: info@abiocat.com
Website: www.abiocat.com
Product Management:
Mobile: (949) 981-6510
E-mail: cpodella@abiocat.com
(Mr. Carl Podella)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Combustible as defined by DOT and USCG.
2. Ventilation: Use in well ventilated areas.
3. Skin and eye contact; protective clothing; treatment in case of contact: Protective clothing is recommended. Avoid eye contact. In case of eye contact, immediately flush with large amounts of water for at least 15 minutes. Get prompt medical attention. Avoid direct contact with skin and clothing. In case of skin contact, immediately flush with large amounts of water. Remove contaminated clothing, including shoes, after flushing has begun. If irritation persists, seek medical attention. For open systems were contact is likely, wear long sleeve shirt, chemical resistant gloves, and protective chemical goggles.

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4.a. Maximum storage temperature: 130°F/55°C
4.b. Minimum storage temperature: 30°F/-1°C
4.c. Optimum storage temperature range: 40°F to 100°F/4°C to 38°C
4.d. Temperatures of phase separations and chemical changes: None

V. SHELF LIFE
The shelf life of unopened drums of ACCELL CLEAN® DWD is unlimited. Containers should always remain capped when not in use to prevent contamination and evaporation.

VI. RECOMMENDED APPLICATION PROCEDURES
1. Application Method: Aircrafts provide the most rapid method of applying dispersants to an oil spill and a variety of aircraft can be used for spraying. For aerial spraying, ACCELL CLEAN® DWD is applied undiluted. Typically application altitudes of 30 to 50 feet are recommended, although higher altitudes may be effective under certain conditions. Actual effective altitudes will depend on the application equipment, weather and aircraft. Careful selection of spray nozzles is critical to achieve desired dose levels, since droplet size must be controlled. A quarter-inch open pipe may be all that is necessary if the aircraft travels at 120 mph (104 knots) or more, since the air shear at these speeds will be sufficient to break the dispersant into the proper sized droplets. Agricultural spray delivery systems may not be suitable because of too fine of spray and too little delivery of ACCELL CLEAN® DWD to the affected area.

Boat Spraying: ACCELL CLEAN® DWD may also be applied from boats equipped with spray booms mounted ahead of the bow wake or as far forward as possible. The most effective method of application from a boat is to apply ACCELL CLEAN® DWD using a low-volume, low-pressure pump so the ACCELL CLEAN® DWD can be applied undiluted. ACCELL CLEAN® DWD should not be fogged or atomized. Natural wave or boat wake action usually provides adequate mixing energy to disperse the oil. Application at sub-freezing temperatures may require larger nozzle, supply lines and orifices due to higher product viscosity.
2. Concentration/Application Rate: A treatment rate of about 10 gallons per acre, or a dispersant to oil ratio of 1:10 is optimal. The rate varies depending on the type of oil, degree of weathering, temperatures, and thickness of the slick.
3. Conditions for Use: For optimal results, ACCELL CLEAN® DWD early treatment of oil-contaminated waters is beneficial. ACCELL CLEAN® DWD can be used on weathered oils.

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity:

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Materials Tested	Species	LC50 (ppm)	
ACCELL CLEAN® DWD	Menidia beryllina	5.66	96-hr
	Mysidopsis bahia	2.07	48-hr
No. 2 Fuel Oil	Menidia beryllina	11.10	96-hr
	Mysidopsis bahia	1.68	48-hr
ACCELL CLEAN® DWD	Menidia beryllina	8.05	96-hr
& No. 2 Fuel Oil (1:10)	Mysidopsis bahia	1.32	48-hr
Reference Toxicant (DDS)	Menidia beryllina	6.60	96-hr
	Mysidopsis bahia	30.80	48-hr

b. Effectiveness:
SWIRLING FLASK DISPERSANT EFFECTIVENESS TEST WITH SOUTH LOUISIANA (S/L) AND PRUDHOE BAY (P/B) CRUDE OIL

Oil	Effectiveness (%)
Prudhoe Bay Crude	58.70
South Louisiana Crude	96.03
Average of Prudhoe Bay and South Louisiana Crudes	77.37

VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point: 130°F/55°C
2. Pour Point: -20.2°F/-29°C
3. Viscosity: 130 SUS @100°F
4. Specific Gravity: 1.0329 @60°F
5. pH: 5.8
6. Surface Active Agents: CONFIDENTIAL
7. Solvents: CONFIDENTIAL
8. Additives: CONFIDENTIAL
9. Solubility: Miscible

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	ND
Cadmium	ND
Chromium	ND
Copper	ND
Lead	ND
Mercury	ND
Nickel	ND
Zinc	ND

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Cyanide	ND
Chlorinated Hydrocarbons	ND

ED_001324_00006005-00062

TECHNICAL PRODUCT BULLETIN #D-17
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: NOVEMBER 01, 2011
"FFT-SOLUTION®"

I. NAME, BRAND, OR TRADEMARK
FFT-SOLUTION®
Type of Product: Dispersant

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Fog Free Technologies, LLC
4365 Dorchester Road
Building 300, Suite 301
North Charleston, SC 29405
Product Management:
Office Phone: (843) 735-6626
Mobile: (478) 697-2588
E-mail: doc@fogfreetechnologies.com
Website: www.fogfreetechnologies.com
(Mr. William Knight)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Fog Free Technologies, LLC
4365 Dorchester Road
Building 300, Suite 301
North Charleston, SC 29405
Product Management:
Office Phone: (843) 735-6626
Mobile: (478) 697-2588
E-mail: doc@fogfreetechnologies.com
Website: www.fogfreetechnologies.com
(Mr. William Knight)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: IMO: Non-Flammable, DOT: Non-Hazardous
2. Ventilation: Lowest level of skin protection is acceptable, but no special ventilation is required.
3. Skin and eye contact; protective clothing; treatment in case of contact: Lowest level of skin protection is acceptable. Avoid eye contact. In case of eye contact, immediately flush eyes with large amounts of water for at least 15 minutes. Avoid contact with skin. In case of skin contact, immediately flush with water and soap if available. For open systems where contact is likely, wear long sleeve shirt, chemical resistant gloves and chemical goggles.
4.a. Maximum storage temperature: 170°F

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4.b. Minimum storage temperature: 30°F
4.c. Optimum storage temperature range: 40°F to 105°F
4.d. Temperatures of phase separations and chemical changes: None

V. SHELF LIFE
The shelf life of unopened drums of FFT-Solution® is limited to 60 months. Storage should be in a semi-controlled warehouse, out of direct sunlight.

VI. RECOMMENDED APPLICATION PROCEDURES
1. Application Method: Aerial Spraying – Aircraft provide the most rapid method of applying dispersants to an oil spill and a variety of aircraft can be used for spraying. For aerial spraying, FFT-Solution® is applied undiluted. Typical application altitudes of 30 to 50 feet have been used, although higher altitudes may be effective under certain conditions. Actual effective altitudes will depend upon application equipment, weather, and aircraft. Careful selection of spray nozzles is critical to achieve desired dose levels, since droplet size must be controlled. Many nozzles used for agricultural spraying are of low capacity and product fine a spray. A quarter-inch open pipe may be all that is necessary if the aircraft travels at 120 mph (104 knots) or more, since the air shear at these speeds will be sufficient to break the dispersant into the proper sized droplets. Optimal temperatures for application are between 33°F and 105°F.
Boat Spraying – FFT-Solution® may also be applied by workboats equipped with spray booms mounted on the stern of the vessel. (Mounting boom on the stern prevents any over spray from making contact with boat operators.) The preferred and most effective method of application from a workboat is to use a low-volume, low-pressure pump so the chemical can be applied undiluted. Standard agriculture spray equipment is designed to make dosage adjustments or provide different spray tips that effect dosage rates. Natural wave or boat wake action usually provides adequate mixing energy to disperse the oil. A typical agriculture spray boom can be mounted to the stern to get wide coverage. The booms on shrimp boats also can be retrofitted to cover a much wider path during applications. The manufacturer also recommends that in lieu of spray tips on the booms, spray tips be changed into solid tubing for injection of FFT-Solution® 3 to 5 feet below the water surface. This will get the thicker crude slicks injected faster and with better results. FFT-Solution® should be applied as droplets, not fogged or atomized.
2. Concentration/Application Rate: A treatment rate of about 2 to 10 U.S. gallons per acre, or dispersant to oil ratio of 1:50 to 1:10 is recommended. This rate varies depending on the type of oil, degree of weathering, temperature, and thickness of the slick.
3. Conditions for Use: FFT-Solution® can be applied to weathered oil as well as light, medium, or heavy oils. Early treatment even at reduced treatment rates, can also counter the foaming tendencies of the spilled oil in turbulent waters. FFT-Solution® can be used on any type oil spills in salt water.

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity:

Materials Tested	Species	LC50 (ppm)	
FFT-SOLUTION®	Menidia beryllina	5.34	96-hr
	Mysidopsis bahia	2.72	48-hr
No. 2 Fuel Oil	Menidia beryllina	40.80	96-hr

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	Mysidopsis bahia	5.19	48-hr
FFT-SOLUTION®	Menidia beryllina	5.14	96-hr
& No. 2 Fuel Oil (1:10)	Mysidopsis bahia	2.75	48-hr
Reference Toxicant (SDS)	Menidia beryllina	2.42	96-hr
	Mysidopsis bahia	6.97	48-hr

b. Effectiveness:
SWIRLING FLASK DISPERSANT EFFECTIVENESS TEST WITH SOUTH LOUISIANA (S/L) AND PRUDHOE BAY (P/B) CRUDE OIL

Oil	Effectiveness (%)
Prudhoe Bay Crude	49.97
South Louisiana Crude	48.87
Average of Prudhoe Bay and South Louisiana Crudes	49.42

VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point: 170°F
2. Pour Point: 23°F
3. Viscosity: 450 SUS @100°F
4. Specific Gravity: 1.0302 @60°F
5. pH: 9.96
6. Surface Active Agents: CONFIDENTIAL
7. Solvents: None
8. Additives: None
9. Solubility: Product is 100% soluble in water

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	ND
Cadmium	ND
Chromium	ND
Copper	ND
Lead	ND
Mercury	ND
Nickel	ND
Zinc	ND
Cyanide	ND
Chlorinated Hydrocarbons	ND

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TECHNICAL PRODUCT BULLETIN #D-18
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: APRIL 23, 2012
"MARINE D-BLUE CLEAN™"

I. NAME, BRAND, OR TRADEMARK
MARINE D-BLUE CLEAN™
Type of Product: Dispersant

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
AGS Solutions, Inc.
5647 Nunn Street
Houston, TX 77087
Phone: (713) 645-4933
Fax: (713) 645-4903
(Mrs. Linda Whiteley)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
AGS Solutions, Inc.
5647 Nunn Street
Houston, TX 77087
Phone: (713) 645-4933
Fax: (713) 645-4903
(Mrs. Linda Whiteley)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable
2. Ventilation: No special requirements. Drums and similar containers should be kept closed. Store in steel or plastic containers.
3. Skin and eye contact; protective clothing; treatment in case of contact: In case of contact with eyes, wash thoroughly with plenty of clean water. Seek medical attention if irritation develops. Rubber protective gloves should be used if prolonged use of product is anticipated. Goggles, long sleeve shirt, and rubber gloves are recommended during application.
4.a. Maximum storage temperature: 170°F
4.b. Minimum storage temperature: 32°F
4.c. Optimum storage temperature range: 40°F to 110°F
4.d. Temperatures of phase separations and chemical changes: Marine D-Blue Clean™ has a pour point of 30°F and may cause chemical changes at temperatures >110°F.

V. SHELF LIFE
Marine D-Blue Clean™ has a shelf life of ≥2 years, if unopened. Cleaner older than 24 months may still be viable. Ensure product is mixed well and then inspect to confirm the product is suitable for application. The product will not lose effectiveness unless the temperatures in >140°F.

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VI. RECOMMENDED APPLICATION PROCEDURES

1. Application Method: Sprayer, boat, aircraft. Marine D-Blue Clean™ is to be used to disperse petroleum-based products in salt water. It may be applied by any conventional methods such as aerial spraying or surface vessel spraying, to accommodate weather conditions. Marine D-Blue Clean™ is to be applied undiluted, for aerial spraying. Timely application provides optimal results. Spray concentrated on the oil slick in atomized form such as with a manual pump or a pump system using moderately coarse droplets rather than a fine mist.

2. Concentration/Application Rate: Marine D-Blue Clean™ can be applied with a variety of spraying equipment, depending upon the type and scale of the water to be cleaned. For heavy concentrations of crude oil spill or temperatures below 40°F, Marine D-Blue Clean™ should be used without dilution in neat form. A dispersant to oil ratio up to 1 part dispersant to 20 parts of oil is suggested. Dose rates may vary depending on type and amount of petroleum spilled, and other site specific conditions such as weather, temperatures and extent of oil slick.

3. Conditions for Use: The performance of Marine D-Blue Clean™ is not affected by water salinity. Marine D-Blue Clean™ is useful on oil spills in salt water. It is effective with crude and residual heavy oil spills.

VII. TOXICITY AND EFFECTIVENESS

a. Toxicity:

Material Tested	Species	LC50 (ppm)
MARINE D-BLUE CLEAN™	Menidia beryllina	18.00 96-hr
	Mysidopsis bahia	56.00 48-hr
No. 2 Fuel Oil	Menidia beryllina	18.00 96-hr
	Mysidopsis bahia	18.00 48-hr
MARINE D-BLUE CLEAN™ &	Menidia beryllina	32.00 96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	18.00 48-hr
Reference Toxicant (DSS)	Menidia beryllina	1.06 96-hr
	Mysidopsis bahia	0.97 48-hr

b. Effectiveness:

SWIRLING FLASK DISPERSANT EFFECTIVENESS TEST WITH SOUTH LOUISIANA (S/L) AND PRUDHOE BAY (P/B) CRUDE OIL

Oil	Effectiveness (%)
Prudhoe Bay Crude	45.00
South Louisiana Crude	55.59
Average of Prudhoe Bay and South Louisiana Crudes	50.30

VIII. MICROBIOLOGICAL ANALYSIS

NA

IX. PHYSICAL PROPERTIES

1. Flash Point: >200°F

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2. Pour Point: 30°F
3. Viscosity: 17.29 cSt @ 100°C
4. Specific Gravity: 1.035 @70°F
5. pH: 11.89
6. Surface Active Agents: CONFIDENTIAL
7. Solvents: CONFIDENTIAL
8. Additives: None
9. Solubility: Completely soluble

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<0.25
Cadmium	<0.005
Chromium	<0.08
Copper	<0.30
Lead	<0.015
Mercury	<0.0025
Nickel	<0.350
Zinc	<2.015
Cyanide	<0.050
Chlorinated Hydrocarbons	ND

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TECHNICAL PRODUCT BULLETIN #D-19
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: AUGUST 1, 2013
"COREXIT® EC9500B"

I. NAME, BRAND, OR TRADEMARK
COREXIT® EC9500B
Type of Product: Dispersant

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Nalco Environmental Solutions LLC
7705 Highway 90-A
Sugar Land, TX 77478
Product Management:
Office: (281) 263-7709
Mobile: (832) 851-5164
E-mail: debby.theriot@nalco.com
(Ms. Debby Theriot)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Nalco Environmental Solutions LLC
7705 Highway 90-A
Sugar Land, TX 77478
Product Management:
Office: (281) 263-7709
Mobile: (832) 851-5164
E-mail: debby.theriot@nalco.com
(Ms. Debby Theriot)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: DOT HazMat Classification – This product meets the criteria for classification as a Class 3 combustible liquid (49 CFR §173.120(b)(1)). However, it does not contain combustion, and, therefore, is not subject to the requirements for the Hazardous Materials Regulations (49 CFR §173.120(b)(3)).
2. Ventilation: Use with adequate ventilation equal to unobstructed outdoors in moderate breeze.
3. Skin and eye contact; protective clothing; treatment in case of contact: Do not get in eyes, on skin, or on clothing. In case of eye contact, rinse immediately with plenty of water and seek medical advice promptly. In case of skin contact, wash immediately with plenty of soap and water. If irritation persists or symptoms develop, seek medical attention. If clothing is contaminated, remove clothing and thoroughly wash the affected area. Do not take internally. In the event of oral ingestion, do not induce vomiting (can cause chemical pneumonia if aspirated into lungs). If conscious, wash out mouth and give water to drink. Get medical attention. If inhaled, remove to fresh air, treat symptomatically. Get medical attention.

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For open systems where contact is likely, wear Tyvek, chemical resistant gloves (e.g., nitrile), and chemical splash goggles. Where concentrations in air may be high (e.g., confined area), the use of a half face filter mask or air supplied breathing apparatus is recommended.
4.a. Maximum storage temperature: 170°F
4.b. Minimum storage temperature: 40°F
4.c. Optimum storage temperature range: 40°F to 100°F
4.d. Temperatures of phase separations and chemical changes: No phase changes or chemical reactions are anticipated in the minimum to maximum storage range. Below 40°F, surfactant may slowly precipitate out of the solution, but it will return back into solution when warmed.

V. SHELF LIFE
The shelf life of unopened drums of COREXIT® EC9500B is potentially unlimited when containers remain capped and sealed to prevent contamination and evaporation of solvents. Testing of COREXIT® EC9500B is recommended every five years to ensure it remains fit for its intended purpose.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method: For aerial spraying, apply COREXIT® EC9500B undiluted. Various fixed-wing aircraft or helicopters can be used for spraying over a large area, from an altitude of 30 to 50 feet or even higher, depending on the application equipment and aircraft. Typical application altitudes of 30 to 50 feet have been used, although higher altitudes may be effective under certain conditions. Actual altitudes will depend on the application equipment, weather and aircraft. Careful selection of spray nozzles is critical to achieve desired dose levels, since droplet size must be controlled. Many nozzles used for agricultural spraying are of low capacity and produce too fine a spray. Avoid nozzles that produce a mist or fog. No nozzle may be necessary if the aircraft travels at 120 mph (104 knots) or more, since the air shear at these speeds will be sufficient to break the chemical stream into appropriately-sized droplets.

For boat spraying (spray boom), COREXIT® EC9500B may also be applied by workboats equipped with spray booms mounted ahead of the bow wake or as far forward as possible. The most effective method of application from a workboat could be the use of a low-volume, low-pressure pump. Spray equipment designed to provide a diluted dispersant solution to the spray booms can also be used. Dispersant concentrations in the 5 to 10 percent range are recommended; lower concentrations may result in significant fall-off in effectiveness. COREXIT® EC9500B should be applied as droplets, not fogged or atomized. Natural wave or boat wake action usually provides adequate mixing energy to disperse the oil. Water from a fire hose can also be used for agitation of the treated slick.

For boat spraying (fire monitor), a slightly modified fire monitor may be useful for applying dispersant concentrates such as COREXIT® EC9500B from a boat. A screen cap is used on the nozzle of the monitor to obtain a uniform spray pattern with the proper sized droplet. Due to the volume output and the greater reach of the fire monitor, significantly more area can be covered in a shorter period of time than using conventional spray booms.

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System Calibration – To facilitate successful application and dosage control, calibrate spray systems at the temperatures anticipated. Application at sub-freezing temperatures may require larger nozzle, supply lines and orifices due to higher product viscosity.
2. Concentration/Application Rate: A treatment rate of about 2 to 10 U.S. gallons per acre, or a dispersant to oil ratio of 1:50 to 1:10 is recommended; lower concentrations may also be used. This rate varies depending on the type of oil, degree of weathering, temperature, and thickness of the slick.
3. Conditions for Use: COREXIT® EC9500B can be used on oil spills in salt waters and at any water temperature. The product can be used on most oils, weathered spills, and "chocolate mousse" (water-oil emulsions). Viscous oil may require higher dosage rates.

VII. TOXICITY AND EFFECTIVENESS

a. Toxicity

Material Tested	Species	LC50 (ppm)	
COREXIT® EC9500B	Menidia beryllina	29.13	96-hr
	Mysidopsis bahia	10.00	48-hr
No. 2 Fuel Oil	Menidia beryllina	7.54	96-hr
	Mysidopsis bahia	2.51	48-hr
COREXIT® EC9500B & No. 2 Fuel Oil (1:10)	Menidia beryllina	4.46	96-hr
	Mysidopsis bahia	2.13	48-hr
Reference Toxicant (SLS)	Menidia beryllina	12.19	96-hr
	Mysidopsis bahia	10.53	48-hr

b. Effectiveness:

SWIRLING FLASK DISPERSANT EFFECTIVENESS TEST WITH SOUTH LOUISIANA (S/L) AND PRUDHOE BAY (P/B) CRUDE OILS

Oil	Effectiveness (%)
Prudhoe Bay Crude	57.0
South Louisiana Crude	50.9
Average of Prudhoe Bay and South Louisiana Crudes	53.9

VIII. MICROBIOLOGICAL PROPERTIES

NA

IX. PHYSICAL PROPERTIES

1. Flash Point: 164°F
2. Pour Point: -44.0°F
3. Viscosity: 21.78 cSt at 40°C
4. Specific Gravity: 0.9626 at 15°C
5. pH: 6.29
6. Chemical Name and Percentage by Weight of the Total Formulation: CONFIDENTIAL
7. Surface Active Agents: CONFIDENTIAL
8. Solvents: CONFIDENTIAL
9. Additives: None
10. Solubility: Miscible

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X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	0.0108
Cadmium	<0.0020
Chromium	<0.0060
Copper	<0.0060
Lead	<0.0040
Mercury	<1.0000 (ug/L)
Nickel	<0.0100
Zinc	<0.0060
Cyanide	<0.0100
Chlorinated hydrocarbons	1.7600

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BULLETIN UPDATES IN BOLD

TECHNICAL PRODUCT BULLETIN #SW-2 (formerly #D-20)
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: JANUARY 7, 1985
REVISED LISTING DATE: AUGUST 21, 1995
"TOPSALL #30"
(aka, SUPERALL #38)

I. NAME, BRAND, OR TRADEMARK
TOPSALL #30 (aka, SUPERALL #38)
Type of Product: Surface Washing Agent (Oil and Petroleum Cleaning Agent)

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT

TOPSALL #30
Stutton North Corporation
P.O. Box 724
Mandeville, LA 70470
Phone: (985) 626-3900
Fax: (985) 674-0476
(Mr. David Anton)

SUPERALL #38
Superall Products LLP
P.O. Box 2954
Spring, TX 77383
Phone: (281) 351-4800
Fax: (281) 351-4855
E-mail: **info@superall.com**
Website: **www.superall.com**
(Mr. Sammy Roberts II)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS

TOPSALL #30
Stutton North Corporation
P.O. Box 724
Mandeville, LA 70470
Phone: (985) 626-3900
Fax: (985) 674-0476
(Mr. David Anton)

SUPERALL #38
Superall Environmental LLC
P.O. Box 2954
Spring, TX 77383
Phone: (281) 351-4800
Fax: (281) 351-4855
E-mail: **info@superall.com**
Website: **www.superall.com**
(Mr. Sammy Roberts II)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: TOPSALL #30 (aka, SUPERALL #38) is non-flammable.
2. Ventilation: Normal type household ventilation is adequate for handling and storage.
3. Skin and eye contact; protective clothing; treatment in case of contact:
In case of contact with eyes, wash thoroughly with large amounts of water. If irritation persists, seek medical attention. Use protective gloves for manual cleaning.
4.a. Maximum storage temperature: 120°F
4.b. Minimum storage temperature: 20°F

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4.c. Optimum storage temperature range: 40°F to 100°F
4.d. Temperatures of phase separations and chemical changes: TOPSALL #30 (aka, SUPERALL #38) has a pour point of 20°F and a boiling point of 212°F.

V. SHELF LIFE
TOPSALL #30 (aka, SUPERALL #38) has a shelf life of not less than two years.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method: For general use, apply by spray, mop, etc. Agitate severe spots and rinse thoroughly for a residue-free surface.
2. Concentration/Application Rate: Normal cleaning (rigs and platforms, bilges, decks, waterline scum, shop machinery and equipment) use 1 part TOPSALL #30 (aka, SUPERALL #38) to up to 20 parts water.

Heavy cleaning (degassing tanks and barges, engine rooms and soot, oil stained concrete, petroleum based drilling muds) use 1 part TOPSALL #30 (aka, SUPERALL #38) to up to 15 parts water.

Severe cleaning (Black magic, Bunker C, crude oil, holding tanks, grease traps) use 1 part TOPSALL #30 (aka, SUPERALL #38) to up to 5 parts water.

Steam cleaning use 1 part TOPSALL #30 (aka, SUPERALL #38) to up to 50 parts of water.
Pressure wash use 1 part TOPSALL #30 (aka, SUPERALL #38) to up to 30 parts water.
DO NOT USE UNDILUTED ON COMPOSITION FLOORS, WATER BASED PAINTED SURFACES, OR ALUMINUM.
3. Conditions for Use: Recommended for cleaning petroleum fractions from decks, platforms, bilges, rigs, and other seagoing equipment, as noted above.

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity:

Material Tested	Species	LC50 (ppm)
TOPSALL #30	Menidia beryllina	156.60 96-hr
(aka, SUPERALL #38)	Mysidopsis bahia	115.80 48-hr
No. 2 Fuel Oil	Menidia beryllina	6.40 96-hr
	Mysidopsis bahia	1.30 48-hr
TOPSALL #30	Menidia beryllina	4.60 96-hr
(aka, SUPERALL #38) &	Mysidopsis bahia	5.00 48-hr
No. 2 Fuel Oil (1:10)		
Reference Toxicant (DSS)	Menidia beryllina	1.60 96-hr
	Mysidopsis bahia	10.00 48-hr

NOTE: This toxicity data was derived using the concentrated product. See Section VI of this bulletin for information regarding the manufacturer's recommendations for concentrations and application rates for field use.
b. Effectiveness:
NA

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VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point: >212°F
2. Pour Point: 20°F
3. Viscosity: 30.53 SUS at 100°F
4. Specific Gravity: 1.06 at 70°F
5. pH: 12.6
6. Surface Active Agents: CONFIDENTIAL
7. Solvents: None
8. Additives: CONFIDENTIAL
9. Solubility: Miscible with water

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	0.05
Cadmium	<0.002
Chromium	0.031
Copper	0.25
Lead	0.02
Mercury	<0.01
Nickel	<0.01
Zinc	0.25
Cyanide	<0.1
Chlorinated Hydrocarbons	<0.1

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EPA HAS NOT RECEIVED UPDATED CONTACT INFORMATION FOR THIS PRODUCT: 3/23/16

TECHNICAL PRODUCT BULLETIN #SW-9
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: MAY 25, 1989
REVISED LISTING DATE: APRIL 16, 1996
"CN-110"

I. NAME, BRAND, OR TRADEMARK
CN-110
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER
Chemex, Inc.
107-B Balboa Drive
Broussard, LA 70518
E-mail: chemex@msn.com
(Mr. Gale Campbell)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Chemex, Inc.
107-B Balboa Drive
Broussard, LA 70518
E-mail: chemex@msn.com
(Mr. Gale Campbell)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable.
2. Ventilation: None needed.
3. Skin and eye contact; protective clothing; treatment in case of contact: As in handling any industrial chemical, the standard precautions of wearing chemical-resistant gloves and eye protection are recommended.
4.a. Maximum storage temperature: 120°F
4.b. Minimum storage temperature: -40°F
4.c. Optimum storage temperature range: 70°F-80°F
4.d. Temperatures of phase separations and chemical changes: Product does not lose effectiveness between temperatures of -40°F through 120°F, although it will become hazy if the temperature is sustained at less than 30°F over a 24-hour period.

V. SHELF LIFE:
CN-110 has a shelf life of 2 years.

VI. RECOMMENDED APPLICATION PROCEDURE

1. Application Method: There are no application restrictions. The preferred application method is by spraying and/or applying the product over the pollutant (primarily oil of any viscosity) on the stained area. Immediately, the product begins to work on breaking the physical bond between the oil and the object desired to be cleaned. The full effect of CN-110 on hard, porous and most non-porous materials usually takes a minimum of 30 minutes with a maximum retention time of 60 minutes. Then the freed oil is sprayed off with available water. The oil is then safely and effectively skimmed without dispersed oil remaining in the affected waters.
If "herding" or "corralling" a slick is desired, CN-110 can also be applied without the increased toxicities by dispersing minute particles of oil into the affected water stream.
2. Concentration/Application Rate: Application concentration for cleaning shorelines is approximately 1 gallon per 75-100 square feet of affected area. Depending on depths of shorelines, this amount will give a residual of much less than 1 ppm of CN-110 in the affected waters. This residual should be lower than the toxicity of the spilled oil.
If "herding" is desired, the application concentration should be in its original state while either spraying CN-110 around the slick or dropping small amounts from a plane. The resulting residual concentration in this case should be the same as shoreline cleaning or less.
If it is desired that CN-110 be added to a high-pressure cleaning system or steam, the dilution rate should be no lower than 10%. This will lower the CN-110 residual in the affected waters to the parts per billion range.
3. Conditions for Use: Preferably fresh water, at temperature of 32°F.

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity:

Material Tested	Species	LC50 (ppm)	
CN-110	Menidia beryllina	52,233.00	96-hr
	Mysidopsis bahia	12,262.00	48-hr
No. 2 Fuel Oil	Menidia beryllina	1.90	96-hr
	Mysidopsis bahia	0.90	48-hr
CN-110	Menidia beryllina	7.40	96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	1.19	48-hr
Reference Toxicant (DSS)	Menidia beryllina	1.80	96-hr
	Mysidopsis bahia	5.90	48-hr

NOTE: This toxicity data was derived using the concentrated product. See Section VI of this bulletin for information regarding the manufacturer's recommendations for concentrations and application rates for field use.
b. Effectiveness:
NA

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VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point: None
2. Pour Point: 30°F
3. Viscosity: 45.7 cSt at 78°F
4. Specific Gravity: 1.025
5. pH: 11.4
6. Surface Active Agents: Trace amounts of a sulfonated compound
7. Solvents: None
8. Additives: Complex silicate solution
9. Solubility: NA

X. ANALYSIS FOR HEAVY METALS, CYANIDES, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<0.22
Cadmium	<0.088
Chromium	0.109/0.131*
Copper	0.238/0.234*
Lead	<0.275
Mercury	<0.0001
Nickel	<0.11
Zinc	<0.374/<0.369*
Cyanide	0.25
Chlorinated Hydrocarbons	ND

* Duplicate Analyses

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TECHNICAL PRODUCT BULLETIN #SW-10 (formerly D-38)
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: JULY 21, 1989
REVISED LISTING DATE: SEPTEMBER 27, 1995
"COREXIT® EC9580A"
(formerly COREXIT 9580 SHORELINE CLEANER)

I. NAME, BRAND, OR TRADEMARK
COREXIT® EC9580A
Type of Product: Surface Washing Agent (hydrocarbon based)

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Nalco Environmental Solutions LLC
7705 Highway 90-A
Sugar Land, TX 77478
Product Management:
Office: (281) 263-7709
Mobile: (832) 851-5164
E-mail: debby.theriot@nalco.com
(Ms. Debby Theriot)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Nalco Environmental Solutions LLC
7705 Highway 90-A
Sugar Land, TX 77478
Product Management:
Office: (281) 263-7709
Mobile: (832) 851-5164
E-mail: debby.theriot@nalco.com
(Ms. Debby Theriot)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: IMO nonflammable; DOT combustible
2. Ventilation: Use with ventilation equal to unobstructed outdoors in moderate breeze.
3. Skin and eye contact; protective clothing; treatment in case of contact: Avoid contact with eyes, skin and clothing. Wash skin with soap and water. Flush eyes with plenty of water until irritation subsides. Remove to fresh air.
4.a. Maximum storage temperature: 170°F
4.b. Minimum storage temperature: -30°F
4.c. Optimum storage temperature range: 40°F-100°F
4.d. Temperatures of phase separations and chemical changes: None

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V. SHELF LIFE
The shelf life of unopened drums of COREXIT® EC9580A is unlimited.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method: COREXIT® EC9580A contains a balanced formula of specifically selected biodegradable surfactants in a de-aromatized hydrocarbon solvent system. COREXIT® EC9580A has a very low degree of toxicity to marine and shoreline organisms.

Shorelines, Mangroves, and Seagrasses - COREXIT® EC9580A is sprayed directly on the oiled rocky shorelines, mangroves or seagrasses full strength as supplied. After a soak time of zero to thirty minutes, rinse the cleaner and the oil released from the shoreline surface into the water where it can be readily recovered by conventional means such as skimmers or absorbents. The soak time may vary with temperature, oil density and degree of weathering.
2. Concentration/Application Rate: The recommended dosage is approximately 1 gallon per 100 square feet but this can vary depending on the amount of weathering and oiling. The product should be applied full strength as supplied. Since it is hydrocarbon-based, the product should not be diluted with water during application as this will greatly reduce effectiveness.
3. Conditions for Use: COREXIT® EC9580A is useful on shorelines in fresh or salt water. It is effective on all types of oil including heavily weathered and emulsified oil ("chocolate mousse") containing up to 50 percent water.

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity:

Material Tested	Species	LC50 (ppm)
COREXIT® EC9580A	Menidia beryllina	86.88 96-hr
	Mysidopsis bahia	31.96 48-hr
No. 2 Fuel Oil	Menidia beryllina	10.72 96-hr
	Mysidopsis bahia	16.12 48-hr
COREXIT® EC9580A &	Menidia beryllina	13.20 96-hr
No.2 Fuel Oil (1:10)	Mysidopsis bahia	9.06 48-hr
Reference Toxicant (DSS)	Menidia beryllina	7.02 96-hr
	Mysidopsis bahia	9.82 48-hr

NOTE: This toxicity data was derived using the concentrated product. See Section VI of this bulletin for information regarding the manufacturer's recommendations for concentrations and application rates for field use.

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VIII. MICROBIOLOGICAL ANALYSISNA

IX. PHYSICAL PROPERTIES
1. Flash Point: 174°F
2. Pour Point: -65°F
3. Viscosity: 8 cSt at 104°F, 28 cSt at 32°F
4. Specific Gravity: 0.810 at 60°F
5. pH: Not Applicable
6. Surface Active Agents: CONFIDENTIAL
7. Solvents: De-aromatized Hydrocarbon
8. Additives: None
9. Solubility: Not Applicable

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<0.06
Cadmium	<0.002
Chromium	0.003
Copper	<0.001
Lead	<0.009
Mercury	<0.0002
Nickel	0.01
Zinc	0.041
Cyanide	<0.05
Chlorinated Hydrocarbons	ND

ED_001324_00006005-00081

TECHNICAL PRODUCT BULLETIN #SW-11 (formerly D-40)USEPA, OEM
REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: JUNE 26, 1989
REMOVAL DATE: SEPTEMBER 15, 1994
RELISTING DATE: JULY 07, 2010
"DE-SOLV-IT INDUSTRIAL FORMULA"

I. NAME, BRAND, OR TRADEMARK
DE-SOLV-IT INDUSTRIAL FORMULA
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Orange-Sol Blending and Packaging
1400 N Fiesta Boulevard
Gilbert, AZ 85233
Phone: (800) 877-7771
Fax: (480) 497-0444
E-mail: albert.farnsworth@orange-sol.com
Website: www.orange-sol.com
(Mr. Albert Farnsworth or
Mr. Jack Farnsworth at (480) 319-0141)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Bell Tech
Master Distributor
P.O. Box 2198
Valdez, AK 99686
Phone: (907) 602-0111
Fax: (907) 835-4535
E-mail: bellenterprise@cvinternet.net
(Mr. Randy Bell)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable (DOT: Not regulated unless shipped by land in a package having a capacity of 3,500 gallons or more). Combustible Class IIIA per OSHA, 29 CFR 1910.106
2. Ventilation: No special requirements
3. Skin and eye contact; protective clothing; treatment in case of contact: No special equipment of clothing required; however, goggles are recommended where splash is potential. If eye or skin irritation occurs, flush with ample fresh water.
4.a. Maximum storage temperature: 120°F continuous, 140°F up to 5 days
4.b. Minimum storage temperature: -20°F
4.c. Optimum storage temperature range: 0°F to 120°F
4.d. Temperatures of phase separations and chemical changes: Stable

V. SHELF LIFE
Two (2) years in sealed polydrums or totes (as delivered).

VI. RECOMMENDED APPLICATION PROCEDURES
1. Application Method: DE-SOLV-IT (DSI) is to be used in neat form. DSI works just as well with fresh or salt water. This product works well with all types of oils. Product can be used on oil-contaminated beaches.
2. Concentration/Application Rate: Use DSI directly on the contaminated area, or up to approximately a 1:10 dilution ratio (product:water). Lighter oils will require a 1:10 to 1:30 product to water dilution ratio. Warmer waters (greater than 78°F) and/or good agitation during application will require less product. Response personnel can determine best method to collect clean up residue. Clean up residue should be collected and disposed of in accordance to local, state, and federal regulations.
3. Conditions for Use: Effective in salt or fresh water, with no limitations as to usage within optimum temperature parameters (application may be made at or above 35°F, with optimum above 48°F).

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity:

Material Tested	Species	LC50 (ppm)
DE-SOLV-IT	Menidia beryllina	37.71 96-hr
	Mysidopsis bahia	4.57 48-hr
No. 2 Fuel Oil	Menidia beryllina	3.76 96-hr
	Mysidopsis bahia	2.04 48-hr
DE-SOLV-IT &	Menidia beryllina	9.40 96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	1.68 48-hr
Reference Toxicant (SLS)	Menidia beryllina	12.25 96-hr
	Mysidopsis bahia	11.71 48-hr

b. Effectiveness: NA

VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point: 145°F
2. Pour Point: -84°F
3. Viscosity: 1.8 cSt @ 40°C
4. Specific Gravity: 1.8345 @60°F
5. pH: 6.6
6. Surface Active Agents: Nonionic PROPRIETARY Surfactants
7. Solvents: PROPRIETARY
8. Additives: None
9. Solubility: Miscible in oil and solvents

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X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<0.010
Cadmium	<0.005
Chromium	<0.015
Copper	<0.015
Lead	<0.010
Mercury	<1 µg/L
Nickel	<0.025
Zinc	0.0.15
Cyanide	<0.010
Chlorinated Hydrocarbons	<6.00

ED_001324_00006005-00084

BULLETIN UPDATES IN BOLD

TECHNICAL PRODUCT BULLETIN #SW-12 (formerly D-41)
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: AUGUST 11, 1989
REVISED LISTING DATE: NOVEMBER 2, 1995
"PREMIER 99"

I. NAME, BRAND, OR TRADEMARK
PREMIER 99
Type of Product: Surface Washing Agent (Water Based)

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Gold Coast Chemical Products
2357 Stirling Road
Dania Beach, FL 33312
Phone: (954) 893-0044
Fax: (954) 893-8884
E-mail: noslime@goldcoastchemical.com
(Mr. Eli Finkelberg or **Ms. Maria Morris**)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Gold Coast Chemical Products
2357 Stirling Road
Dania Beach, FL 33312
Phone: (954) 893-0044
Fax: (954) 893-8884
E-mail: noslime@goldcoastchemical.com
(Mr. Eli Finkelberg or **Ms. Maria Morris**)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: None
2. Ventilation: Adequate ventilation is needed if in closed environment.
3. Skin and eye contact; protective clothing; treatment in case of contact: Skin and eye contact: Detergents will defat skin and eyes. May cause irritation. Protective clothing: Use protective gloves for manual cleaning and splash goggles. Treatment in case of contact: If splashed on skin, wash with copious amounts of water. If ingested, drink diluted vinegar or lemon juice. Get medical attention.
4.a. Maximum storage temperature: 125°F
4.b. Minimum storage temperature: 0°F
4.c. Optimum storage temperature range: 0°F - 75°F
Avoid freezing the product. If material freezes and separation is experienced, it should be warmed and mixed together.

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4.d. Temperatures of phase separations and chemical changes: No separation expected down to 20°F.

V. SHELF LIFE
Unopened material – at least 5 years is expected.
Opened material – at least 2 years is expected.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method: Apply by spray, mop, or pressure washer, etc. Agitate severe spots. Rinse thoroughly for residue free surface.
2. Concentration/Application Rate:
Normal Cleaning – 1 part PREMIER 99 to up to 20 parts water.
Heavy Cleaning – 1 part PREMIER 99 to up to 15 parts water.
Severe Cleaning – 1 part PREMIER 99 to up to 5 parts water.
Steam Cleaning – 1 part PREMIER 99 to up to 50 parts water.
Pressure Wash – 1 part PREMIER 99 to up to 30 parts water.
3. Conditions for Use: Water salinity, water temperature, types and ages of pollutants are not determined.

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity:

Material Tested	Species	LC50 (ppm)
PREMIER 99	Menidia beryllina	565.70 96-hr
	Mysidopsis bahia	94.70 48-hr
No. 2 Fuel Oil	Menidia beryllina	10.20 96-hr
	Mysidopsis bahia	2.10 48-hr
PREMIER 99 &	Menidia beryllina	8.20 96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	2.50 48-hr
Reference Toxicant (DSS)	Menidia beryllina	1.55 96-hr
	Mysidopsis bahia	7.96 48-hr

NOTE: This toxicity data was derived using the concentrated product. See Section VI of this bulletin for information regarding the manufacturer's recommendations for concentrations and application rates for field use.
b. Effectiveness:
NA

VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point: 160°F
2. Pour Point: NA
3. Viscosity: 15 cps
4. Specific Gravity: 1.01

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5. pH: 10 - 11.5
6. Surface Active Agents: Active 8000* - Purity Chemical <10%
7. Solvents: <5%
8. Additives: <5%
9. Solubility: Complete in Water
*NOTE: Particular chemical composition of Active 8000 is considered by Purity Chemical as a trade secret. More detailed information can be given by Purity Chemical – Mr. Jim Palmer, 1800 NW 70th Avenue, Miami, FL 33126, 1-800-654-0235, FAX (305) 592-2601.

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	< 0.01
Cadmium	< 0.0005
Chromium	< 0.1
Copper	< 0.1
Lead	< 0.005
Mercury	< 0.001
Nickel	< 0.5
Zinc	< 0.1
Cyanide	< 0.005
Chlorinated Hydrocarbons	ND

ED_001324_00006005-00087

TECHNICAL PRODUCT BULLETIN #SW-15 (formerly D-46)
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: APRIL 23, 1990
REVISED LISTING DATE: AUGUST 30, 1995
"SIMPLE GREEN®"

I. NAME, BRAND, OR TRADEMARK
SIMPLE GREEN®
Type of Product: Surface Washing Agent (Water Based)

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Sunshine Makers, Inc.
15922 Pacific Coast Highway
Huntington Beach, CA 92649
Phone: (800) 228-0709
Phone: (562) 795-6000
Fax: (562) 592-3830
E-mail: CChapin@simplegreen.com
(Ms. Carol Chapin)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Sunshine Makers, Inc.
15922 Pacific Coast Highway
Huntington Beach, CA 92649
Phone: (800) 228-0709
Phone: (562) 795-6000
Fax: (562) 592-3830
E-mail: CChapin@simplegreen.com
(Ms. Carol Chapin)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable.
2. Ventilation: Not required.
3. Skin and eye contact; protective clothing; treatment in case of contact: SIMPLE GREEN® is safe for use on skin and will not cause irritation in the majority of users. Avoid contact with eyes, irritation may result. Wear splash goggles or full face-shield and have eye washing equipment available in areas where potential is high for eye contact. No special precautions or additional protective equipment are required during handling or use. SIMPLE GREEN® is provided with a Material Safety Data Sheet (No. 1002).
4.a. Maximum storage temperature: 140°F
4.b. Minimum storage temperature: 34°F
4.c. Optimum storage temperature range: >32°F and <140°F
4.d. Temperatures of phase separations and chemical changes: SIMPLE GREEN® is stable and phase separation will not occur at temperatures within the above storage range.

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V. SHELF LIFE
SIMPLE GREEN® has an unlimited shelf life.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method: Spray on oily surface.
2. Concentration/Application Rate: For open water, spray concentrated product directly on surface of oil at a ratio of 4 parts of oil to 1 part of SIMPLE GREEN®. Site conditions may warrant alternative procedures to maintain effectiveness.
3. Conditions for Use: Equally effective in fresh water, estuarine, and marine environments at all temperatures. SIMPLE GREEN® contains no known EPA Priority Pollutants.

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity:

Material Tested	Species	LC50 (ppm)
SIMPLE GREEN®	Menidia beryllina	27.90 96-hr
	Mysidopsis bahia	77.60 48-hr
No. 2 Fuel Oil	Menidia beryllina	6.50 96-hr
	Mysidopsis bahia	3.70 48-hr
SIMPLE GREEN® &	Menidia beryllina	8.30 96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	4.40 48-hr
Reference Toxicant (DSS)	Menidia beryllina	7.80 96-hr
	Mysidopsis bahia	21.20 48-hr

NOTE: This toxicity data was derived using the concentrated product. See Section VI of this bulletin for information regarding the manufacturer's recommendations for concentrations and application rates for field use.

VIII. MICROBIOLOGICAL ANALYSIS
SIMPLE GREEN® contains no microorganisms, enzymes, or biological material.

IX. PHYSICAL PROPERTIES
1. Flash Point: >200°F
2. Pour Point: None
3. Viscosity: 2.0 Centistokes at 78°F
4. Specific Gravity: 1.0257 g/ml at 72°F
5. pH: 9.5
6. Surface Active Agents: CONFIDENTIAL
7. Solvents: CONFIDENTIAL
8. Additives: CONFIDENTIAL
9. Solubility: Infinitely miscible.
(Increasing salt concentrations in marine ecosystems will lead to complexes with SIMPLE GREEN® that may become visible at ratios above one part SIMPLE GREEN® to 99 parts seawater.)

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X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<5.0000
Cadmium	<0.0233
Chromium	0.1150
Copper	<0.7500
Lead	0.0776
Mercury	<0.0125
Nickel	<2.3000
Zinc	<4.4000
Cyanide	<1.0000
Chlorinated Hydrocarbons	<1.0

ED_001324_00006005-00090

TECHNICAL PRODUCT BULLETIN #SW-16 (formerly D-52)
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: JULY 8, 1991
REVISED LISTING DATE: JUNE 14, 1995
"AQUACLEAN"

I. NAME, BRAND, OR TRADEMARK
AQUACLEAN
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Madison Chemical Company, Inc.
3141 Clifty Drive
Madison, IN 47250
Phone: (812) 273-6000
Fax: (812) 273-6002
E-mail: cara.cyrus@madchem.com
(Ms. Cara Cyrus)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Madison Chemical Company, Inc.
3141 Clifty Drive
Madison, IN 47250
Phone: (812) 273-6000
Fax: (812) 273-6002
E-mail: cara.cyrus@madchem.com
(Ms. Cara Cyrus)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable.
2. Ventilation: Handle in a well-ventilated space. Local exhaust is recommended if TLV's are exceeded.
3. Skin and eye contact; protective clothing; treatment in case of contact: Avoid eye and skin contact. In case of such contact, immediately flush with large amount of cool water for at least 15 minutes, and call a physician. Wear protective eye goggles, impermeable protective gloves, and protective clothing when handling the product. Wash contaminated protective equipment (including clothing, shoes, eye goggles, gloves, etc.) thoroughly in soap and water, rinse repeatedly in clean water and dry before reuse. Avoid ingestion, breathing dusts, mists, or fumes. In case of ingestion, induce vomiting, give water and call a physician. In case of inhalation, move the affected person to fresh air, and call a physician.
4.a. Maximum storage temperature: 140°F
4.b. Minimum storage temperature: 50°F
4.c. Optimum storage temperature range: >50°F to <104°F

4.d. Temperatures of phase separations and chemical changes: <50°F, >104°F

V. SHELF LIFE
18 months if stored between 50°F and 104°F, and away from acids.

VI. RECOMMENDED APPLICATION PROCEDURES
1. Application Method: AQUACLEAN may be introduced with a pressure spray to cover the affected area, after the appropriate dilution or concentration is prepared. After application, agitate spill area with water using a solid stream flow.
For manual cleaning with AQUACLEAN, follow instructions in the product data sheet provided by the manufacturer.
2. Concentration/Application Rate: For small spills, dilute 3 to 1 with water and apply as above. For large spills, prepare a 33% solution of AQUACLEAN and apply through a foam eductor at 6% setting with approximately 90 gallons per minute flow at the nozzle.
For spills on shorelines and beaches, dilute AQUACLEAN 50% with fresh water and apply using a pressure spray to cover the entire contaminated area. Then rinse with fresh water.
3. Conditions for Use: Water temperature should be above 41°F.

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity:

Material tested	Species	LC50 (ppm)
AQUACLEAN	Menidia beryllina	70.7 96-hr
	Mysidopsis bahia	32.7 48-hr
No. 2 Fuel Oil	Menidia beryllina	4.4 96-hr
	Mysidopsis bahia	1.8 48-hr
AQUACLEAN and	Menidia beryllina	6.5 96-hr
No. 2 Fuel (1:10)	Mysidopsis bahia	2.1 48-hr
Reference Toxicant (DSS)	Menidia beryllina	1.4 96-hr
	Mysidopsis bahia	4.9 48-hr

NOTE: This toxicity data was derived using the concentrated product. See Section VI of this bulletin for information regarding the manufacturer's recommendations for concentrations and application rates for field use.
b. Effectiveness:
NA

VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point: None detected
2. Pour Point: -20°F
3. Viscosity: 16.5 cP at 25°C (77°F)
4. Specific Gravity: 1.06 at 25°C (77°F)
5. pH: 11.8 (at full strength)
6. Chemical Name and Percentage by Weight of the Total Formulation: CONFIDENTIAL

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7. Surface Active Agents: Anionic and nonionic synthetic surfactants.
8. Solvents: CONFIDENTIAL
9. Additives: CONFIDENTIAL
10. Solubility: Completely soluble

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	1.10
Cadmium	0.16
Chromium	0.20
Copper	0.66
Lead	1.83
Mercury	<0.01
Nickel	0.80
Zinc	0.29
Cyanide	0.06
Chlorinated hydrocarbons	4.20

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BULLETIN UPDATES IN BOLD

TECHNICAL PRODUCT BULLETIN #SW-18
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: OCTOBER 23, 1996
"NATURE'S WAY HS"
(aka, MARINECLEAN, MICRO CLEAN, NATURE'S WAY PC, POWERCLEAN)

I. NAME, BRAND, OR TRADEMARK
NATURE'S WAY HS
(aka, MARINECLEAN, MICRO CLEAN, NATURE'S WAY PC, POWERCLEAN)
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER
Integra Environmental, Ltd.
5825 Centralcrest
Houston, TX 77092
Phone: (713) 680-1234
Fax: (713) 680-1608
E-mail: info@integraenvironmental.com
Website: www.integraenvironmental.com
(Ms. Cathy Kaiser)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Integra Environmental, Ltd.
5825 Centralcrest
Houston, TX 77092
Phone: (713) 680-1234
Fax: (713) 680-1608
E-mail: info@integraenvironmental.com
Website: www.integraenvironmental.com
(Ms. Cathy Kaiser)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable.
2. Ventilation: No special precautions are required, but in case of inhalation, move person to fresh air.
3. Skin and eye contact; protective clothing; treatment in case of contact: Flush contaminated skin with plenty of water for at least 15 minutes. Consult a physician if irritation develops. Protective gloves are recommended for extended or prolonged contact, (e.g., immersing hands). Tight fitting safety goggles are recommended for handling product in concentrated form, especially if contacts are worn.
4.a. Maximum storage temperature: 130°F
4.b. Minimum storage temperature: 32°F

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4.c. Optimum storage temperature: 90°F
4.d. Temperatures of phase separations and chemical changes: NA

V. SHELF LIFE
NATURE'S WAY HS has a five year shelf life.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method: NATURE'S WAY HS may be applied by spraying, pouring, dispensing equipment, or by manual or automatic scrubber machines. Do not mix the product with any other cleaner nor allow any other cleaners to contact surfaces where HS is being used. Hot water should never be used.
2. Concentration/Application Rate: Apply NATURE'S WAY HS full strength (undiluted) to surface area with sprayer, concentrating on areas with heaviest contamination first. To speed clean-up of shorelines and beaches, pressure spray into cracks and crevices prior to scrubbing. Agitate and scrub well using power brushes, hand brushes, brooms or mops. If possible, allow the scrubbed solution to remain on the surface for at least 15 minutes. If allowed to soak overnight, the next morning the treated surface must be re-wet with water, reagitated, and rinsed. Additional product will not be necessary at that time.
3. Conditions for Use: For heavily contaminated surfaces, NATURE'S WAY HS should always be used full strength. For moderate accumulations HS may be diluted to as little as 2 oz. per gallon of cool water for cleaning light contamination. For average contamination, a dilution of 12 oz. per gallon is recommended (1 part NATURE'S WAY HS to 10 parts water). For light use, 4 to 6 oz. of product per gallon water will be sufficient.

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity

Material Tested	Species	LC50 (ppm)
NATURE'S WAY HS	Menidia beryllina	152.14 96-hr
	Mysidopsis bahia	193.00 48-hr
No. 2 Fuel Oil	Menidia beryllina	3.15 96-hr
	Mysidopsis bahia	0.96 48-hr
NATURE'S WAY HS	Menidia beryllina	3.91 96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	1.07 48-hr
Reference Toxicant (DSS)	Menidia beryllina	- 96-hr
	Mysidopsis bahia	5.71 48-hr

NOTE: This toxicity data was derived using the concentrated product. See Section VI of this bulletin for information regarding the manufacturer's recommendations for concentrations and application rates for field use.
a. Effectiveness:
NA

VIII. MICROBIOLOGICAL ANALYSIS
NA

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IX. PHYSICAL PROPERTIES

1. Flash Point: NA
2. Pour Point: Flowable at all temperatures above freezing
3. Viscosity: <100 CPS
4. Specific Gravity: 1.01
5. pH: 8 - 9.5
6. Surface Active Agents: CONFIDENTIAL
7. Solvents: CONFIDENTIAL
8. Additives: CONFIDENTIAL
9. Solubility: NA

X. ANALYSIS FOR HEAVY METALS AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<0.003
Cadmium	<0.005
Chromium	<0.010
Copper	0.020
Lead	<0.002
Mercury	<0.0002
Nickel	<0.030
Zinc	0.260
Cyanide	<0.020
Chlorinated Hydrocarbons	ND

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BULLETIN UPDATES IN BOLD

TECHNICAL PRODUCT BULLETIN #SW-19
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: JANUARY 30, 1997
"CYTOSOL"

I. NAME, BRAND, OR TRADEMARK
CYTOSOL
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER
CytoCulture International, Inc.
249 Tewksbury Avenue
Point Richmond, CA 94801-3829
Phone: (510) 233-0102
Fax: (510) 233-3777
Emergency Mobile: (510) 233-0102
E-mail First Response: rvwedel@gmail.com
E-mail: cytoculture@gmail.com
Website: www.cytosolbiosolvent.com
Website: www.cytoculture.com
(Dr. Randall von Wedel)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
CytoCulture International, Inc.
249 Tewksbury Avenue
Point Richmond, CA 94801-3829
Phone: (510) 233-0102
Fax: (510) 233-3777
Emergency Mobile: (510) 233-0102
E-mail First Response: rvwedel@gmail.com
E-mail: cytoculture@gmail.com
Website: www.cytosolbiosolvent.com
Website: www.cytoculture.com
(Dr. Randall von Wedel)

Foss Environmental, Inc.
7440 West Marginal
Seattle, WA 98108-4141
Phone: (206) 768-1450
Fax: (206) 767-3460
(Mr. Larry Pintler)

Advanced Cleanup Technologies, Inc.
20928 Lamberton Avenue
Carson, CA 90810
Phone: (800) 334-2284
Fax: (310) 763-9076
(Mr. Walt Dorn)

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IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION

1. Flammability: Non-flammable. However, keep the product away from heat and avoid contact with strong oxidizing agents. Ensure proper disposal of product-saturated absorbents, rags, and combustible materials to avoid the possibility of spontaneous combustion.

2. Ventilation: Product is not volatile. However, in the event of aerosol inhalation, immediately move victim to fresh air. If victim has stopped breathing, give artificial respiration, preferably by mouth to mouth. Get medical attention immediately.

3. Skin and eye contact; protective clothing; treatment in case of contact: The CYTOSOL contains no volatile hydrocarbons or petroleum constituents. However, as a precautionary measure, wear gloves and safety glasses meeting the specifications of ANSI Standard Z87.1. Avoid breathing aerosols. Avoid prolonged contact with skin.

4.a. Maximum storage temperature: 110°F

4.b. Minimum storage temperature: 39°F

4.c. Optimum storage temperature: 55°F

4.d. Temperatures of phase separations and chemical changes: Avoid freezing. At temperatures below the cloud point (43°F), the product may become cloudy, but will return to normal upon warming, with no effect on performance. Store product in airtight containers, if possible, without excessive exposure to moisture.

V. SHELF LIFE

Closed container: 10 years in a dry environment.

Open container: 1 year in a warm, humid environment.

The product does not deteriorate appreciably over time, but will grow bacteria if water condensation accumulates in the container.

VI. RECOMMENDED APPLICATION PROCEDURE

1. Application Method: The CYTOSOL is applied to oiled shorelines to extract and recover weathered petroleum by flotation with passive water deluges from header pipes or manual spraying. Remaining residual hydrocarbons are biodegraded, either passively by intrinsic bioremediation, or aggressively by enhancing the process with controlled amounts of nutrients and/or acclimated cultures of bacteria cultured from the site, when approved by local, state and federal agencies.

The CYTOSOL process is most suitable for the treatment of heavily oiled shorelines that do not respond well to conventional treatments, or that are considered too sensitive for mechanical/pressure wash strategies. Prior to the application of CYTOSOL, collection booms, oil skimmers, sorbent pads, or other appropriate containment and collection mechanisms must be deployed and operational.

2. Concentration/Application Rate: CYTOSOL may be applied with a variety of spraying or washing equipment, depending upon the scale and type of shoreline to be cleaned. The product is to be used only neat and undiluted, for direct application to spilled oil. For large beach areas, CYTOSOL can be sprayed from water trucks or work boats equipped with pumps, hoses, and nozzles to deliver the product as an aerial spray. In smaller applications, CYTOSOL may be applied with hand sprayers or portable pumps to spray the product directly onto oiled surfaces.

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Dose rates will vary with the type and amount of petroleum spilled, the extent of weathering, and other site specific conditions, including temperature, porosity of shoreline, and residence time available to let the product contact the oil. In general, the ratio of applied CYTOSOL to crude oil is between 0.5:1 and 1:1. The quantity of CYTOSOL applied should be approximately equivalent to the quantity of petroleum accumulated on the shoreline, or as required to dissolve and remove weathered oil. After application, the product should be allowed to penetrate and dissolve the weathered petroleum for at least one hour, preferably longer. Cold weather applications will require more contact time before initiating recovery. In tidal areas, it is advisable to apply the CYTOSOL as the tide is ebbing (receding) to maximize contact time. Trapped oil may continue to be released for several days, requiring that containment devices be left in place.

3. Conditions for Use: The following shoreline types are appropriate for the use of CYTOSOL: Coarse sand beaches where petroleum has penetrated into sand; marsh areas and vegetated wetlands where oil has coated plants and become trapped; concrete bulkheads, rip rap and piers that may have trapped oil; oiled pilings; gravel or cobble shorelines and rocky shores, where oil has become trapped in pockets; and, public beaches, fisheries, hatcheries, river banks, and other sensitive or high impact sites. The CYTOSOL has been fielded tested successfully for removing oil from mussel beds and intertidal zones, pilings and concrete rip rap. The CYTOSOL also proved effective in facilitating the removal of oil from the banks and vegetation along an oiled creek.

VII. TOXICITY AND EFFECTIVENESS

a. Toxicity

Material Tested	Species	LC50 (ppm)
CYTOSOL	Menidia beryllina	738.0 96-hr
	Mysidopsis bahia	124.0 48-hr
No. 2 Fuel Oil	Menidia beryllina	38.9 96-hr
	Mysidopsis bahia	5.9 48-hr
CYTOSOL &	Menidia beryllina	24.3 96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	7.0 48-hr
Reference Toxicant (DSS)	Menidia beryllina	13.8 96-hr
	Mysidopsis bahia	22.2 48-hr

NOTE: This toxicity data was derived with the EPA protocols for dispersants using a blender to emulsify the product into the water for testing organisms. The CYTOSOL emulsion created microdroplets of product which may have had direct physical effects on the test larvae. Since the solubility of the product in water is so low (14 ppm or less), it is probable that the observed effects on the test organisms was caused by larvae having direct contact with droplets of product rather than by a true chemical toxicity from the trace amount of dissolved product. In practice, the CYTOSOL would not be emulsified to any great extent during application. See Section VI of this bulletin for information regarding the manufacturer's recommendations for concentrations and application rates for field use.

b. Effectiveness:

NA

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VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point: 360°F
2. Pour Point: 10°F
3. Viscosity: 4.15 CST @ 104°F
4. Specific Gravity: 0.8877 @ 60°F
5. pH: Neutral
6. Surface Active Agents: None
7. Solvents: No Petroleum Distillates
8. Additives: CONFIDENTIAL
9. Solubility: 14 ppm in fresh water, 7 ppm in sea water

X. ANALYSIS FOR HEAVY METALS AND CHLORINATED HYDROCARBONS

Compound	Concentration
Arsenic	ND
Cadmium	ND
Chromium	ND
Copper	ND
Lead	ND
Mercury	ND
Nickel	ND
Zinc	ND
Cyanide	ND
Chlorinated Hydrocarbons	ND

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TECHNICAL PRODUCT BULLETIN #SW-20USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: MARCH 21, 1997
"BIOSOLVE® HYDROCARBON MITIGATION™ AGENT"

I. NAME, BRAND, OR TRADEMARK
BIOSOLVE® HYDROCARBON MITIGATION™ AGENT
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER
The BioSolve® Company
329 Massachusetts Avenue
Lexington, MA 02420
Phone: (781) 482-7900 or (800) 225-3909
Fax: (781) 482-7909
Website: www.biosolve.com
E-mail: info@biosolve.com
(Mr. Karl Loos or Mr. James Edgerly)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
The BioSolve® Company
329 Massachusetts Avenue
Lexington, MA 02420
Phone: (781) 482-7900 or (800) 225-3909
Fax: (781) 482-7909
Website: www.biosolve.com
E-mail: info@biosolve.com
(Mr. Karl Loos or Mr. James Edgerly)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable
2. Ventilation: Normal
3.Skin and eye contact; protective clothing; treatment in case of contact: Flush contaminated eyes thoroughly with water for 15 minutes, and get medical attention. Remove contaminated clothing, wash exposed area with soap and water, wash clothing before reuse. Get medical attention if irritation develops. Get medical attention for ingestion. No medical attention is necessary with inhalation. There are no special storage requirements or special handling precautions; use good normal hygiene.
4.a. Maximum storage temperature: 120°F (50°C)
4.b. Minimum storage temperature: 35°F (1.5°C)
4.c. Optimum storage temperature: 60°F (15°C)
4.d. Temperatures of phase separations and chemical changes: NA

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V. SHELF LIFE
BIOSOLVE® has a 10+ year shelf life if unopened.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method: Dilute or use eductors to specified rate and apply through fire hose, power washers, steam powered units, or chemical boom sprayers with nozzles that produce a shearing action. Special nozzles to apply the solution as droplets are not necessary. For shoreline cleanup involving heavy or weathered crude, presoak to a 6% solution may be necessary.
2. Concentration/Application Rate: BIOSOLVE® is a highly concentrated product and must be diluted with water before use. Dilution ratios vary depending on site specific conditions. Dilution ratio's normally run at 6%, 3%, or 1%. For heavy, mousse, or weathered oil, a 3% to 6% solution should be applied. For light or refined products, apply at 2% to 3%. For sheens, apply at .5 to 1%. Since testing shows that BIOSOLVE® quickly emulsifies weathered crude, it is not critical to apply immediately after a spill occurs; impact considerations can be fully considered prior to action taken.

Surface Washing Applications: BIOSOLVE® applied through power washers in light dilution is very effective in attaining the removal of oils from rock, cobblestone, shorelines, and sea walls. In marsh or wetland applications, BIOSOLVE® prevents the oil from clinging to grasses and mangroves.

Rigs and Platforms: BIOSOLVE® is used to inert undersea pipelines before plugging and abandonment, degas tanks and platforms during work over operations, and to wash drill cuttings to remove oils and prevent sheens on surface waters.
3. Conditions for Use: May be used with salt or fresh water. Temperature is not relevant.

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity:

Material Tested	Species	LC50 (ppm)	
BIOSOLVE®	Menidia beryllina	6.4	96-hr
	Mysidopsis bahia	3.6	48-hr
No. 2 Fuel Oil	Menidia beryllina	5.6	96-hr
	Mysidopsis bahia	2.7	48-hr
BIOSOLVE® &	Menidia beryllina	7.4	96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	1.3	48-hr
Reference Toxicant (SDS)	Menidia beryllina	7.2	96-hr
	Mysidopsis bahia	13.4	48-hr

NOTE: This toxicity data was derived using the concentrated product. See Section VI of this bulletin for information regarding the manufacturer's recommendations for concentrations and application rates for field use.
b. Effectiveness:
NA

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VIII. MICROBIOLOGICAL ANALYSIS NA

IX. PHYSICAL PROPERTIES
(Liquid concentrate)
1. Flash Point: NA, Water based >200°F (93.3°C)
2. Pour Point: 32.9°F (0.5°C)
3. Viscosity: 77.5 Centistrokes (concentrate), 490 centipoise (concentrate), 15 centipoise at 6%, at 60.08°F or 15.6°C
4. Specific Gravity: 1.025 at 60°F or 15.5°C
5. pH: 9.37 +/- 0.5
6. Chemical Name and Percentage by Weight of the Total Formulation: CONFIDENTIAL
7. Surface Active Agents: CONFIDENTIAL
8. Solvents: CONFIDENTIAL
9. Additives: CONFIDENTIAL
10. Solubility: Complete-true solution formed with water

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<0.2
Cadmium	<0.18
Chromium	<0.5
Copper	<0.6
Lead	<0.2
Mercury	<0.07
Nickel	<0.6
Silver	<0.4
Zinc	0.51
Cyanide	<0.01
Chlorinated Hydrocarbons	<0.5

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EPA HAS NOT RECEIVED UPDATED CONTACT INFORMATION FOR THIS PRODUCT: 3/23/16

TECHNICAL PRODUCT BULLETIN #SW-21
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: MARCH 2, 1998
"PETROTECH 25"

I. NAME, BRAND, OR TRADEMARK
PETROTECH 25
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Petrotech America Corporation
130 William Street, Suite 802
New York, NY 10038
Phone: (212)933-9071, ext. 7001
Fax: (877) 226-4028
E-mail: Info@helpenvironmental.com
(Mr. Lawrence Gallo)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS

Petrotech America Corporation
130 William Street, Suite 802
New York, NY 10038
Phone: (212)933-9071, ext. 7001
Fax: (877) 226-4028
E-mail: Info@helpenvironmental.com
(Mr. Lawrence Gallo)

Manufacturing Plant:
Clariant Corp.
Charlotte, NC

H.E.L.P. Environmental
926 3rd Avenue
Brooklyn, NY 11232

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable.
2. Ventilation: Normal.
3. Skin and eye contact; protective clothing; treatment in case of contact: No special handling is required beyond that prescribed under the general OSHA rules for non-hazardous, non-flammable and noncorrosive liquids. This is not to suggest that contact with eyes and skin is totally without risk for allergy. Contact with eyes and skin is to be avoided, as suggested under OSHA procedures.
4.a. Maximum storage temperature: +45°C
4.b. Minimum storage temperature: -5°C (can be stored below its freezing point without

detectable loss of performance provided that it is warmed to within liquid range prior to application.)
4.c. Optimum storage temperature: >-5°C and <+45°C
4.d. Temperatures of phase separations and chemical changes: NA

V. SHELF LIFE
PETROTECH 25 has an unlimited shelf-life when maintained in the factory sealed containers and stored within the prescribed temperature limits. Climatic factors such as humidity have no effect on closed container storage although the product is hygroscopic and will absorb water if left for long periods in open containers.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method: It is recommended that the surface washing agent PETROTECH 25 be applied to contaminated surfaces in one of three ways: (a) a mixture of ten parts PETROTECH 25 to ninety parts water, either fresh or saltwater, should be discharged over the surface by commercial pressure washer, hot or cold; (b) the same mixture discharged on the surface using standard firefighting apparatus preferably at a nozzle pressure of 100 PSI plus; or (3) PETROTECH 25 in concentrated form can be applied to the surface and manually or mechanically brushed and then water applied.
2. Concentration/Application Rate: Generally, PETROTECH 25 is applied neat in its factory supplied concentrate form. However, for lighter oils where educting or proportioning equipment is available, an aqueous solution of PETROTECH 25 between 3 and 10 percent may be used. Broadly speaking, PETROTECH 25 has no solvent action. For any given oil spill of a specific nature, the application rate is unaffected by neat or diluted application as long as the concentrate to oil ratio remains the same. Applications of diluted PETROTECH 25 in the 6 - 10 percent range via firefighting equipment can be used on automobile and aviation gasoline's together with the lighter oils such as diesel and all jet fuels.

The dosage of PETROTECH 25 to be used depends upon two factors:1) The nature of the oil, and 2) The energy used in its application to the contaminated substrate.
3. Conditions for Use: May be used with salt or fresh water. Temperature is not relevant.

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity:

Material Tested	Species	LC50 (ppm)
PETROTECH 25	Menidia beryllina	601.0 96-hr
	Mysidopsis bahia	350.0 48-hr
No. 2 Fuel Oil	Menidia beryllina	2.8 96-hr
	Mysidopsis bahia	1.8 48-hr
PETROTECH 25 & No. 2 Fuel Oil	Menidia beryllina	3.4 96-hr
(1:10)	Mysidopsis bahia	1.0 48-hr
Reference Toxicant (DSS)	Menidia beryllina	7.9 96-hr
	Mysidopsis bahia	19.8 48-hr

b. Effectiveness:

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NA

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VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
(Liquid concentrate)
1. Flash Point: None
2. Pour Point: 0°C
3. Viscosity: 700 CP
4. Specific Gravity: 1.03
5. pH: 7.5
6. Chemical Name and Percentage by Weight of Total Formulation: CONFIDENTIAL
7. Surface Active Agents: CONFIDENTIAL
8. Solvents: CONFIDENTIAL
9. Additives: CONFIDENTIAL
10. Solubility: 100%

X. ANALYSIS FOR HEAVY METALS AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<0.10
Cadmium	<0.08
Chromium	<0.10
Copper	<0.26
Lead	0.047
Mercury	<0.0005
Nickel	<0.40
Zinc	0.256
Cyanide	0.70
Chlorinated Hydrocarbons	ND

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TECHNICAL PRODUCT BULLETIN #SW-22
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: NOVEMBER 12, 1998
"SPLIT DECISION SC (formerly Split Decision)"
(aka, CLEAN SPLIT, DUO-SPLIT)

I. NAME, BRAND, OR TRADEMARK
SPLIT DECISION SC
(aka, CLEAN SPLIT, DUO-SPLIT)
Type of Product: Surface Washing Agent (Water Based)

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Mantek
Division of NCH Corporation
P.O. Box 660196
Dallas, TX 75266-0196
Phone: (800) 527-9919, ext. 0661
E-mail: gzimmerm@nch.com
(Mr. George Zimmerman)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS

SPLIT DECISION SC
Mantek
Division of NCH Corporation
P.O. Box 660196
Dallas, TX 75266-0196
Phone: (800) 527-9919, ext. 0661
E-mail: gzimmerm@nch.com
(Mr. George Zimmerman)

DUO-SPLIT
Chemsearch
Division of NCH Corporation
Irving, TX 75015
Phone: (800) 527-9919, ext. 0661
E-mail: gzimmerm@nch.com
(Mr. George Zimmerman)

CLEAN SPLIT
Certified Laboratories
Division of NCH Corporation
P.O. Box 2493
Ft. Worth, TX 76113-2493
Phone: (800) 527-9919, ext. 0661
E-mail: gzimmerm@nch.com
(Mr. George Zimmerman)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Not flammable
2. Ventilation: Not required
3. Skin and eye contact; protective clothing; treatment in case of contact: SPLIT DECISION SC is not aggressive to skin and will not cause irritation in the majority of users. Avoid contact with

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eyes, irritation may result. Wear safety glasses with side shields if the method of use presents the likelihood of eye contact. No special precautions or additional protective equipment are required during handling or use.
4.a. Maximum storage temperature: 140°F
4.b. Minimum storage temperature: 27°F
4.c. Optimum storage temperature range: 32-140°F
4.d. Temperatures of phase separations and chemical changes: SPLIT DECISION SC is stable and phase separation will not occur at temperatures within the above storage range. Repetitive freeze/thaw cycles may cause stratification. This stratification is readily dispersed by minimal mixing.

V. SHELF LIFE
The recommended shelf life is one year.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method: Spray on oily surface. SPLIT DECISION SC forms a loose emulsion with oil that separates within seconds. Oil displaced from surface can be skimmed from the rinse water or absorbed with an oil absorbent.
2. Concentration/Application Rate: For heavy oil apply at a concentration of 1 part SPLIT DECISION SC to 3 parts water. For lighter oil on non-porous substrates use at up to 1 part SPLIT DECISION SC to 30 parts water. For application by hot water pressure washers or steam cleaner, SPLIT DECISION SC may be diluted with as much as 50 parts water.
3. Conditions for Use: Effective in fresh water, estuarine, and marine environments at normal climatic temperatures. SPLIT DECISION SC contains no known EPA Priority Pollutants.

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity

Material Tested	Species	LC50 (ppm)
SPLIT DECISION	Menidia beryllina	8.27 96-hr
	Mysidopsis bahia	8.20 48-hr
No. 2 Fuel Oil	Menidia beryllina	12.26 96-hr
	Mysidopsis bahia	4.30 48-hr
SPLIT DECISION SC &	Menidia beryllina	0.25 96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	2.06 48-hr
Reference Toxicant (DSS)	Menidia beryllina	13.80 96-hr
	Mysidopsis bahia	22.20 48-hr

b. Effectiveness
NA

VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point: None

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2. Pour Point: NA
3. Viscosity: 20 cps - Brookfield #1 spindle @ 20 rpm at 73°F
4. Specific Gravity: 1.075 at 73°F
5. pH: 7.0
6. Surface Active Agents: Confidential
7. Solvents: Water
8. Additives: CONFIDENTIAL
9. Solubility in Water: Complete

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<0.05
Cadmium	<0.03
Chromium	<0.03
Copper	0.20
Lead	<0.05
Mercury	<0.03
Nickel	<0.03
Zinc	0.08
Cyanide	<0.1
Chlorinated Hydrocarbons	<0.1

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TECHNICAL PRODUCT BULLETIN #SW-23
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: MARCH 1, 1999
"PETRO-CLEAN"

I. NAME, BRAND, OR TRADEMARK
PETRO-CLEAN
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
B.R.A.T. Microbial Products Inc.
P.O. Box 7089
Pasadena, TX 77508
Phone: (713) 724-9226
E-mail: alabastercorp@gmail.com
(Mr. John Sheffield)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
B.R.A.T. Microbial Products Inc.
P.O. Box 7089
Pasadena, TX 77508
Phone: (713) 724-9226
E-mail: alabastercorp@gmail.com
(Mr. John Sheffield)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable
2. Ventilation: Normal
3. Skin and eye contact: Protective clothing; treatment in case of contact. Eyes-flush with water using eye cup of fountain for 15 minutes. Seek medical attention if irritation persists. Wash contaminated clothing and footwear before reuse. Ingestion – seek medical attention. Inhalation – no medical attention is required.
4.a. Maximum storage temperature: 120°F
4.b. Minimum storage temperature: 35°F
4.c. Optimum storage temperature range:
4.d. Temperatures of phase separations and chemical changes: None

V. SHELF LIFE
Indefinite when stored properly.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method: PETRO-CLEAN is applied through power washers or even garden type sprayers in light dilution is very effective in removing petrochemical hydrocarbons from rocks,

shorelines, sea walls, bridges, and highways. In wetland applications, PETRO-CLEAN prevents hydrocarbons from attaching to grasses, trees, rocks, etc.
2. Concentration/Application Rate: Dilute or use eductors to specified rate and apply through fire hose, power washers, or sprayers to contaminated area. PETRO-CLEAN is a highly concentrated product and must be diluted before use. Dilution ratios vary depending on the specific conditions of the contaminated site. Normal recommended dilutions are from 0.5% to 6%. On heavy or weathered crude, pre-soaking with 6% may be necessary. For light or refined products, apply as 3% to 6% solution. For sheens on water apply a 0.5% to 1.0% solution.
3. Conditions for Use: May be used with salt or fresh water

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity

Material Tested	Species	LC50 (ppm)	
PETRO-CLEAN	Menidia beryllina	100	96-hr
	Mysidopsis bahia	110	48-hr
No. 2 Fuel Oil	Menidia beryllina	110	96-hr
	Mysidopsis bahia	110	48-hr
PETRO-CLEAN &	Menidia beryllina	115	96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	105	48-hr
Reference Toxicant (DSS)	Menidia beryllina	1.14	96-hr
	Mysidopsis bahia	0.98	48-hr

b. Effectiveness:
NA

VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point: > 200°F
2. Pour Point: -17°F
3. Viscosity: 1.26 @ 75°F
4. Specific Gravity: 0.99 @ 75°F
5. pH: 8.05 (10% solution, s.u.)
6. Surface Active Agents: CONFIDENTIAL
7. Solvents: None
8. Additives: CONFIDENTIAL
9. Solubility in Water: 100 percent

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<0.10
Cadmium	<0.10
Chromium	<0.01
Copper	<0.01

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Lead	<0.002
Mercury	<0.01
Nickel	<0.01
Zinc	<0.01
Cyanide	<2.0
Chlorinated Hydrocarbons	<1.0

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EPA HAS NOT RECEIVED UPDATED CONTACT INFORMATION FOR THIS PRODUCT: 3/23/16

TECHNICAL PRODUCT BULLETIN #SW-24
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: JULY 14, 2000
"DO-ALL #18"

I. NAME, BRAND, OR TRADEMARK
DO-ALL #18
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Radcob Solutions, Inc.
4800 North State Road 7, Suite #105
Lauderdale Lakes, FL 33319
Phone: (954) 249-2178
Fax: (954) 640-7080
E-mail: adam@doall18.com
Website: www.doall18.com
(Mr. Adam Goldberg)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Radcob Solutions, Inc.
4800 North State Road 7, Suite #105
Lauderdale Lakes, FL 33319
Phone: (954) 249-2178
Fax: (954) 640-7080
E-mail: adam@doall18.com
Website: www.doall18.com
(Mr. Adam Goldberg)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: DO-ALL #18 is water based, contains no solvents and is non-flammable.
2. Ventilation: Normal room ventilation.
3. Skin and eye contact; protective clothing; treatment in case of contact: Avoid contact with skin, eyes, and clothing. Wear safety glasses or goggles and protective gloves when handling. In case of eye contact, flush immediately with water for at least 15 minutes. If persistent irritation occurs, call a physician. For skin contact, wash thoroughly with soap and water.
4.a. Maximum storage temperature:100°F
4.b. Minimum storage temperature: 35°F
4.c. Optimum storage temperature range: 40°F to 100°F
4.d. Temperatures of phase separations and chemical changes: DO-ALL #18 has a pour point of 32°F and phase separation occurs at 105°F.

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V. SHELF LIFE
DO-ALL #18 has a shelf life of at least two (2) years.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method: May be diluted with fresh or salt water. For general use, apply by spray, mop, etc. Agitate severe spots, rinse thoroughly for residue-free surface.
2. Concentration/Application Rate: To clean oil from beaches, rocks, and piers as a shore-line cleaner, first use a pre-treatment or soaking, using one (1) part DO-ALL #18 diluted with three (3) parts of water. Allow 30 to 45 minutes to soften viscous oil deposits (soak time may vary with temperature, oil density, and degree of weathering). After the soaking period, dilute one (1) part of DO-ALL #18 with 15 parts of water and apply with a high pressure water hose (50 - 100 PSI). Oil released can then be removed by vacuuming, skimmers, or absorbents.
For normal cleaning of shop machinery, bilges, decks, waterline scum, rigs, and platforms, dilute one (1) part DO-ALL #18 with up to 20 parts of water.

For heavy cleaning and degreasing of tanks, barges, engine rooms and soot, oil stained concrete, and petroleum based drilling muds, dilute one (1) part DO-ALL #18 with up to 15 parts of water.
For severe cleaning of holding tanks, grease traps, black magic, crude oil, and Bunker C, dilute one (1) part DO-ALL #18 with up to five (5) parts of water.

For steam cleaning, dilute one (1) part of DO-ALL #18 with up to 50 parts of water.

For pressure washing, dilute one (1) part DO-ALL #18 with up to 30 parts of water.
DO NOT USE UNDILUTED ON COMPOSITION FLOORS, WATER-BASED PAINTED SURFACES, OR ALUMINUM,
3. Conditions for Use: Recommended for cleaning petroleum fractions from beaches, rocks, piers, bilges, decks, waterline scum, rigs, platforms, tanks, barges, engine rooms, machinery, holding tanks, and grease traps.

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity

Material Tested	Species	LC50 (ppm)
DO-ALL #18	Menidia beryllina	66.10 96-hr
	Mysidopsis bahia	288.00 48-hr
No. 2 Fuel Oil	Menidia beryllina	9.10 96-hr
	Mysidopsis bahia	0.65 48-hr
DO-ALL #18 & No. 2 Fuel Oil	Menidia beryllina	9.38 96-hr
(1:10)	Mysidopsis bahia	0.57 48-hr
Reference Toxicant (SDS)	Menidia beryllina	6.36 96-hr
	Mysidopsis bahia	16.53 48-hr

b. Effectiveness:
NA

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VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point: >200°F
2. Pour Point: 32°F
3. Viscosity: 1.8 @ 68°F
4. Specific Gravity: 1.07 @ 68°F
5. pH:13.1
6. Surface Active Agents: CONFIDENTIAL
7. Solvents: None
8. Additives: CONFIDENTIAL
9. Solubility in Water: Soluble with water.

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	ND (<0.02)
Cadmium	ND (<0.02)
Chromium	ND (<0.02)
Copper	0.33
Lead	ND (<0.02)
Mercury	ND (<0.00)
Nickel	ND (<0.10)
Zinc	0.28
Cyanide	0.26
Chlorinated Hydrocarbons	ND (<0.30)

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BULLETIN UPDATES IN BOLD

TECHNICAL PRODUCT BULLETIN #SW-25
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: JULY 9, 2001
"SC-1000™"

I. NAME, BRAND, OR TRADEMARK
SC-1000™
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
GEMTEK® Products
3808 North 28th Avenue
Phoenix, AZ 85017
Emergency Number: (602) 265-8586
Phone: (800) 331-7022
Fax: (602) 265-7241
E-mail: info@gemtek.com
(Mr. Kim Kristoff)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
GEMTEK® Products
3808 North 28th Avenue
Phoenix, AZ 85017
Emergency Number: (602) 265-8586
Phone: (800) 331-7022
Fax: (602) 265-7241
E-mail: info@gemtek.com
(Mr. Kim Kristoff)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable.
2. Ventilation: General room ventilation is satisfactory.
3.Skin and eye contact; protective clothing; treatment in case of contact: Non-irritating, no first aid needed. May be an eye irritant. Do not spray into eyes; safety glasses are recommended. If irritation does occur, rinse thoroughly with water.
4.a. Maximum storage temperature: None.
4.b. Minimum storage temperature: Room temperature.
4.c. Optimum storage temperature range: 70°F to 90°F
4.d. Temperatures of phase separations and chemical changes: Low temperature can cause handling problems; viscosity of material will increase. The product is an organic compound and it will not typically stratify. The cloud point is 54°F. At 212°F it will boil and at somewhat less

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(around 130°F) water vapor will form. Repeat freeze/thaw/boiling cycles over a 30-day period has not demonstrated noticeable break down of the product.

V. SHELF LIFE
Minimum of 5 years.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method: SC-1000™ is a highly concentrated cleaning compound capable of a multitude of cleaning applications with dilutions ranging from full strength to far in excess of 1:350. Depending on the specific factors in the cleaning environment, the desired cleaning speed with the least amount of SC-1000™ can be determined. When diluting, it is recommended that SC-1000™ be added to premeasured water to minimize foaming in the solution.
2. Concentration/Application Rate:
Beach Waterfront, Rocky Soils, Break Water Structures, and Pier Facilities: For beach sands or light rocky soils, burning or creating a temporary shallow wash tank is most successful. Fill one-half of the tank with contaminated beach sand, then add a solution of SC-1000™ and clean water (ocean or fresh) to cover the sand. Gentle agitation will release the oil to the surface of the tank where it can be collected. For rocky surfaces spray with a 20 percent solution of SC-1000™ using a horizontal eductor sprayer, spraying side-to-side, allowing the soil to dwell for several minutes before spraying top-to-bottom with clean ocean or fresh water to rinse oil into perimeter oil booms, blankets or impermeable sheeting.

Washing Marine Vegetation - Use a non-pressure/impact spraying equipment to dispense a 0.01 percent SC-1000™ solution and allow to stand for 5-10 minutes before a final rinsing with fresh or ocean water.

Washing Marine Equipment - For wet oils and bunker crude, use SC-1000™ at 20 percent solution (preferably warmer than 80EF) and spray or wipe. Apply directly to equipment, allow to dwell for 1-2 minutes and then spray rinse with fresh or ocean water. For hardened oils, fuels, and viscous lubricants, apply SC-1000™ blended with SC-Supersolve™ (a non-toxic, low aromatic, water miscible solvent) at the ratio of 80/20 then dilute with water to a 50 percent solution, spray or wipe onto surface, let stand for 1-2 minutes before rinsing.

Heavy Cleaning Examples - Dilution full strength 1:5; diesel engines, auto parts, baked on oil or lube grease, dried oil/enamel, latex paints, thick food syrups, insect smears, dried animal or vegetable fats, hard resins, thick dust-laden oily dirt, asphalt and grass or plant stains.

Average Cleaning Examples - Dilution 1:5 up to 1:20; automotive work counters and tools, food and beverage processing equipment, oily or food-laden floors, manufacturing work areas, vehicle maintenance, shipping containers, utility equipment, and parts washers.

General Maintenance Examples - 1:20 up to 1:100; vehicle washing, general janitorial for offices/schools/hospitals/recreation and related equipment, pressure sprayers, food preparation and storage, painted/plastic laminate surfaces, sports equipment, general cleaning, immersion tanks, and ultrasonics.

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3. Conditions for Use: SC-1000™ may be used on any surface that is compatible with water. The product may tarnish some soft aluminum surfaces if not adequately diluted and rinsed with water.

VII. TOXICITY AND EFFECTIVENESS

a. Toxicity

Material Tested	Species	LC50 (ppm)
SC-1000™	Menidia beryllina	26.40 96-hr
	Mysidopsis bahia	15.20 48-hr
No. 2 Fuel Oil	Menidia beryllina	8.85 96-hr
	Mysidopsis bahia	1.57 48-hr
SC-1000™ & No. 2 Fuel Oil	Menidia beryllina	4.72 96-hr
	Mysidopsis bahia	2.13 48-hr
Reference Toxicant (SDS)	Menidia beryllina	2.22 96-hr
	Mysidopsis bahia	10.5 48-hr

b. Effectiveness:

NA

VIII. MICROBIOLOGICAL ANALYSIS

NA

IX. PHYSICAL PROPERTIES

1. Flash Point: >212°F
2. Pour Point: 25°F
3. Viscosity: <10 cps @ 25°C
4. Specific Gravity: 1.009
5. pH: 10.2 - 10.5
6. Surface Active Agents: CONFIDENTIAL.
7. Solvents: None.
8. Additives: CONFIDENTIAL.
9. Solubility in Water: Soluble in water.

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	1.33
Cadmium	ND
Chromium	ND
Copper	0.100
Lead	ND
Mercury	ND
Nickel	ND
Zinc	0.20
Cyanide	ND

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Chlorinated Hydrocarbons	ND

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TECHNICAL PRODUCT BULLETIN #SW-26
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: AUGUST 06, 2001
"GOLD CREW SW"

I. NAME, BRAND, OR TRADEMARK
GOLD CREW SW
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT

Gold Crew Products & Services, LLC
P.O. Box 12032
Orange, CA 92869
Phone: (714) 288-8781
Fax: (714) 288-8730
E-mail: jfigueira@goldcrew.net
Website: www.goldcrew.net
(Mr. Jim Figueira)

ECS
9014 Peacock Hill Avenue, Suite 200
Gig Harbor, WA 98332
(Mr. Ed Grubbs)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS

Gold Crew Products & Services, LLC
P.O. Box 12032
Orange, CA 92869
Phone: (714) 288-8781
Fax: (714) 288-8730
E-mail: jfigueira@goldcrew.net
Website: www.goldcrew.net
(Mr. Jim Figueira)

ECS
9014 Peacock Hill Avenue, Suite 200
Gig Harbor, WA 98332
(Mr. Ed Grubbs)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION

1. Flammability: Non-flammable.
2. Ventilation: Normal.
3. Skin and eye contact; protective clothing; treatment in case of contact: Extensive testing indicates that GOLD CREW SW is non-hazardous and non-toxic to humans; however, good hygiene practices should always be followed as outlined below:
Eyes- flush with water; get medical attention if required; Skin - remove contaminated clothing, wash exposed area, and wash clothing before use. If irritation develops get medical attention; Ingestion - get medical attention if required; Inhalation - none considered necessary.
4.a. Maximum storage temperature: When above 120°F, keep container closed and stored in a cool dark place. Evaporation may change product's characteristics.
4.b. Minimum storage temperature: Product will freeze below 25°F. No phase separation will occur. If frozen, thaw, and stir well.
4.c. Optimum storage temperature range: 25°F to 120°F

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4.d. Temperatures of phase separations and chemical changes: No separation at any temperature between 32-120°F. No tendency to "layer out" or separate, standing for 30 days. No separation of layering after freezing.

V. SHELF LIFE
20 years (unopened).

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method: Apply through hand pump sprayer and allow to soak.
2. Concentration/Application Rate: As a presoak dilute 20 parts water to 1 part SW. For crude oil, allow about 1 hour. For medium distillates, allow 30 minutes. For light distillates, allow 15 minutes. Time may vary depending on weather conditions. After allowing the solution to presoak, wash the area in the following manner: Apply through a power washer or through a steam powered unit at 1 percent, 3 percent, or 5 percent depending on oil viscosity and temperature.
3. Conditions for Use: Equally effective with salt or fresh water.

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity:

Material Tested	Species	LC50 (ppm)
GOLD CREW SW	Menidia beryllina	13.80 96-hr
	Mysidopsis bahia	20.40 48-hr
No. 2 Fuel Oil	Menidia beryllina	6.75 96-hr
	Mysidopsis bahia	2.82 48-hr
GOLD CREW SW &	Menidia beryllina	6.34 96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	2.70 48-hr
Reference Toxicant (SDS)	Menidia beryllina	2.22 96-hr
	Mysidopsis bahia	9.52 48-hr

b. Effectiveness:
NA

VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point: >200
2. Pour Point: 25°F
3. Viscosity: 33.87 CST
4. Specific Gravity: 1.035
5. pH: 9.76 +/- 0.01
6. Surface Active Agents: CONFIDENTIAL.
7. Solvents: None.
8. Additives: CONFIDENTIAL.
9. Solubility in Water: Complete.

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X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<1.0
Cadmium	<0.10
Chromium	<1.0
Copper	<1.0
Lead	<0.5
Mercury	<0.02
Nickel	<1.0
Zinc	0.44
Cyanide	ND
Chlorinated Hydrocarbons	ND

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TECHNICAL PRODUCT BULLETIN #SW-28USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: NOVEMBER 05, 2001
"NALE-IT"

I. NAME, BRAND, OR TRADEMARK
NALE-IT
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
SPL Control LLC
P.O. Box 627
Elemore City, OK 73433
Phone: (580) 788-2187
E-mail: splcontrol@aol.com
(Mr. Tom Lester)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
SPL Control LLC
P.O. Box 627
Elemore City, OK 73433
Phone: (580) 788-2187
E-mail: splcontrol@aol.com
(Mr. Tom Lester)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable
2. Ventilation: Workers should be in well ventilated areas; if in a confined area, use a respirator.
3. Skin and eye contact; protective clothing; treatment in case of contact: Workers should wear protective goggles or safety glasses. Prolonged contact with skin may result in dryness.
4.a. Maximum storage temperature: NA
4.b. Minimum storage temperature: >32°F
4.c. Optimum storage temperature range: 40°F to 200°F
4.d. Temperatures of phase separations and chemical changes: No phase separation or hazardous polymerization will occur.

V. SHELF LIFE
Indefinite.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method: NALE-IT may be applied using a pressure sprayer.
2. Concentration/Application Rate: For pit closures, surface hydrocarbon spills, compressor stations, pipeline and flow line leaks, well head and tank farm leaks, and highway spills. (petroleum products) mix 1 part NALE-IT with 20 parts water.

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3. Conditions for Use: Equally effective with fresh or salt water.

VII. TOXICITY AND EFFECTIVENESS

a. Toxicity:

Material Tested	Species	LC50 (ppm)	
NALE-IT	Menidia beryllina	273.30	96-hr
	Mysidopsis bahia	69.00	48-hr
No. 2 Fuel Oil	Menidia beryllina	6.93	96-hr
	Mysidopsis bahia	2.29	48-hr
NALE-IT & No. 2 Fuel Oil	Menidia beryllina	3.82	96-hr
(1:10)	Mysidopsis bahia	1.84	48-hr
Reference Toxicant (SDS)	Menidia beryllina	2.60	96-hr
	Mysidopsis bahia	8.56	48-hr

b. Effectiveness:

NA

VIII. MICROBIOLOGICAL ANALYSIS

NA

IX. PHYSICAL PROPERTIES

1. Flash Point: >212°F
2. Pour Point: 30°F
3. Viscosity: 1.18
4. Specific Gravity: 1.02
5. pH: 6.8 - 7.2
6. Surface Active Agents: CONFIDENTIAL
7. Solvents: None
8. Additives: CONFIDENTIAL
9. Solubility in Water: Soluble in fresh and sat water.

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	0.82
Cadmium	ND
Chromium	ND
Copper	0.173
Lead	ND
Mercury	ND
Nickel	ND
Zinc	0.18
Cyanide	ND
Chlorinated Hydrocarbons	ND

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LISTING CHANGES PENDING, FOLLOWING VERIFICATION BY MANUFACTURER AND EPA

TECHNICAL PRODUCT BULLETIN #SW-30
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: JULY 24, 2002
"F-500"

I. NAME, BRAND, OR TRADEMARK
F-500
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Hazard Control Technologies, Inc.
150 Walter Way
Fayetteville, GA 30214
Phone: (770) 719-5112
Fax: (770) 719-5117
(Mr. Christopher L. Champion)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Hazard Control Technologies, Inc.
150 Walter Way
Fayetteville, GA 30214
Phone: (770) 719-5112
Fax: (770) 719-5117
(Mr. Christopher L. Champion)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable.
2. Ventilation: Local exhaust – no special requirements.
3. Skin and eye contact; protective clothing; treatment in case of contact: Eye contact – may cause eye irritation, flush with water. Wear splash proof protection goggles or full-face shield. If irritation persists contact a physician. Skin contact – may cause mild irritation, flush with water. Wear rubber and vinyl gloves and apron. Product has been tested and found to be non-skin sensitizing per OECD 406. Ingestion – may cause gastrointestinal irritation. Drink plenty of water to dilute. Do not induce vomiting. If irritation persists contact a physician. Inhalation – elevated temperature vapors may cause irritation to respiratory tract. Remove to fresh air.
4.a. Maximum storage temperature: 130°F
4.b. Minimum storage temperature: 17°F
4.c. Optimum storage temperature range: 35°F - 130°F
4.d. Temperatures of phase separations and chemical changes: NA

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V. SHELF LIFEThe shelf life is 15 years when stored between 35°F - 130°F in unopened containers.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method: Standard fire apparatus spray nozzle with agitation onto and into spill.
2. Concentration/Application Rate: 1 part F-500:8 parts hydrocarbon:32 parts water (fresh or salt).
3. Conditions for Use: Water temperature: 33°F - 211°F. Effective on both polar and non-polar hydrocarbons

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity:

Material Tested	Species	LC50 (ppm)	
F-500	Menidia beryllina	<10.00	96-hr
	Mysidopsis bahia	32.00	48-hr
No. 2 Fuel Oil	Menidia beryllina	56.00	96-hr
	Mysidopsis bahia	100.00	48-hr
F-500 & No. 2 Fuel Oil	Menidia beryllina	<10.00	96-hr
(1:10)	Mysidopsis bahia	32.00	48-hr
Reference Toxicant (DSS)	Menidia beryllina	1.14	96-hr
	Mysidopsis bahia	0.98	48-hr

b. Effectiveness:
NA

VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point: >200°F
2. Pour Point: -17°F
3. Viscosity: 54-56 centistokes @ 72°F
4. Specific Gravity: 0.99 g/cc @ 72°F
5. pH: 7.00
6. Surface Active Agents: PROPRIETARY/CONFIDENTIAL
7. Solvents: None
8. Additives: None
9. Solubility in Water: Complete

ED_001324_00006005-00127

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<0.03
Cadmium	<0.01
Chromium	<0.01
Copper	<0.05
Lead	<0.025
Mercury	<0.005
Nickel	<0.02
Zinc	<0.07
Cyanide	<0.02
Chlorinated Hydrocarbons	<0.10

ED_001324_00006005-00128

BULLETIN UPDATES IN BOLD

TECHNICAL PRODUCT BULLETIN #SW-31
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: OCTOBER 27, 2003
"ENVIROCLEAN"
(formerly ENVIRO CLEAN 165)

I. NAME, BRAND, OR TRADEMARK
ENVIROCLEAN
(formerly ENVIRO CLEAN 165)
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Enviro Clean Services, LLC
P.O. Box 721090
Oklahoma City, OK 73172-1090
Phone: (405) 373-4545
Fax: (405) 373-4549
E-mail: info@eccgrp.com
E-mail: jonathan.behymer@eccgrp.com
Website: www.eccgrp.com
(Mr. Jonathan Behymer)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Enviro Clean Services, LLC
P.O. Box 721090
Oklahoma City, OK 73172-1090
Phone: (405) 373-4545
Fax: (405) 373-4549
E-mail: info@eccgrp.com
E-mail: jonathan.behymer@eccgrp.com
Website: www.eccgrp.com
(Mr. Jonathan Behymer)

Enviro Clean Products & Services
110 Airport Drive, Suite A
Wappingers Falls, NY 12590
Phone: (800) 477-2461
Fax: (845) 463-4573
E-mail: jjordan@envirocleanps.com
Website: www.envirocleanps.com
(Mr. Joe Jordan)

ED_001324_00006005-00129

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION

1. Flammability: Non-flammable.
2. Ventilation: Normal.
3. Skin and eye contact; protective clothing; treatment in case of contact: Use good normal hygiene and avoid contact with skin and eyes. Gloves and goggles are recommended for field application and product handling. If contact with eyes flush with water for 15 minutes and seek medical attention. For contact with skin, wash area with soap and water. May cause redness, edema, and drying of skin. Seek medical attention if irritation develops. In case of ingestion, seek medical attention. Not considered an inhalation risk.

4.a. Maximum storage temperature: 120°F
4.b. Minimum storage temperature: 28°F
4.c. Optimum storage temperature range: 30°F - 120°F
4.d. Temperatures of phase separations and chemical changes: Temperature fluctuations will not cause separation or deterioration of product. Product blend is stable and will not undergo phase separation of ingredients or stratification of contents over time.

V. SHELF LIFE

Unlimited if unopened.

VI. RECOMMENDED APPLICATION PROCEDURE

1. Application Method: Dilute product with water prior to use. Apply product via manual pressure applicator (i.e., hand pump), or other delivery equipment, to impacted surfaces. Allow product to soak prior to rinse/recovery if heavily saturated with oil. On hard surfaces, product may be applied and agitated with a brush or other physical means prior to recovery of effluent. Product may also be pre-mixed and used in a batch tank or through an eduction/metering system for flushing and recovery operations.
2. Concentration/Application Rate: ENVIROCLEAN is a concentrated product and must be diluted prior to use. Concentrations vary based upon type of oil and degree of surface saturation. For light ends (i.e., gas condensate/gasoline) a 1% - 2% solution may be used to flush area to containment. (A higher concentration solution of 6% should be used if flammable vapor presents an explosion hazard.) For lighter oils (i.e., No. 2 Fuel Oil) a 3% solution may be used to flush impacted areas to containment. For heavy ends (i.e., crude oil/No. 6 Fuel Oil) a 6% solution of ENVIROCLEAN should be applied and allowed to soak into containment/substrate for up to an hour to allow for release of oil. The surface should then be flushed to containment with a 1% - 3% solution of ENVIROCLEAN. Product may be used as noted above through any pressure or steam equipment. The use of a "hot" unit is recommended when oils are at low temperature or have been weathered.
3. Conditions for Use: ENVIROCLEAN may be diluted with hard, soft, brackish, salt, or most waters of sufficient quality for operations.

ED_001324_00006005-00130

VII. TOXICITY AND EFFECTIVENESSa. Toxicity:

Material Tested	Species	LC50 (ppm)
ENVIROCLEAN	Menidia beryllina	27.80 96-hr
	Mysidopsis bahia	22.60 48 hr
No. 2 Fuel Oil	Menidia beryllina	8.77 96-hr
	Mysidopsis bahia	1.53 48-hr
ENVIROCLEAN&		
No. 2 Fuel Oil (1:10)	Menidia beryllina	8.13 96-hr
	Mysidopsis bahia	1.76 48 hr
Reference Toxicant (DSS)	Menidia beryllina	1.83 96-hr
	Mysidopsis bahia	3.37 48 hr

b. Effectiveness:
NA

VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point: >200°F
2. Pour Point: 28.8°F
3. Viscosity: 9 Centipose
4. Specific Gravity: 1.028
5. pH: 8.63
6. Surface Active Agents: CONFIDENTIAL
7. Solvents: None
8. Additives: CONFIDENTIAL
9. Solubility in Water: Complete

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<0.002
Cadmium	<0.001
Chromium	<0.005
Copper	<0.002
Lead	<0.005
Mercury	<0.0002
Nickel	<0.005
Zinc	<0.002
Cyanide	<0.1
Chlorinated Hydrocarbons	<0.05

ED_001324_00006005-00131

BULLETIN UPDATES IN BOLD

TECHNICAL PRODUCT BULLETIN #SW-32
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: JULY 21, 2006
"BG-CLEAN™ 401"

I. NAME, BRAND, OR TRADEMARK
BG-CLEAN™ 401
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Amiran BioChemicals, LLC
7221 South 10th Street
Oak Creek, WI 53154
Phone: (414) 571-6230
Fax: (414) 571-6231
(Dr. Mohsen Amiran)
Phone: (414) 939-8405
Fax: (414) 571-6231
E-mail: samiran@amiran-technologies.com or jwilde@amiran-technologies.com
(**Mr. Sherwin Amiran** or Mr. Jason Wilde at (703) 216-0194)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Amiran BioChemicals, LLC
7221 South 10th Street
Oak Creek, WI 53154
Phone: (414) 571-6230
Fax: (414) 571-6231
(Dr. Mohsen Amiran)

BioCenter, Inc.
P.O. Box 170498
Milwaukee, WI 53217
Phone: (414) 768-7100
Fax: (414) 768-7106
E-mail: skelling@aol.com
(Mr. Scott Kelling)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: BG-CLEAN™ 401 is not classified as flammable by either USDOT or IMO regulations.
2. Ventilation: Avoid prolonged breathing of vapors.
3. Skin and eye contact; protective clothing; treatment in case of contact:

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BG-CLEAN™ 401 is an organic compound with a slightly alkaline pH. No extraordinary precautions are required during handling. Avoid unnecessary contact with skin or eyes. No special protective clothing is required. Body areas exposed to BG-CLEAN™ 401 may be flushed with water to clean off the chemical.
4.a. Maximum storage temperature: 180°F
4.b. Minimum storage temperature: -25°F
4.c. Optimum storage temperature range: 68°F
4.d. Temperatures of phase separations and chemical changes: BG-CLEAN™ 401 is not adversely affected by changes in storage temperature unless evaporation is allowed to occur. Phase separation does not occur when the product is stored in below freezing conditions. BG-CLEAN™ 401 is ready for use as soon as it is rewarmed to approximately 34-40°F. Product will expand when frozen.

V. SHELF LIFE
The shelf life of unopened containers of BG-CLEAN™ 401 is unlimited. Containers should always be capped when not in use to prevent contamination and evaporation.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method: BG-CLEAN™ 401 is applied by one of two methods. 1) For situations where cleanup starts shortly after contamination and the oil has not yet weathered, use a high pressure spray. BG-CLEAN™ 401 is proportioned into a stream of water and sprayed directly on the surface to be cleaned at a rate of 60-70 gpm. 2) For difficult cleaning situations such as weathered crude oil on a rocky beach, a three step procedure should be used. First presoak the contaminated area by proportioning BG-CLEAN™ 401 into a low pressure stream of water at a rate of about 20 gpm. Allow the spray to soak for 15-30 minutes. Then proportion BG-CLEAN ™ 401 into a high pressure water stream and apply at a rate of 60-70 gpm. Selection of the best procedure depends on site conditions.

BG-CLEAN™ 401 effectiveness is increased when applied with water heated to between 100EF and 180EF. As ambient temperature decreases, the benefits of applying heated spray increase. The efficiency of BG-CLEAN™ 401 depends directly on mixing of the BG-CLEAN™ 401 molecules with the hydrocarbon molecules. Given good mixing, BG-CLEAN™ 401 can be used on all hydrocarbons except asphalt.
2. Concentration/Application Rate: Dilute BG-CLEAN™ 401 water. The amount of spray required varies with the amount of oil. Concentrations ranging from 5:1 to 100:1 have been found useful depending on hydrocarbon concentrations and viscosity. During application, adjust the concentration of BG-CLEAN™ 401 to suit the cleaning effect desired.
3. Conditions for Use: BG-CLEAN™ 401 is recommended as a cleaner for piers, seawalls, pilings, ship's hulls, and rocky beaches. It can be used on metal, wood, and plastics. BG-CLEAN™ 401 is also highly useful for cleaning contaminated solids such as soil. This includes a range from normal soil aggregate to 100% sand. Two conditions are required for maximum cleaning; thorough mixing of BG-CLEAN™ 401 with the oil and an adequate concentration of BG-CLEAN™ 401.

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VII. TOXICITY AND EFFECTIVENESSa. Toxicity:

Material Tested	Species	LC50 (ppm)
BG-CLEAN™ 401	Menidia beryllina	787.00 96-hr
	Mysidopsis bahia	477.00 48-hr
No. 2 Fuel Oil	Menidia beryllina	16.90 96-hr
	Mysidopsis bahia	2.92 48-hr
BG-CLEAN™ 401	Menidia beryllina	13.10 96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	2.86 48-hr
Reference Toxicant (SDS)	Menidia beryllina	3.93 96-hr
	Mysidopsis bahia	8.80 48-hr

b. Effectiveness:
NA

VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point, ASTM D-93: >76.6°C (>170°F)
2. Pour Point, ASTM D-97: -4°C
3. Viscosity, ASTM D-88: 24 SUS@ 100°F
4. Specific Gravity, ASTM D-1298: 1.00604 @ 60°F
5. pH: 8.227
6. Surface Active Agents: Proprietary
7. Solvents: Proprietary
8. Additives: Proprietary
9. Solubility: Miscible in water.

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<0.118
Cadmium	<0.020
Chromium	<0.125
Copper	0.049
Lead	0.166
Mercury	<0.02
Nickel	<0.125
Zinc	0.280
Cyanide	0.002
Chlorinated Hydrocarbons	ND

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BULLETIN UPDATES IN BOLD

TECHNICAL PRODUCT BULLETIN #SW-33
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: NOVEMBER 27, 2006
"E-SAFE©"

I. NAME, BRAND, OR TRADEMARK
E-SAFE©
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
PLUTUS Environmental Technologies, Inc.
300 John L Marshall Drive
Sevierville, TN 37862
Phone: (865) 604-3150
E-mail: plutusceo@mail.com
(Mr. James Hatcher)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
PLUTUS Environmental Technologies, Inc.
300 John L Marshall Drive
Sevierville, TN 37862
Phone: (865) 604-3150
E-mail: plutusceo@mail.com
(Mr. James Hatcher)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable until >170ºF
2. Ventilation: Handle in a well-ventilated space. Local exhaust is recommended if TLV's are exceeded.
3. Skin and eye contact; protective clothing; treatment in case of contact: Avoid eye and (sensitive) skin contact. In case of contact, immediately flush with large amount of cool water of at least 5 minutes. Wear protective eye goggles when using any chemicals. Impermeable protective gloves are recommended for sensitive skin types. Protective clothing is not required. Rinse contaminated clothing, shoes, goggles, and gloves in simple tap water to remove any chemical residue. Avoid ingestion, breathing dusts, mists, or fumes. In case of ingestion drink several glasses of water. Do not induce vomiting. In case of inhalation, move affected person to fresh air.
4.a. Maximum storage temperature: 160°F
4.b. Minimum storage temperature: -15°F
4.c. Optimum storage temperature range: 40°F – 110ºF
4.d. Temperatures of phase separations and chemical changes: No phase separations will occur.

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Continued exposure to direct sunlight may cause a change in color, but performance is not affected.

V. SHELF LIFE
Unlimited if left in unopened containers stored at 40°F - 110°F and away from direct sunlight.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method: E-SAFE© may be introduced with a pressure spray to cover the affected area. The contaminated area should be thoroughly moistened. Following the spray application the treated area should be soaked with water to facilitate penetration. Heavy soil such as clay will be cleaned by E-SAFE©, but tilling or aerating the soil will rapidly shorten penetration time. Sand or loam ay require heavy dosage with E-SAFE© because hydrocarbon migration is so rapid in these soil types. Treatment of fouled beach areas should have E-SAFE© sprayed on all contaminated surfaces. Any remaining hydrocarbons may then be effectively vacuumed or wiped away from the treated surfaces. Incidental wave action or rainfall will enhance coverage and penetration by E-SAFE©.
2. Concentration/Application Rate: E-SAFE© should be applied full strength. Beginning treatment for hydrocarbon contaminated surface is one gallon of E-SAFE© per 100 square foot of surface area. This dosage is recommended when the ambient temperature is 72°F and humidity is moderate. Higher temperature or lower humidity will increase the need for repeated applications or a higher volume of E-SAFE© per application.
3. Conditions for Use: E-SAFE© works on all soil types and weather conditions that allow hydrocarbon penetration. E-SAFE© follows the same path, channel, or gradient as the contaminant. When visible detection reveals that E-SAFE© has been absorbed by, or has penetrated the soil, water should be applied to the site. E-SAFE© is soluble in water and also breaks the surface tension of the transporting water molecules.

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity:

Material Tested	Species	LC50 (ppm)	
E-SAFE©	Menidia beryllina	329.00	96-hr
	Mysidopsis bahia	257.00	48-hr
No. 2 Fuel Oil	Menidia beryllina	5.45	96-hr
	Mysidopsis bahia	10.20	48-hr
E-SAFE©	Menidia beryllina	8.77	96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	14.20	48-hr
Reference Toxicant (SDS)	Menidia beryllina	8.07	96-hr
	Mysidopsis bahia	16.00	48-hr

b. Effectiveness:
NA

VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES

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1. Flash Point, ASTM D-93: >170°F
2. Pour Point, ASTM D-97: -27°C
3. Viscosity, ASTM D-88: 11SFS@ 100°F
4. Specific Gravity, ASTM D-1298: 1.0118 @ 60°F
5. pH: 8.04
6. Surface Active Agents: Confidential
7. Solvents: Confidential
8. Additives: Confidential
9. Solubility: Soluble

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<0.005
Cadmium	<0.0008
Chromium	<0.025
Copper	0.061
Lead	0.082
Mercury	<0.007
Nickel	<0.003
Zinc	0.214
Cyanide	0.200
Chlorinated Hydrocarbons	ND

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BULLETIN UPDATES IN BOLD

TECHNICAL PRODUCT BULLETIN #SW-34
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: NOVEMBER 27, 2006
"SHEEN-MAGIC©"

I. NAME, BRAND, OR TRADEMARK
SHEEN-MAGIC©
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
PLUTUS Environmental Technologies, Inc.
300 John L Marshall Drive
Sevierville, TN 37862
Phone: (865) 604-3150
E-mail: plutusceo@mail.com
(Mr. James Hatcher)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
PLUTUS Environmental Technologies, Inc.
300 John L Marshall Drive
Sevierville, TN 37862
Phone: (865) 604-3150
E-mail: plutusceo@mail.com
(Mr. James Hatcher)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable until >170ºF
2. Ventilation: Handle in a well-ventilated space. Local exhaust is recommended if TLV's are exceeded.
3. Skin and eye contact; protective clothing; treatment in case of contact: Avoid eye and (sensitive) skin contact. In case of contact, immediately flush with large amount of cool water of at least 5 minutes. Wear protective eye goggles when using any chemicals. Impermeable protective gloves are recommended for sensitive skin types. Protective clothing is not required. Rinse contaminated clothing, shoes, goggles, and gloves in simple tap water to remove any chemical residue. Avoid ingestion, breathing dusts, mists, or fumes. In case of ingestion drink several glasses of water. Do not induce vomiting. In case of inhalation, move affected person to fresh air.
4.a. Maximum storage temperature: 160°F
4.b. Minimum storage temperature: -8°F
4.c. Optimum storage temperature range: 40°F – 110ºF
4.d. Temperatures of phase separations and chemical changes: No phase separations will occur.

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V. SHELF LIFE
Unlimited if left in unopened containers stored at 40°F - 110°F and away from direct sunlight.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method: SHEEN-MAGIC© recommended treatment is light misting of contaminated surface. Heavier hydrocarbons such as crude oil should be boomed or vacuumed away as much as possible before application of the SHEENMAGIC©. Treatment of fouled beach areas should have SHEEN-MAGIC© sprayed on all contaminated surfaces. Incidental wave action or rainfall will enhance coverage and penetration by SHEEN-MAGIC©. Any remaining hydrocarbons may then be effectively vacuumed or wiped away from the treated surfaces. Aerial application should be delivered at height and air speed that will create air shear necessary to deliver droplets as per nozzle manufacturer's recommendations. Mist spray from surface vehicles may be delivered from power fogger units. Hand sprayers are generally used for small treatment areas.
2. Concentration/Application Rate: One ounce per 50 square yards of surface is the normal treatment for diesel spills. Heavier hydrocarbon sheens may require additional treatment to remove the contaminant.
3. Conditions for Use: SHEEN-MAGIC© works in all weather conditions that allow hydrocarbon penetration. SHEEN-MAGIC© should be used as soon as the temperature and weather conditions allow delivery to the spill area. Heavier concentrations may be required when the temperature/humidity will cause rapid evaporation of the spray.

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity:

Material Tested	Species	LC50 (ppm)	
SHEEN-MAGIC©	Menidia beryllina	183.00	96-hr
	Mysidopsis bahia	161.00	48-hr
No. 2 Fuel Oil	Menidia beryllina	4.57	96-hr
	Mysidopsis bahia	3.04	48-hr
SHEEN-MAGIC©	Menidia beryllina	7.82	96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	5.75	48-hr
Reference Toxicant (SDS)	Menidia beryllina	11.70	96-hr
	Mysidopsis bahia	5.36	48-hr

b. Effectiveness:
NA

VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point, ASTM D-93: >170°F
2. Pour Point, ASTM D-97: -22°C
3. Viscosity, ASTM D-88: 11SFS@ 100°F
4. Specific Gravity, ASTM D-1298: 1.0127 @ 60°F

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5. pH: 8.10
6. Surface Active Agents: Confidential
7. Solvents: Confidential
8. Additives: Confidential
9. Solubility: Soluble

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<0.005
Cadmium	<0.0008
Chromium	0.026
Copper	0.023
Lead	0.085
Mercury	<0.007
Nickel	<0.003
Zinc	0.231
Cyanide	0.200
Chlorinated Hydrocarbons	ND

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BULLETIN UPDATES IN BOLD

TECHNICAL PRODUCT BULLETIN #SW-35
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: JUNE 16, 2008
"PROCLEANS"

I. NAME, BRAND, OR TRADEMARK
PROCLEANS
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Eximco International, Inc.
5250 Gulfton, #2-B
Houston, TX 77081
Phone: (713) 432-7899
E-mail: procleans@procleans.com; **eximco@eximco.net**
(Mr. Nat Brown)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Eximco International, Inc.
5250 Gulfton, #2-B
Houston, TX 77081
Phone: (713) 432-7899
E-mail: procleans@procleans.com; **eximco@eximco.net**
(Mr. Nat Brown)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable.
2. Ventilation: Normal.
3. Skin and eye contact; protective clothing; treatment in case of contact: Flush contaminated eyes thoroughly with water for 15 minutes, and get medical attention. Remove contaminated clothing, wash exposed area with soap and water, and wash clothing before use. Get medical attention if irritation develops. Get medical attention if ingested. No medical attention is necessary if inhaled.
4.a. Maximum storage temperature: 130°F
4.b. Minimum storage temperature: 35°F
4.c. Optimum storage temperature range: 50°F to 100°F
4.d. Temperatures of phase separations and chemical changes: NA

V. SHELF LIFE
Approximately 2 years at recommended temperatures if unopened.

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VI. RECOMMENDED APPLICATION PROCEDURE

1. Application Method: Apply specified dilute solution using fire hoses or heated pressure washers onto the contaminated solid surface of the spill.
2. Concentration/Application Rate: Use ten parts water to one part product. Dilution rates may be adjusted to suit different job conditions. Apply 10 to 15 gallons of diluted PROCLEANS to one cubic yard of contamination.
3. Conditions for Use: May be used with fresh or salt water. Warmer temperatures may improve results. Most effective if used on solid surfaces such as shoreline beaches and rocks contaminated with light and medium weight crude oils and refined petroleum products.

VII. TOXICITY AND EFFECTIVENESS

a. Toxicity:

Material Tested	Species	LC50 (ppm)
PROCLEANS	Menidia beryllina	83.73 96-hr
	Mysidopsis bahia	83.98 48-hr
No. 2 Fuel Oil	Menidia beryllina	7.41 96-hr
	Mysidopsis bahia	11.68 48-hr
PROCLEANS &	Menidia beryllina	4.78 96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	11.68 48-hr
Reference Toxicant ($CuSO_4$)	Menidia beryllina	0.73 96-hr
	Mysidopsis bahia	0.77 48-hr

b. Effectiveness:

NA

VIII. MICROBIOLOGICAL ANALYSIS

NA

IX. PHYSICAL PROPERTIES

1. Flash Point: >186°F
2. Pour Point: 34.6°F
3. Viscosity: 2.41 cST @ 104°F
4. Specific Gravity: 1.01 @ 25°C
5. pH: 6.8
6. Surface Active Agents: Anionic and nonionic
7. Solvents: None.
8. Additives: None
9. Solubility in Water: NA

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	0.690
Cadmium	ND
Chromium	ND
Copper	ND

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Lead	ND
Mercury	ND
Nickel	ND
Zinc	0.738
Cyanide	ND
Chlorinated Hydrocarbons	ND

ED_001324_00006005-00143

BULLETIN UPDATES IN BOLD

TECHNICAL PRODUCT BULLETIN #SW-36
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: MARCH 30, 2009
"SPILLCLEAN"
SPILLCLEAN ["Concentrate"]
(aka, FIREMAN'S BRAND SPILLCLEAN)

I. NAME, BRAND, OR TRADEMARK
SPILLCLEAN
SPILLCLEAN ["Concentrate"] = 30% Active Ingredients and 70% Water
(aka, FIREMAN'S BRAND SPILLCLEAN)
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Super Sat Ventures, Inc.
S96 W34577 Jericho Drive
Eagle, WI 53119
Phone: (414) 840-9223
(Mr. Daniel W. Klein)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Super Sat Ventures, Inc.
S96 W34577 Jericho Drive
Eagle, WI 53119
Phone: (414) 840-9223
(Mr. Daniel W. Klein)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: >210°F
2. Ventilation: General room ventilation is expected to be satisfactory.
3. Skin and eye contact; protective clothing; treatment in case of contact: Product may cause mild skin irritation. Wear impervious gloves, safety goggles, and full cover clothes. Eye wash and safety shower should be accessible. If eye contact, flush immediately with water for at least 15 minutes. If skin contact, wash with soap and water. If swallowed, give two glasses of water (do not induce vomiting). Seek medical attention for eye and skin contact and ingestion.
4.a. Maximum storage temperature: <210°F
4.b. Minimum storage temperature: >32°F
4.c. Optimum storage temperature range: 50°F – 70°F
4.d. Temperatures of phase separations and chemical changes: <32°F and >210°F

V. SHELF LIFE
3 years. Avoid extreme heat and store in a dry, cool area.

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VI. RECOMMENDED APPLICATION PROCEDURES

Please note:

SPILLCLEAN comes in two forms "Concentrate" and "Original Formula." SPILLCLEAN ["Concentrate"] is 30% Active Ingredients and 70% Water while SPILLCLEAN ["Original Formula"] is 10% Active Ingredients and 90% Water.

SPILLCLEAN ["Concentrate"] and SPILLCLEAN ["Original Formula"] are for on land and surface use only. They should not be used around or near bodies of water when there is a reasonable chance of mixing in with water. Once the contaminant/SPILLCLEAN ["Concentrate"] solution mixes with the body of water, "control" of the contaminant will be lost since SPILLCLEAN is water soluble.

SPILLCLEAN is a formula designed to solubilize and emulsify oil and oil-type products such as motor oil, gasoline, diesel fuel, and transmission fluid. When such products are accidentally spilled and need to be cleaned up from hard surfaces such as streets and driveways, SPILLCLEAN is an effective material to use. Being a surfactant-type material, SPILLCLEAN allows the spilled contaminant to be emulsified and then lifted and separated from the hard surface. The resulting spill/contaminant can then be picked up, vacuumed up, or flushed with water, all in accordance with federal, state, and local regulations.

1. Application Method: SPILLCLEAN ["Concentrate"] 30% Active Ingredients and 70% Water – squeeze product directly around outside perimeter of oil/gasoline/antifreeze spill using squeeze bottle container. This process is designed to "contain" the contaminant and keep if from migrating down a hard surface like a city street, parking lot, or garage floor. SPILLCLEAN ["Concentrate"] is more viscous than oil/gasoline, and will "hold" the contaminant in place. Once the contaminant is contained, the user can apply SPILLCLEAN ["Original Formula"] over the "body" of the contaminant if the spill is large (over 2 gallons). If the spill is small (less than 2 gallons), the user can apply either SPILLCLEAN ["Concentrate"] or SPILLCLEAN ["Original Formula"] to the "body" of the contaminant spill. Using a broom or broom-like applicator, sweep SPILLCLEAN in with the contaminant until thoroughly blended in place. The original bright red color of SPILLCLEAN ["Concentrate"] and SPILLCLEAN ["Original Formula"] will dissipate when it is thoroughly mixed with the contaminant.

SPILLCLEAN ["Original Formula"] 10% Active Ingredients and 90% Water – apply over the "body" of the contaminant if the spill is large (over 2 gallons). If the spill is small (less than 2 gallons), the user can apply SPILLCLEAN ["Concentrate"] or SPILLCLEAN ["Original Formula"] to the "body" of the contaminant spill. SPILLCLEAN ["Original Formula"] is designed to "attach" to a contaminant and remove it from a hard surface like a city street, parking lot, or garage floor. It is recommended to be used on any size contaminant spill, large or small. This product is designed to penetrate into the surface pores and molecularly "attach" with the contaminant, thus making the contaminant "water soluble." The contaminant can be removed from the pores (of the asphalt, concrete, epoxy surface, etc.) with a 60psi water supply. The user can then dispose of the resulting mixture according to regulations. This product can be

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applied using a vast number of different applicators, especially with regard to firefighting equipment. Using a broom or broom-like applicator, sweep SPILLCLEAN in with the contaminant until thoroughly blended in place. The original bright red color of SPILLCLEAN ["Concentrate"] and SPILLCLEAN ["Original Formula"] will dissipate when it is thoroughly mixed with the contaminant.

When SPILLCLEAN'S bright red color has dissipated (upon mixing) with the contaminant, it can be wiped clean with a rag or wet-vacuumed, collected, and disposed of according to EPA, federal, state, and local regulations. Additionally, a dry sorbent may be applied to the resulting SPILLCLEAN/contaminant/water mixture, shoveled up and disposed of according to applicable regulations.

2. Concentration/Application Rate: For Surface and Land Application Only:
SPILLCLEAN ["Concentrate"] 30% Active Ingredients and 70% Water – for spills less than 2 gallons squeeze a one-half inch ribbon of straight product around the perimeter of the oil/gasoline spill, followed by an "X" pattern over the body of the spill. For spills greater than 2 gallons squeeze a one-half inch ribbon of straight product around the perimeter of the oil/gasoline spill. The general purpose of SPILLCLEAN ["Concentrate"] is to "contain" the contaminant from migrating, and therefore should not be diluted with water during application.

SPILLCLEAN ["Original Formula"] 10% Active Ingredients and 90% Water – concentration rate is based on equipment used and disposal method. Typical usage will be (0 to 100 parts water) plus 1 part SPILLCLEAN ["Original Formula"] all applied to 1 part contaminant (oil/gasoline spill).

The resulting mixture of SPILLCLEAN and oil must be disposed of in accordance with EPA, federal, state, and local agencies that regulate disposal of contaminant. The resulting SPILLCLEAN contaminant mixture should be wet-vacuumed up and placed in a proper container and disposed.

3. Conditions for Use:
Water Salinity: Water soluble, not applicable for use on water
Water Temperature: >32°F and <120°F
Types of Pollutants: Automobile motor oil, gasoline, diesel fuel, and transmission fluid
Ages of Pollutants: 0 to 20 years old

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity:

Material Tested	Species	LC50 (ppm)
SPILLCLEAN ["Concentrate"]	Menidia beryllina	24.30 96-hr
	Mysidopsis bahia	10.00 48-hr
No. 2 Fuel Oil	Menidia beryllina	6.60 96-hr
	Mysidopsis bahia	2.20 48-hr
SPILLCLEAN ["Concentrate"] &	Menidia beryllina	3.30 96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	1.30 48-hr

Reference Toxicant (SDS)	Menidia beryllina	8.90	96-hr
	Mysidopsis bahia	10.70	48-hr

VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point: SPILLCLEAN ["Concentrate"] = >210°F
2. Pour Point: SPILLCLEAN ["Concentrate"] = 27.0°F
3. Viscosity: SPILLCLEAN ["Concentrate"] = 6400cPs@25°C
4. Specific Gravity: SPILLCLEAN ["Concentrate"] = 1.030
5. pH: SPILLCLEAN ["Concentrate"] = 7.20
6. Surface Active Agents: Confidential
7. Solvents: Confidential
8. Additives: Confidential
9. Solubility: Water soluble

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	0.02
Cadmium	<0.007
Chromium	<0.01
Copper	<0.01
Lead	<0.02
Mercury	<0.00003
Nickel	<0.01
Zinc	<0.01
Cyanide	0.137
Chlorinated Hydrocarbons	<0.01

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EPA HAS NOT RECEIVED UPDATED CONTACT INFORMATION FOR THIS PRODUCT: 3/23/16

TECHNICAL PRODUCT BULLETIN #SW-37
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: MARCH 15, 2010
"TXCHEM HE-1000™"

I. NAME, BRAND, OR TRADEMARK
"TXCHEM HE-1000™"
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Texas EnviroChem, Inc.
11410 Dumas Street
Houston, TX 77034
Phone: (713) 806-4099
(Mr. Pete Franks)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Texas EnviroChem, Inc.
11410 Dumas Street
Houston, TX 77034
Phone: (713) 806-4099
(Mr. Pete Franks)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Not flammable
2. Ventilation: Recommended, respirator in confined area
3. Skin and eye contact; protective clothing; treatment in case of contact:
Wear rubber gloves and eye protection. If eye contact, wash eyes thoroughly for 15 minutes; including upper and lowers lids, and seek medical attention. For skin contact, irritation is possible, wash with soap and water for 15 minutes. If irritation persists, seek medical attention.
4.a. Maximum storage temperature: 95°F
4.b. Minimum storage temperature: 32°F
4.c. Optimum storage temperature range: 75°F
4.d. Temperatures of phase separations and chemical changes: No phase changes have been observed.

V. SHELF LIFE
One year in a sealed container.

VI. RECOMMENDED APPLICATION PROCEDURES
1. Application Method: TXCHEM HE-1000™ is applied by pressure sprayer, heated pressure

washer, fire hoses or mixing on or into hydrocarbon contaminated media.

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2. Concentration/Application Rate: TXCHEM HE-1000™ should be diluted to a one (1) part concentrated chemical to ten (10) parts water solution. Apply ten to fifteen gallons of diluted solution to one cubic yard of contaminated media. Agitate to slurry. Dilution rate may change due to level of hydrocarbon contamination. Please see manufacturer's instructions for additional application dilutions. Excess washing solution should be disposed of according to local, state, and federal regulations.3. Conditions for Use: Pollutants should be of hydrocarbon in nature. Greater results occur at ambient temperatures greater than 50°F. Fresh or salt water can be used with no performance change.

VII. TOXICITY AND EFFECTIVENESS

a. Toxicity:

Material Tested	Species	LC50 (ppm)
TXCHEM HE-1000™	Menidia beryllina	91.33 96-hr
	Mysidopsis bahia	65.52 48-hr
No. 2 Fuel Oil	Menidia beryllina	5.84 96-hr
	Mysidopsis bahia	2.17 48-hr
TXCHEM HE-1000™ &	Menidia beryllina	7.07 96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	2.11 48-hr
Reference Toxicant (SLS)	Menidia beryllina	15.27 96-hr
	Mysidopsis bahia	12.84 48-hr

b. Effectiveness: NA

VIII. MICROBIOLOGICAL ANALYSIS

NA

IX. PHYSICAL PROPERTIES

1. Flash Point: >210°F
2. Pour Point: 23.0°F
3. Viscosity: 1.99cSt
4. Specific Gravity: 0.999
5. pH: 7.20
6. Surface Active Agents: Confidential
7. Solvents: NA
8. Additives: Confidential
9. Solubility: NA

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	ND
Cadmium	ND
Chromium	0.0366
Copper	0.0402
Lead	0.0189
Mercury	ND

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Nickel	0.0125
Zinc	0.29
Cyanide	<0.05
Chlorinated Hydrocarbons	ND

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TECHNICAL PRODUCT BULLETIN #SW-38USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: MAY 11, 2010
"NOKOMIS 5-W"

I. NAME, BRAND, OR TRADEMARK
NOKOMIS 5-W
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Mar-Len Supply, Inc.
23159 Kidder Street
Hayward, CA 94545
Phone: (510) 782-3555
Fax: (510) 782-2032
(Mr. Frank Winter)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Mar-Len Supply, Inc.
23159 Kidder Street
Hayward, CA 94545
Phone: (510) 782-3555
Fax: (510) 782-2032
(Mr. Frank Winter)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable (water based)
2. Ventilation: No special requirements
3. Skin and eye contact; protective clothing; treatment in case of contact: In case of eye contact, flush with water; in case of skin contact, wash with water; and, if swallowed drink water to dilute and induce vomiting.
4.a. Maximum storage temperature: 212°F
4.b. Minimum storage temperature: 32°F
4.c. Optimum storage temperature range: 50°F
4.d. Temperatures of phase separations and chemical changes: NA

V. SHELF LIFE
15 years or more if stored correctly in plastic drums.

VI. RECOMMENDED APPLICATION PROCEDURES
1. Application Method: NOKOMIS 5-W is a concentrated liquid, non-hazardous cleaner. Can be used full strength or diluted with fresh or salt water. NOKOMIS 5-W is marketed in plastic containers.
2. Concentration/Application Rate: Dilution ratios are determined by the individual cleaning

application. For washing equipment contaminated with soluble crude and/or bunker fuel oil use a 5:1 cleaning solution. Spray or brush onto surface, agitate with a stiff bristle brush, and rinse with fresh or salt water. For pressure washing, pre-spray surface with concentrate and allow to dwell on surface one to ten minutes (depending on age of oil). For shoreline areas and beaches with rocky, breakwaters contain the area of beach sand and gravel by creating a sand bather around a small contaminated area. Spray contaminated area with a 10:1 solution. Add salt or freshwater, agitate surface to help release oil from sand. Allow time for oil to surface and recover oil. To clean larger tidal rock surfaces, apply 5:1 or 20 percent mixture of NOKOMIS 5-W. Spray solution onto rocks with a garden type pump sprayer. Agitate with a stiff bristle brush. Allow to dwell on surface until surface looks soluble. Contain with a boom or use oil absorbent pads to recover oil.
3. Conditions for Use: Fresh or salt water can be used.

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity:

Material Tested	Species	LC50 (ppm)
NOKOMIS 5-W	Menidia beryllina	10.46 96-hr
	Mysidopsis bahia	21.52 48-hr
No. 2 Fuel Oil	Menidia beryllina	4.25 96-hr
	Mysidopsis bahia	2.11 48-hr
NOKOMIS 5-W	Menidia beryllina	3.07 96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	2.24 48-hr
Reference Toxicant (SLS)	Menidia beryllina	13.01 96-hr
	Mysidopsis bahia	9.05 48-hr

b. Effectiveness: NA

VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point: None
2. Pour Point: 28°F
3. Viscosity: 31.00 cps
4. Specific Gravity: 1.0065 g/cc
5. pH: 10.4
6. Surface Active Agents: Confidential
7. Solvents: None
8. Additives: None
9. Solubility: Completely water soluble

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	0.037

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Cadmium	<0.050
Chromium	<0.050
Copper	<0.050
Lead	<0.025
Mercury	<0.0064
Nickel	<0.050
Zinc	1.7
Cyanide	0.042
Chlorinated Hydrocarbons	<0.500

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LISTING CHANGES PENDING, FOLLOWING VERIFICATION BY MANUFACTURER AND EPA

TECHNICAL PRODUCT BULLETIN #SW-39
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: JULY 02, 2010
"G-CLEAN OSC-1809"

I. NAME, BRAND, OR TRADEMARK
G-CLEAN OSC-1809
(aka, OIL SPILL CLEANUP)
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Green Earth Technologies
1136 Celebration Boulevard
Celebration, FL 34347
Phone: (330) 540-4220
Fax: (815) 331-0931
E-mail: mlukco@getg.com
E-mail: jloch@getg.com
Website: www.getg.com
(Mr. Michael Lukco)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Green Earth Technologies
1136 Celebration Boulevard
Celebration, FL 34347
Phone: (330) 540-4220
Fax: (815) 331-0931
E-mail: mlukco@getg.com
E-mail: jloch@getg.com
Website: www.getg.com
(Mr. Michael Lukco)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable (DOT: Non-hazardous)
2. Ventilation: No special requirements
3. Skin and eye contact; protective clothing; treatment in case of contact: As defined by OSHA's Hazard Communication Standard, this product is non-hazardous with no evidence of adverse effects. No personal protection or exposure controls.
4.a. Maximum storage temperature: 140°F continuous up to 5 days
4.b. Minimum storage temperature: 35°F

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4.c. Optimum storage temperature range: 50°F to 98°F
4.d. Temperatures of phase separations and chemical changes: May begin freezing at or below 25°F as product begins to thaw. Mix product with agitator until product becomes homogenous.

V. SHELF LIFE
Five to ten years in sealed polydrums or totes (as delivered).

VI. RECOMMENDED APPLICATION PROCEDURES
1. Application Method: Product may be applied to any surface for removal of oils. Select proper dilution depending on product types and material surface prior to application. For treatment of large areas, properly diluted product may be applied by spraying with a pressure washer, portable fire pump or any other suitable pump with seawater or freshwater suction that is equipped with a chemical inductor or feed pump. For smaller areas, properly diluted product may be applied with scrubber, mop, cloth or damp sponge. Apply liberally, adjusting dilution on site as necessary.
2. Concentration/Application Rate: For heavily weathered oil on rocks, a diluted solution of 3 parts water to 1 part product is recommended. For heavily weathered oil on beaches/sand, a diluted solution of 5 parts water to 1 part product is ideal. For tar balls, no dilution is necessary and it is suggested to apply directly at full strength. For removing oil from vegetation, a diluted solution of 10/20 parts water to 1 part product is preferred. Product may be diluted with either salt water or fresh water. Warmer waters (greater than 78°F) and/or good agitation during application will require less product.
3. Conditions for Use: Best results are obtained by allowing diluted solution to soak for at least 30 minutes to soften the oil deposits. Reapplication may be necessary in severely contaminated areas. A sorbent boom or vacuum suction equipment should be positioned to collect the washed off effluent. When proper containment equipment is in place and a soaking period of at least 30 minutes has been achieved, a diluted solution of 20 parts water and 1 part product should be applied at mid-pressure (approximately 100 PSI). Adjust the pressure and angle of the hose sprayer to achieve optimum results, adjusting dilution as necessary on site. Product and effluent should be vacuumed up or absorbed in absorbent boom and disposed of according to EPA guidelines.

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity:

Material Tested	Species	LC50 (ppm)
G-CLEAN OSC-1809	Menidia beryllina	11.49 96-hr
	Mysidopsis bahia	7.32 48-hr
No. 2 Fuel Oil	Menidia beryllina	2.51 96-hr
	Mysidopsis bahia	2.24 48-hr
G-CLEAN OSC-1809 &	Menidia beryllina	6.05 96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	2.51 48-hr
Reference Toxicant (SLS)	Menidia beryllina	12.25 96-hr
	Mysidopsis bahia	11.71 48-hr

b. Effectiveness: NA

VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point: >93°C
2. Pour Point: -16°F
3. Viscosity: 60.77 at 40°C
4. Specific Gravity: 1.029 @60°F
5. pH: 11.3
6. Surface Active Agents: Nonionic, Surfactants, PROPRIETARY
7. Solvents: Plant-based, PROPRIETARY
8. Additives: None
9. Solubility: Completely water soluble

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<0.004
Cadmium	<0.002
Chromium	2.004
Copper	0.068
Lead	<0.004
Mercury	<1 µg/L
Nickel	0.0132
Zinc	0.0136
Cyanide	<0.25
Chlorinated Hydrocarbons	<5.00

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TECHNICAL PRODUCT BULLETIN #SW-40
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: JULY 06, 2010
"GREEN BEAST™ OIL SPILL & ODOR REMEDIATOR"
(aka, GREEN BEAST WASHING AGENT; ALL PURPOSE CLEANER & REMEDIATOR)

I. NAME, BRAND, OR TRADEMARK
GREEN BEAST™ OIL SPILL & ODOR REMEDIATOR
(aka, GREEN BEAST WASHING AGENT; ALL PURPOSE CLEANER & REMEDIATOR)
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
BioFusion Corporation
310 Godwin Avenue
Ridgewood, NJ 07450
Phone: (201) 447-6241
Fax: (201) 444-2307
E-mail: gubb@biofusion.co
Website: www.biofusion.co
(Mr. David Gubb)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS

Brightside Products, LLC
310 Godwin Avenue
Ridgewood, NJ 07450
Phone: (201) 447-6241
Fax: (201) 444-2307
E-mail: gubb@biofusion.co
(Mr. David Gubb)

MSC Industrial Supply Company, Inc.
75 Maxess Road
Melville, NY 11747
Phone: (800) 645-7270
Website: www.mscdirect.com

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable (DOT: Non-hazardous)
2. Ventilation: No special requirements
3. Skin and eye contact; protective clothing; treatment in case of contact: No special equipment or clothing required; however, goggles are recommended. If eye or skin irritation occurs, flush with plenty of water.
4.a. Maximum storage temperature: 120°F
4.b. Minimum storage temperature: 35°F
4.c. Optimum storage temperature range: 40°F to 113°F
4.d. Temperatures of phase separations and chemical changes: Stable

V. SHELF LIFE
Unlimited in sealed polydrums or totes (as delivered).

VI. RECOMMENDED APPLICATION PROCEDURES

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1. Application Method: The diluted composition of the present formulation is preferably applied to a surface to be cleaned under pressure (i.e., power washing), but will work well poured directly onto the contaminated area. It is advantageous to apply the diluted final composition at high pressure, above 500 psi, but it is not required.
2. Concentration/Application Rate: For treating hydrocarbons on beaches, rocks, and hard surfaces the final composition is diluted 1:15 with fresh or sea water and is applied to the hydrocarbons at a rate of about 4 gallons for 1000 square feet of contaminated area. For spills which are of heavy consistency, the diluted mixture is preferably applied at a rate of about 1.3 gallons for 1000 square feet of contaminated area and the diluted final composition is preferably applied over a period of three consecutive days. Residue should be collected and disposed of in accordance with local, state, and federal practices and laws.
3. Conditions for Use: The composition of the present formulation is diluted into water, preferably at a temperature of about 38°F to about 60°F. While the composition is active below about 38°F, the activity is slightly reduced. The composition is also active at temperatures above about 60°F; however, at these elevated temperatures the composition is less stable and is denatured at a greater rate than at lower temperatures. Preferably, the diluted compositions of the present formulation are used immediately after the dilution into about 38°F to 60°F water.

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity:

Material Tested	Species	LC50 (ppm)
Product	Menidia beryllina	29.18 96-hr
	Mysidopsis bahia	30.42 48-hr
No. 2 Fuel Oil	Menidia beryllina	2.51 96-hr
	Mysidopsis bahia	2.24 48-hr
Product &	Menidia beryllina	7.15 96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	2.24 48-hr
Reference Toxicant (SLS)	Menidia beryllina	12.25 96-hr
	Mysidopsis bahia	11.71 48-hr

b. Effectiveness: NA

VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point: >85°C
2. Pour Point: +26°F
3. Viscosity: 3.87 at 40°C
4. Specific Gravity: 0.9986 @60°F
5. pH: 4.5
6. Surface Active Agents: Anionic and Nonionic, PROPRIETARY SURFACTANTS
7. Solvents: None
8. Additives: Nutrient and Protein Package, PROPRIETARY
9. Solubility: Miscible in oil, water, and solvents

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X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	0.0088
Cadmium	<0.002
Chromium	0.1752
Copper	0.0360
Lead	<0.004
Mercury	<1 µg/L
Nickel	<0.010
Zinc	0.0840
Cyanide	<0.010
Chlorinated Hydrocarbons	<5.00

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TECHNICAL PRODUCT BULLETIN #SW-41
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: JULY 13, 2010
"TULXA"

I. NAME, BRAND, OR TRADEMARK
TULXA
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Grupo Arthuriana S.A. de C.V.
Cuernavaca No. 43
Colonia Condesa, Delegación Cuauhtémoc
Mexico, Distrito Federal C.P. 06140
Phone: 01 52 (55) 52 41 11 90
Fax: 01 52 (55) 53 61 13 54
E-mail: sgarcia@arthuriana.com.mx, sgarcia@onsite.com.mx or bescorcia@arthuriana.com.mx, bescorcia@onsite.com.mx
Website: www.lancelotmexico.com
(Ms. Susana Garcia Ballesteros)
(Ms. Bertha Escorcia Rodriguez)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Grupo Arthuriana S.A. de C.V.
Cuernavaca No. 43
Colonia Condesa, Delegación Cuauhtémoc
Mexico, Distrito Federal C.P. 06140
Phone: 01 52 (55) 52 41 11 90
Fax: 01 52 (55) 53 61 13 54
E-mail: sgarcia@arthuriana.com.mx, sgarcia@onsite.com.mx or bescorcia@arthuriana.com.mx, bescorcia@onsite.com.mx
(Ms. Susana Garcia Ballesteros)
(Ms. Bertha Escorcia Rodriguez)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable (DOT: Non-hazardous)
2. Ventilation: Wear protective mask.
3. Skin and eye contact; protective clothing; treatment in case of contact: Avoid contact with eyes, in case of contact rinse with fresh water. Do not ingest. If swallowed do not induce vomiting and contact a doctor immediately. Use normal protective equipment for handling powder, such as a mask or eye shield. If eye or skin irritation occurs, flush with plenty of fresh water.
4.a. Maximum storage temperature: 104°F or 40°C

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4.b. Minimum storage temperature: 52°F or 20°C
4.c. Optimum storage temperature range: 77°F or 25°C and 95°F or 35°C
4.d. Temperatures of phase separations and chemical changes: >104°F or 40°C

V. SHELF LIFE
Two years if stored in dry, fresh environment.

VI. RECOMMENDED APPLICATION PROCEDURES
1. Application Method: Tulxa can be applied using conventional spraying equipment using low to moderate pressure. Tulxa can be applied directly to any surfaces coated with oil (e.g., beaches, rocks, plants).
2. Concentration/Application Rate: Tulxa can be diluted with fresh water up to a ratio of 1:200. Higher concentration of Tulxa may be required for weathered oils. Optimum concentration should be determined on site based on the type and age of the oil being removed. The product is fully miscible with water with minimal mixing.
3. Conditions for Use: It is recommended to do a test to measure the amount of oils removed and check the time and dilution at which the fats are separated. The product should completely separate the oils in 25 minutes. Although, it may be necessary to let the mixture stay in contact with surface for a longer period of time depending on the type and age of the oil. Residue should be collected and disposed of in accordance with local, state, and federal practices and laws.

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity:

Material Tested	Species	LC50 (ppm)
TULXA	Menidia beryllina	16.50 96-hr
	Mysidopsis bahia	11.33 48-hr
No. 2 Fuel Oil	Menidia beryllina	4.94 96-hr
	Mysidopsis bahia	1.31 48-hr
TULXA &	Menidia beryllina	6.08 96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	2.24 48-hr
Reference Toxicant (SLS)	Menidia beryllina	12.19 96-hr
	Mysidopsis bahia	10.53 48-hr

b. Effectiveness: NA

VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point: >185°F
2. Pour Point: 22°F
3. Viscosity: 30.77 cSt @ 40°C
4. Specific Gravity: 1.0263 @60°F
5. pH: 5.0
6. Surface Active Agents: NA
7. Solvents: NA

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8. Additives: None
9. Solubility: Miscible in oil, water, and solvents

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<0.002
Cadmium	<0.001
Chromium	0.4436
Copper	0.0034
Lead	<0.002
Mercury	<1 µg/L
Nickel	<0.005
Zinc	0.0278
Cyanide	<0.013
Chlorinated Hydrocarbons	<1.00

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TECHNICAL PRODUCT BULLETIN #SW-42USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: JULY 28, 2010
"MARINE GREEN CLEAN™"

I. NAME, BRAND, OR TRADEMARK
MARINE GREEN CLEAN™
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
AGS Solutions, Inc.
5647 Nunn Street
Houston, TX 77087
Phone: (713) 645-4933
Fax: (713) 645-4903
E-mail: agssolutionsinc@gmail.com
Website: www.agstx.com
(Mrs. Linda Whiteley)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
AGS Solutions, Inc.
5647 Nunn Street
Houston, TX 77087
Phone: (713) 645-4933
Fax: (713) 645-4903
E-mail: agssolutionsinc@gmail.com
Website: www.agstx.com
(Mrs. Linda Whiteley)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable
2. Ventilation: Respiratory protection is not considered necessary for normal use. If exposure to vapors or mists is possible, such as is a fire emergency, NIOSH approved respiratory protection for organic vapors should be used. Mechanical ventilation is not normally required.
3. Skin and eye contact; protective clothing; treatment in case of contact: In case of contact with eyes, wash thoroughly with plenty of clean water. Seek medical attention if irritation develops. Rubber protective gloves should be used if prolonged use of product is anticipated.
4.a. Maximum storage temperature: 100°F
4.b. Minimum storage temperature: 0°F
4.c. Optimum storage temperature range: 33°F to 100°F
4.d. Temperatures of phase separations and chemical changes: >100°F

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V. SHELF LIFE

Shelf life is ≥ 2 years. The product may lose its effectiveness at temperatures >140°F. Make sure bulk containers are properly vented. Drums and similar containers should be kept closed. Store in steel or plastic containers.

VI. RECOMMENDED APPLICATION PROCEDURES

1. Application Method: For general use, apply product by spray, mop, or with standard steam and pressure wash cleaning equipment. It can also be applied using a foam generator, or any convenient sprayer. Product can be used as is or by using heat and pressure or mechanical scrubbing. Rinse thoroughly with fresh water for a residue-free surface. In direct applications, foaming will be most effective as it will allow more contact time for the product to work. In a typical foam cleaning application operation the surface to be cleaned will be thoroughly covered with foam and allowed to stand for several minutes. The foam is rinsed away with clean water using a hot pressure of low pressure washer. Product can be applied with a variety of spraying or washing equipment, depending upon the type and scale of the shoreline or beach to be cleaned. For large areas such as beaches, the product can be sprayed from water trucks or other vehicles equipped with pumps, hoses, and nozzles to aerially deliver cleaner. On smaller oily surfaces, the product can be applied with hand sprayers or portable pumps may be used to spray directly onto oily surfaces. Dose rates may vary depending on type and amount of petroleum spilled, and other site conditions such as water, temperatures, and porosity of shoreline. Cold weather applications will require more contact time before initiating recovery. The treated product can be removed by several means including but not limited to: sorbent pads, oil skimmers, collection booms, use of vacuum trucks, berm collecting, drumming, frac tanks, or other appropriate containment and collection mechanism.

2. Concentration/Application Rate: For spills on shorelines and beaches, the product can be used undiluted up to 14% dilution with fresh water. After application, the product should be allowed to penetrate and dissolve the oily surface for up to 30 minutes, longer is preferable – if possible, to maximize contact time. For light cleaning, use up to 1:50 parts product to water. For heavy cleaning, use up to 1:14 parts product to water.

3. Conditions for Use: Product can be used in fresh or salt water, sand beaches, gravel, cobble, coarse sand and rocky shores, public beaches, and other sensitive or high impact sites.

VII. TOXICITY AND EFFECTIVENESS

a. Toxicity:

Material Tested	Species	LC50 (ppm)
MARINE GREEN CLEAN™	Menidia beryllina	46.00 96-hr
	Mysidopsis bahia	89.00 48-hr
No. 2 Fuel Oil	Menidia beryllina	18.00 96-hr
	Mysidopsis bahia	22.00 48-hr
MARINE GREEN CLEAN™ &	Menidia beryllina	34.00 96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	45.00 48-hr
Reference Toxicant (DSS)	Menidia beryllina	1.06 96-hr
	Mysidopsis bahia	0.97 48-hr

b. Effectiveness: NA

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VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point: NA
2. Pour Point: 30°F
3. Viscosity: 77.2 cSt @ 25°C
4. Specific Gravity: 1.032 @70°F
5. pH: 11-12.5
6. Surface Active Agents: CONFIDENTIAL
7. Solvents: CONFIDENTIAL
8. Additives: None
9. Solubility: Completely soluble

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	0.648
Cadmium	0.030
Chromium	0.143
Copper	0.154
Lead	<0.025
Mercury	<0.013
Nickel	0.357
Zinc	2.540
Cyanide	<0.02
Chlorinated Hydrocarbons	ND

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TECHNICAL PRODUCT BULLETIN #SW-43USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: JULY 28, 2010
"MARINE GREEN CLEAN PLUS™"

I. NAME, BRAND, OR TRADEMARK
MARINE GREEN CLEAN PLUS™
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
AGS Solutions, Inc.
5647 Nunn Street
Houston, TX 77087
Phone: (713) 645-4933
Fax: (713) 645-4903
E-mail: agssolutionsinc@gmail.com
Website: www.agstx.com
(Mrs. Linda Whiteley)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
AGS Solutions, Inc.
5647 Nunn Street
Houston, TX 77087
Phone: (713) 645-4933
Fax: (713) 645-4903
E-mail: agssolutionsinc@gmail.com
Website: www.agstx.com
(Mrs. Linda Whiteley)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable
2. Ventilation: Respiratory protection is not considered necessary for normal use. If exposure to vapors or mists is possible, such as is a fire emergency, NIOSH approved respiratory protection for organic vapors should be used. Mechanical ventilation is not normally required.
3. Skin and eye contact; protective clothing; treatment in case of contact: In case of contact with eyes, wash thoroughly with plenty of clean water. Seek medical attention if irritation develops. Rubber protective gloves should be used if prolonged use of product is anticipated.
4.a. Maximum storage temperature: 100°F
4.b. Minimum storage temperature: 0°F
4.c. Optimum storage temperature range: 33°F to 100°F
4.d. Temperatures of phase separations and chemical changes: >100°F

V. SHELF LIFE

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Shelf life is ≥ 2 years. The product will not lose its effectiveness unless the temperatures is >140°F. Make sure bulk containers are properly vented. Drums and similar containers should be kept closed. Store in steel or plastic containers.

VI. RECOMMENDED APPLICATION PROCEDURES

1. Application Method: For general use, apply product by spray, mop, or with standard steam and pressure wash cleaning equipment. It can also be applied using a foam generator, or any convenient sprayer. Product can be used as is or by using heat and pressure or mechanical scrubbing. Rinse thoroughly with fresh water for a residue-free surface. In direct applications, foaming will be most effective as it will allow more contact time for the product to work. In a typical foam cleaning application operation the surface to be cleaned will be thoroughly covered with foam and allowed to stand for several minutes. The foam is rinsed away with clean water using a hot pressure of low pressure washer. Product can be applied with a variety of spraying or washing equipment, depending upon the type and scale of the shoreline or beach to be cleaned. For large areas such as beaches, the product can be sprayed from water trucks or other vehicles equipped with pumps, hoses, and nozzles to aerially deliver cleaner. On smaller oily surfaces, the product can be applied with hand sprayers or portable pumps may be used to spray directly onto oily surfaces. Dose rates may vary depending on type and amount of petroleum spilled, and other site conditions such as water, temperatures, and porosity of shoreline. Cold weather applications will require more contact time before initiating recovery. The treated product can be removed by several means including but not limited to: sorbent pads, oil skimmers, collection booms, use of vacuum trucks, berm collecting, drumming, frac tanks, or other appropriate containment and collection mechanism.

2. Concentration/Application Rate: For spills on shorelines and beaches, the product can be used undiluted up to 14% dilution with fresh water. After application, the product should be allowed to penetrate and dissolve the oily surface for up to 30 minutes, longer is preferable – if possible, to maximize contact time. For light cleaning, use up to 1:200 parts product to water. For heavy cleaning, use up to 1:14 parts product to water.

3. Conditions for Use: Product can be used in fresh or salt water, sand beaches, gravel, cobble, coarse sand and rocky shores, public beaches, and other sensitive or high impact sites.

VII. TOXICITY AND EFFECTIVENESS

a. Toxicity:

Material Tested	Species	LC50 (ppm)
MARINE GREEN CLEAN PLUS™	Menidia beryllina	28.00 96-hr
	Mysidopsis bahia	53.00 48-hr
No. 2 Fuel Oil	Menidia beryllina	18.00 96-hr
	Mysidopsis bahia	23.00 48-hr
MARINE GREEN CLEAN PLUS™	Menidia beryllina	30.00 96-hr
& No. 2 Fuel Oil (1:10)	Mysidopsis bahia	32.00 48-hr
Reference Toxicant (DSS)	Menidia beryllina	1.06 96-hr
	Mysidopsis bahia	0.97 48-hr

b. Effectiveness: NA

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VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point: NA
2. Pour Point: 28°F
3. Viscosity: 80.2 cSt @ 25°C
4. Specific Gravity: 8.6 @70°F
5. pH: 11-12.5
6. Surface Active Agents: CONFIDENTIAL
7. Solvents: CONFIDENTIAL
8. Additives: CONFIDENTIAL
9. Solubility: Completely soluble

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	0.827
Cadmium	0.025
Chromium	0.078
Copper	0.062
Lead	<0.025
Mercury	<0.013
Nickel	0.220
Zinc	1.990
Cyanide	<0.02
Chlorinated Hydrocarbons	ND

ED_001324_00006005-00169

TECHNICAL PRODUCT BULLETIN #SW-44USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: AUGUST 5, 2010
"CLEAN GREEN"
(aka, CLEANGREEN® PLANET WASH)

I. NAME, BRAND, OR TRADEMARK
CLEAN GREEN
(aka, CLEANGREEN® PLANET WASH)
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
U.S. AG, LLC
P.O. Box 368
Luthersville, GA 30251
Phone: (770) 927-3206
Fax: (770) 927-3968
E-mail: unitedstatesag@yahoo.com
Website: www.unitedstatesag.org
(Mr. Carl Schneider)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
U.S. AG, LLC
56 N Main
Luthersville, GA 30251
Phone: (770) 927-3206
Fax: (770) 927-3968
E-mail: unitedstatesag@yahoo.com
Website: www.unitedstatesag.org
(Mr. Carl Schneider)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable (DOT: Non-hazardous)
2. Ventilation: No special requirements.
3. Skin and eye contact; protective clothing; treatment in case of contact: No special equipment or clothing required, however, goggles are recommended. If eye or skin irritation occurs, flush with plenty of fresh water.
4.a. Maximum storage temperature: 120°F continuous, 140°F up to 5 days
4.b. Minimum storage temperature: 35°F
4.c. Optimum storage temperature range: 40°F to 120°F
4.d. Temperatures of phase separations and chemical changes: Stable

V. SHELF LIFE
5 years in sealed polydrums or totes (as delivered).

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VI. RECOMMENDED APPLICATION PROCEDURES

1. Application Method: Product may be applied to any oil coated surface, such as beaches, equipment, rocks, etc. A variety of pumps or sprayers may be used for direct application to contaminates, back-pack, drum pumps, pick-up sprayers, etc.
2. Concentration/Application Rate: Where ever higher oil concentrations occur use approximately a 1:10 dilution ratio (product:water). Lightly soiled areas will require a 1:10 to 1:30 ratio.
3. Conditions for Use: Residue from surface washing should be collected and disposed of according to local, state, and federal regulations. The collection of residue can be determined on a site by site basis based on best practices of the area.

VII. TOXICITY AND EFFECTIVENESS

a. Toxicity:

Material Tested	Species	LC50 (ppm)
CLEAN GREEN	Menidia beryllina	136.10 96-hr
	Mysidopsis bahia	70.70 48-hr
No. 2 Fuel Oil	Menidia beryllina	3.35 96-hr
	Mysidopsis bahia	2.24 48-hr
CLEAN GREEN &	Menidia beryllina	4.73 96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	2.24 48-hr
Reference Toxicant (SLS)	Menidia beryllina	12.25 96-hr
	Mysidopsis bahia	10.53 48-hr

b. Effectiveness: NA

VIII. MICROBIOLOGICAL ANALYSIS

NA

IX. PHYSICAL PROPERTIES

1. Flash Point: >93°C
2. Pour Point: +25°F
3. Viscosity: 3.72 @40°C
4. Specific Gravity: 1.0691 @70°F
5. pH: 9.9
6. Surface Active Agents: CONFIDENTIAL
7. Solvents: CONFIDENTIAL
8. Additives: CONFIDENTIAL
9. Solubility: Miscible in oil, water, and solvents

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	0.0265
Cadmium	<0.005

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Chromium	0.0985
Copper	<0.0150
Lead	<0.0100
Mercury	0.0005
Nickel	<0.0250
Zinc	0.2455
Cyanide	<0.300
Chlorinated Hydrocarbons	<5.0

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EPA HAS NOT RECEIVED UPDATED CONTACT INFORMATION FOR THIS PRODUCT: 3/23/16

TECHNICAL PRODUCT BULLETIN #SW-45
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: AUGUST 5, 2010
"SOC-10"

I. NAME, BRAND, OR TRADEMARK
SOC 10 (SURFACE OIL CLEANER)
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Oil Treatment International AG
Seestrasse 5
CH-6300 Zug
Switzerland
Phone: 01141-41-727-2100
Fax: 01141-41-727-2109
(Mr. Paul Schuler, CEO)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Eco-Oil Treatment Technologies Corporation
18 Poppy Hills
Laguna Niguel, CA 92677
Phone: (949) 903-40336 (24-Hour)
E-mail: EcoOilTreatment@gmail.com
(Mr. William Azzalino)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable (water based)
2. Ventilation: No special requirements.
3. Skin and eye contact; protective clothing; treatment in case of contact: In case of eye contact, flush with water. In case of skin contact, wash with water. If swallowed, drink water to dilute and induce vomiting.
4.a. Maximum storage temperature: 60°C
4.b. Minimum storage temperature: 0°C
4.c. Optimum storage temperature range: 10°C to 30°C
4.d. Temperatures of phase separations and chemical changes: 85°C

V. SHELF LIFE
2 years or more if stored correctly in plastic drums and at recommended temperatures.

VI. RECOMMENDED APPLICATION PROCEDURES

1. Application Method: Product may be applied by manual or mechanical means including but not limited to: hand operated spraying flask, spraying equipment and jet spraying equipment. Application mixture, once applied, should be washed with water or any suitable type for desired end result after about 3 minutes. Application mixture can be applied without further action or may be scrubbed, rubbed, or abraded as desired until diluted hydrocarbons have been removed from soil, sand, or rocks.

2. Concentration/Application Rate: Product should be applied at a 1:12 product to water ratio: 1:12 (1 oz of SOC 10 concentrated:11 oz water or 1 ml SOC 10 concentrated to 11 ml water).

3. Conditions for Use: Product may be used in fresh, river, brackish, or salt water of any temperature above 35°F. Optimum temperature for normal contamination is 25°C for heavy or aged oil. Product is suitable for use on crude oils and petroleum products that retain the majority of their VOCs including oil slicks, oil sheens, oil emulsions, and oil spills. It is not suitable for use on tar balls or other tar masses, or tar sands. For in-situ washing of sands, soils, and vegetation, a lined recovery trench may be built down slope to recover any residue. As washing occurs, pump residue from trench and dispose according to federal, state, and local regulations.

VII. TOXICITY AND EFFECTIVENESS

a. Toxicity:

Material Tested	Species	LC50 (ppm)
SOC 10	Menidia beryllina	20,007 96-hr
	Mysidopsis bahia	9,639 48-hr
No. 2 Fuel Oil	Menidia beryllina	3.76 96-hr
	Mysidopsis bahia	2.04 48-hr
SOC 10 &	Menidia beryllina	6.31 96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	2.24 48-hr
Reference Toxicant (SLS)	Menidia beryllina	12.19 96-hr
	Mysidopsis bahia	10.53 48-hr

b. Effectiveness: NA

VIII. MICROBIOLOGICAL ANALYSIS

NA

IX. PHYSICAL PROPERTIES

1. Flash Point: 122°F
2. Pour Point: 29°F
3. Viscosity: 1.261 cps @40°C
4. Specific Gravity: 0.9970 g/cc @60°F
5. pH: 7.3
6. Surface Active Agents: CONFIDENTIAL
7. Solvents: None
8. Additives: None
9. Solubility: Completely water soluble

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X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<0.050
Cadmium	<0.035
Chromium	<0.025
Copper	<0.050
Lead	<0.060
Mercury	0.0005
Nickel	<0.050
Zinc	0.052
Cyanide	<0.150
Chlorinated Hydrocarbons	<1.0

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LISTING CHANGES PENDING, FOLLOWING VERIFICATION BY MANUFACTURER AND EPA

TECHNICAL PRODUCT BULLETIN #SW-46
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: AUGUST 17, 2010
"BIOGRASS EXTRA®"

I. NAME, BRAND, OR TRADEMARK
BIOGRASS EXTRA®
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
bioGRASS EXTRA MEXICANA S.A. de C.V.
Transvina y Retes 6103-2
Col. Panamericana
Chihuahua City, Chihuahua, Mexico C.P. 31210
Phone: (614) 413-3011
E-mail: pedro.murillo@biograssextra.com
Website: www.biograssextra.com
(Sr. Pedro Murillo)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Sun Equipment and Construction Co.
8855 Viscount Boulevard
PMB 249, Suite D
El Paso, TX 79925
E-mail: pedro.murillo@biograssextra.com
(Sr. Pedro Murillo, Director)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable (DOT: Non-hazardous).
2. Ventilation: No special requirements.
3. Skin and eye contact; protective clothing; treatment in case of contact: No special equipment or clothing required, however goggles are recommended. In case of eye irritation, flush with plenty of fresh water.
4.a. Maximum storage temperature: 120°F continuous, 140°F up to 5 days
4.b. Minimum storage temperature: 35°F
4.c. Optimum storage temperature range: 40°F to 120°F
4.d. Temperatures of phase separations and chemical changes: Mix well before use if outside the 60-85°F range.

V. SHELF LIFE
Two years minimum.

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VI. RECOMMENDED APPLICATION PROCEDURES

Recommended application procedures depending on concentration of contaminants, water salinity levels, water temperature, and the type and age of the contaminant.

There are two means of application: power spraying or direct application.
a. Application via power spraying: Use of a power washer to spray the contaminated surface. The action may be improved by warming the product during use.
b. Application via direct application: Remove contaminated soil, sand, etc. into a container. Irrigate the affected ground with the product and let it soak in. Agitate the mixture of water/product/ground and add additional water to float the contaminant off of the surface. A layer of product-contaminant will form which may be physically separated from the soil. The oil in this layer may be separated by dehydration or pumping to prepare the contaminant for disposal or reclamation. The clean soil or sand may be returned to its original environment.

The residue should be removed and disposed of as required by local, state, or federal regulations. The on-site coordinator can determine the best way to recover the residue based on the spill type, surface, and environment of the area.

Concentrations: The concentration of the BIOGRASS® EXTRA product to be used depends on the density of the contaminant. Normally the product is used in a one-to-one proportion with the contaminant.

VII. TOXICITY AND EFFECTIVENESS

a. Toxicity:

Material Tested	Species	LC50 (ppm)
BIOGRASS® EXTRA	Menidia beryllina	548.66 96-hr
	Mysidopsis bahia	703.43 48-hr
No. 2 Fuel Oil	Menidia beryllina	2.51 96-hr
	Mysidopsis bahia	2.24 48-hr
BIOGRASS® EXTRA &	Menidia beryllina	2.54 96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	2.24 48-hr
Reference Toxicant (SLS)	Menidia beryllina	12.25 96-hr
	Mysidopsis bahia	11.71 48-hr

b. Effectiveness:
NA

VIII. MICROBIOLOGICAL ANALYSIS

NA

IX. PHYSICAL PROPERTIES

1. Flash Point: >93°C
2. Pour Point: 21.0°F
3. Viscosity: 1.37 cSt @40°C

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4. Specific Gravity: 1.0253 @60°F
5. pH: 7.1
6. Surface Active Agents: Anionic and nonionic, proprietary, surfactants
7. Solvents: Water
8. Additives: Sodium phosphate dibasic, sodium chloride
9. Solubility: Miscible in water and some solvents

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	0.0702
Cadmium	0.0024
Chromium	0.0174
Copper	0.0158
Lead	0.0086
Mercury	<0.001
Nickel	0.0580
Zinc	0.3092
Cyanide	<0.010
Chlorinated Hydrocarbons	<1.0

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EPA HAS NOT RECEIVED UPDATED CONTACT INFORMATION FOR THIS PRODUCT: 3/23/16

TECHNICAL PRODUCT BULLETIN #SW-47
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: AUGUST 25, 2010
"ENVIRONMENTAL 1 CRUDE OIL CLEANER"

I. NAME, BRAND, OR TRADEMARK
ENVIRONMENTAL 1 CRUDE OIL CLEANER
(aka, ENVIRONMENTAL 1 WASHING AGENT)
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Environmental 1, LLC
P.O. Box 9
Jackson, TN 38302
Phone: (615) 269-0506
Fax: (615) 269-0025
E-mail: info@environmental-one.com
E-mail: mfb@environmental-one.com
Website: www.environmental-one.com
(Ms. Mary Frances Blankenship, President)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Environmental 1, LLC
P.O. Box 9
Jackson, TN 38302
Phone: (615) 269-0506
Fax: (615) 269-0025
E-mail: info@environmental-one.com
E-mail: mfb@environmental-one.com
Website: www.environmental-one.com
(Ms. Mary Frances Blankenship, President)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable, no hazards or restrictions
2. Ventilation: No special requirements.
3. Skin and eye contact; protective clothing; treatment in case of contact: No special equipment or clothing required, however goggles are recommended if used with a pressure washer. If eye or skin irritation occurs, flush with plenty of fresh water.
4.a. Maximum storage temperature: 140°F
4.b. Minimum storage temperature: 35°F

4.c. Optimum storage temperature range: 40°F to 120°F
4.d. Temperatures of phase separations and chemical changes: Stable

V. SHELF LIFE

Unlimited in sealed polydrums or totes (as delivered).

VI. RECOMMENDED APPLICATION PROCEDURES

ENVIRONMENTAL 1 CRUDE OIL CLEANER cleans oil from solid surfaces such as beaches, rocks, machines, buildings, tools, and other hard surfaces.

1. Spray ENVIRONMENTAL 1 CRUDE OIL CLEANER on oil surface to be cleaned with a drum pump sprayer or for smaller jobs use a hand pump sprayer.
2. On areas of heavy oil accumulation use product directly on the spill, or for areas of lighter accumulation use a 1:10 to 1:30 dilution ratio (product:water).
3. The oil and cleaner form a loose emulsion that can be rinsed away. Oil displaced from hard surfaces can be skimmed from the rinse water, absorbed with an oil absorbent, or removed via commercial waste removal.
4. May be used with fresh or salt water in normal climatic temperatures.

VII. TOXICITY AND EFFECTIVENESS

a. Toxicity:

Material Tested	Species	LC50 (ppm)
ENVIRONMENTAL 1 CRUDE	Menidia beryllina	22.68 96-hr
OIL CLEANER	Mysidopsis bahia	16.27 48-hr
No. 2 Fuel Oil	Menidia beryllina	2.24 96-hr
	Mysidopsis bahia	0.99 48-hr
ENVIRONMENTAL 1 CRUDE	Menidia beryllina	2.19 96-hr
OIL CLEANER & No. 2 Fuel Oil (1:10)	Mysidopsis bahia	0.43 48-hr
Reference Toxicant (SLS)	Menidia beryllina	12.25 96-hr
	Mysidopsis bahia	11.71 48-hr

b. Effectiveness:

NA

VIII. MICROBIOLOGICAL ANALYSIS

NA

IX. PHYSICAL PROPERTIES

1. Flash Point: >93°C
2. Pour Point: +26.0°F
3. Viscosity: 3.34 cSt @ 40°C
4. Specific Gravity: 1.01 @ 15°C
5. pH: 6.2
6. Surface Active Agents: Anionic, nonionic, zwitterionic surfactants
7. Solvents: None
8. Additives: Preservative
9. Solubility: Miscible in oil, water, and solvents

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X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	0.0021
Cadmium	<0.0010
Chromium	<0.0030
Copper	<0.0030
Lead	<0.0020
Mercury	<0.0005
Nickel	<0.0050
Zinc	<0.0030
Cyanide	<0.010
Chlorinated Hydrocarbons	<5.00

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BULLETIN UPDATES IN BOLD

TECHNICAL PRODUCT BULLETIN #SW-48
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: OCTOBER 4, 2010
"SANDKLENE 950"

I. NAME, BRAND, OR TRADEMARK
SANDKLENE 950
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
MDEChem, Inc.
923 10th Street PMB 101
Floresville, TX 78114
Phone: (830) 393-5293
E-mail: corporateoffice@mdechem.com
Website: www.mdechem.com
(Mr. Paul Sack)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS

Imperial Petroleum, Inc.
101 NW 1st Street #213
Evansville, IN 47708
Phone: (812) 867-1433
E-mail: Jwilsonx1@aol.com
(Mr. Jeff Wilson)

Mailing Address:
Imperial Petroleum, Inc.
P.O. Box 1006
Evansville, IN 47706
(Mr. Jeff Wilson)

Archer Petroleum Corp.
490-580 Hornby St.
Vancouver, Canada V6C 3B6
604-683-7588
(Mr. Colin Bowkett)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable (DOT: Non-hazardous)
2. Ventilation: Normal
3. Skin and eye contact; protective clothing; treatment in case of contact: Wear chemically impervious gloves. No other special equipment or clothing is required; however, goggles are recommended. If eye or skin irritation occurs, flush with plenty of water.
4.a. Maximum storage temperature: 120°F continuous, 140°F up to 5 days
4.b. Minimum storage temperature: 35°F
4.c. Optimum storage temperature range: 40°F to 120°F
4.d. Temperatures of phase separations and chemical changes: Stable

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V. SHELF LIFE
Unlimited in sealed drums or totes (as delivered).

VI. RECOMMENDED APPLICATION PROCEDURES
1. Application Method: SANDKLENE 950 is most effective in enclosed systems using centrifuges, shearing devices, or similar high speed equipment to process material. Under these conditions, SANDKLENE 950 and water are recycled continuously. In smaller applications on solid surfaces, SANDKLENE 950 may be applied with sprayers using water diluted product directly onto solid oil coated surfaces.
2. Concentration/Application Rate: Oil contaminated sands are placed in an enclosed chamber with a solution of SANDKLENE 950 and water. The concentration of SANDKLENE 950 in water ranges from about 0.15% to about 1.0%. The total volume of solution is 350 gallons per 3 cubic yards of contaminated sand. The mixture is agitated at an elevated temperature in the range of 100°F to 150°F. The actual treatment rate will vary within the recommended range, depending upon the nature of sand, the nature of the oil, and the percentage of oil content.
3. Conditions for Use: The water and oil parts are separated from the sand. The water part is continuously recycled, the oil is recovered, and the sand can be disposed according to federal, state, and local regulations. Dose rates and SANDKLENE 950 concentrations will vary with the type and amount of petroleum present, the extent of weathering, and other site specific conditions, including temperature and time available to let the solution contact the oil.

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity:

Material Tested	Species	LC50 (ppm)
SANDKLENE 950	Menidia beryllina	1768.73 96-hr
	Mysidopsis bahia	1263.78 48-hr
No. 2 Fuel Oil	Menidia beryllina	8.95 96-hr
	Mysidopsis bahia	2.41 48-hr
SANDKLENE 950&	Menidia beryllina	4.48 96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	2.24 48-hr
Reference Toxicant (DLS)	Menidia beryllina	12.25 96-hr
	Mysidopsis bahia	11.71 48-hr

b. Effectiveness: NA

VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point: >93°C
2. Pour Point: +10°F
3. Viscosity: 3.69 cSt @ 40°C
4. Specific Gravity: 1.2806 @60°F

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5. pH: 9.4
6. Surface Active Agents: None
7. Solvents: None
8. Additives: None
9. Solubility: Completely soluble

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<0.540
Cadmium	<0.209
Chromium	1.100
Copper	<0.205
Lead	<0.494
Mercury	0.0009
Nickel	<0.274
Zinc	<0.204
Cyanide	<1.150
Chlorinated Hydrocarbons	<0.100

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BULLETIN UPDATES IN BOLD

TECHNICAL PRODUCT BULLETIN #SW-49
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: NOVEMBER 10, 2010
"DE-SOLV-IT CLEAN AWAY APC SUPER CONCENTRATE"

I. NAME, BRAND, OR TRADEMARK
DE-SOLV-IT CLEAN AWAY APC SUPER CONCENTRATE
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Orange-Sol Blending and Packaging
1400 N Fiesta Boulevard
Gilbert, AZ 85233
Phone: (800) 877-7771
Fax: (480) 497-0444
E-mail: albert.farnsworth@orange-sol.com
Website: www.orange-sol.com
(Mr. Albert Farnsworth or
Mr. Jack Farnsworth at (480) 319-0141)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Bell Tech
Master Distributor
P.O. Box 2198
Valdez, AK 99686
Phone: (907) 602-0111
Fax: (907) 835-4535
E-mail: bellenterprise@cvinternet.net
(Mr. Randy Bell)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-combustible
2. Ventilation: No special requirements
3. Skin and eye contact; protective clothing; treatment in case of contact: No special equipment of clothing required; however, goggles are recommended where splash is potential. If eye or skin irritation occurs, flush with ample fresh water.
4.a. Maximum storage temperature: 210°F
4.b. Minimum storage temperature: 34°F
4.c. Optimum storage temperature range: 55°F to 90°F
4.d. Temperatures of phase separations and chemical changes: There are no known phase separations, chemical changes, or other altercations that will change the effectiveness of the

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product.

V. SHELF LIFE
Two (2) years in sealed drums or totes (as delivered).

VI. RECOMMENDED APPLICATION PROCEDURES
1. Application Method: DE-SOLV-IT CLEAN AWAY APC SUPER CONCENTRATE can be used on all oil coated surfaces including sand and rocks through a detergency mechanism. Product should be used with handheld sprayers or for larger applications applied with truck mounted sprayers. Remove contamination with DE-SOLV-IT CLEAN AWAY APC SUPER CONCENTRATE, followed by a rinse.
2. Concentration/Application Rate: For oil spill removal and heavy duty cleaning, dilute product with water using a 1:1 ratio.
3. Conditions for Use: DE-SOLV-IT CLEAN AWAY APC SUPER CONCENTRATE can be used in salt or fresh water, with no limitations as to usage within the optimum temperature parameters (application may be made at or above 35°F, with optimum above 48°F). Cleaning of oil soaked areas should be done in a contained area and residue should be collected. For sand or vegetation cleaning, a berm may be constructed down slope that will collect the residue for disposal. All disposal residues should be done according to federal, state, and local regulations. In general, the technique used for collection of the oil/soap residue should be determined by the onsite contractor based on the environment of the area to be cleaned and the equipment and materials available for collection. Cleanup residue should be collected and disposed of in accordance with local, state, and federal regulations.

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity:

Material Tested	Species	LC50 (ppm)
DE-SOLV-IT CLEAN AWAY	Menidia beryllina	20.95 96-hr
APC SUPER CONCENTRATE	Mysidopsis bahia	30.95 48-hr
No. 2 Fuel Oil	Menidia beryllina	4.07 96-hr
	Mysidopsis bahia	0.86 48-hr
DE-SOLV-IT CLEAN AWAY	Menidia beryllina	6.42 96-hr
APC SUPER CONCENTRATE &	Mysidopsis bahia	0.69 48-hr
No. 2 Fuel Oil (1:10)		
Reference Toxicant (SLS)	Menidia beryllina	12.04 96-hr
	Mysidopsis bahia	8.19 48-hr

b. Effectiveness: NA

VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point: >93°C
2. Pour Point: +20°F

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3. Viscosity: 3.1 cSt @ 40°C
4. Specific Gravity: 1.024 @60°F
5. pH: 9.03
6. Surface Active Agents: PROPRIETARY
7. Solvents: PROPRIETARY
8. Additives: Yes
9. Solubility: 100 percent

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<1.0
Cadmium	<0.5
Chromium	<0.5
Copper	<2.0
Lead	<1.0
Mercury	<0.005
Nickel	<1.0
Zinc	<2.5
Cyanide	0.08
Chlorinated Hydrocarbons	<0.05

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LISTING CHANGES PENDING, FOLLOWING VERIFICATION BY MANUFACTURER AND EPA

TECHNICAL PRODUCT BULLETIN #SW-50
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: NOVEMBER 17, 2010
"EO ALL PURPOSE SOAP-LAVENDER"

I. NAME, BRAND, OR TRADEMARK
EO ALL PURPOSE SOAP-LAVENDER
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
EO Products/Small World Trading Company
90 Windward Way
San Rafael, CA 94901
Phone: (415) 945-1900
Fax: (415) 945-7117
E-mail: patrick@eoproducts.com or michael@eoproducts.com
Website: www.eoproducts.com
(Mr. Patrick Butler or Mr. Michael Cronin)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS

UNFI East/Select Nutrition
P.O. Box 567
Keene, NH 03431
Phone: (603) 256-3000
(Ms. Missy Lamonreux)

UNFI West
1101 Sunset Boulevard
Rocklin, CA 95765
Phone: (916) 625-4100
(Ms. Kari Cluk)

Threshold
23 Janis Way
Scotts Valley, CA 95066
Phone: (800) 777-5677
(Ms. Linda Sims)

Lotus Light
P.O. Box 1008
Scotts Valley, CA 95066
(Ms. Kate Lill)

Sales Outlet:
Whole Foods Austin
601 N Lamar Boulevard, Suite 200
Austin, TX 78703
Phone: (512) 476-1206
(Mr. Jeremiah McElwee)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable (DOT: Non-hazardous)
2. Ventilation: Normal
3. Skin and eye contact; protective clothing; treatment in case of contact: Rinse thoroughly after

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use. Avoid eye contact. In case of such contact, immediately flush with large amounts of cool water for at least 15 minutes. Consult a physician if irritation develops. Protective gloves are recommended for extended or prolonged contact (e.g., immersing hands). Wear safety glasses if the method of use presents the likelihood of eye contact. Do not ingest. In case of ingestion, consult a physician.
4.a. Maximum storage temperature: 45°C
4.b. Minimum storage temperature: 4°C
4.c. Optimum storage temperature range: 22°C to 30°C
4.d. Temperatures of phase separations and chemical changes: Phase separation may occur at <15°C (but will restore to original condition at optimum temperature).

V. SHELF LIFE
Three (3) years (as delivered).

VI. RECOMMENDED APPLICATION PROCEDURES
1. Application Method: EO ALL PURPOSE SOAP may be applied by pouring, spraying (when diluted 1:4), dispensing equipment, or by scrubbing machines.
2. Concentration/Application Rate: Apply EO ALL PURPOSE SOAP full strength (undiluted) to surface area by pouring or with dispensing equipment concentrating on areas with heaviest contamination first. Apply diluted (1:4 dilution rate) EO ALL PURPOSE SOAP with sprayer. Agitate and scrub well. Rinse thoroughly. For heavily contaminated surfaces, EO ALL PURPOSE SOAP should always be used full strength (undiluted). For average to light contamination, EO ALL PURPOSE SOAP may be diluted from 2x-10x with water.
3. Conditions for Use: During cleaning, contain the oil soaked area and collect residue. For sand and vegetation cleaning, a berm may be constructed down slope that will collect the residue for disposal. All disposal of residue should be done according to federal, state, and local regulations. In general, the technique used for the collection of the oil/soap residue should be determined by the on-site contractor based on the environment of the area to be cleaned, and equipment and materials available for collection.

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity:

Material Tested	Species	LC50 (ppm)
EO ALL PURPOSE SOAP	Menidia beryllina	21.33 96-hr
	Mysidopsis bahia	83.65 48-hr
No. 2 Fuel Oil	Menidia beryllina	8.95 96-hr
	Mysidopsis bahia	2.41 48-hr
EO ALL PURPOSE SOAP &	Menidia beryllina	3.14 96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	2.37 48-hr
Reference Toxicant (SLS)	Menidia beryllina	12.04 96-hr
	Mysidopsis bahia	8.19 48-hr

b. Effectiveness: NA

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VIII. MICROBIOLOGICAL ANALYSIS
NA

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IX. PHYSICAL PROPERTIES1. Flash Point: >93°C
2. Pour Point: +24°F
3. Viscosity: 349.5 cSt @ 40°C
4. Specific Gravity: 1.0208 @60°F
5. pH: 5.88
6. Surface Active Agents: PROPRIETARY
7. Solvents: PROPRIETARY
8. Additives: PROPRIETARY
9. Solubility: Miscible in oil, water, and solvents

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<0.540
Cadmium	<0.209
Chromium	0.202
Copper	<0.205
Lead	<0.494
Mercury	<0.000388
Nickel	5.99
Zinc	<0.204
Cyanide	<1.15
Chlorinated Hydrocarbons	<2.0

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TECHNICAL PRODUCT BULLETIN #SW-51
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: DECEMBER 7, 2010
"DYNAMIC GREEN™"

I. NAME, BRAND, OR TRADEMARK
DYNAMIC GREEN™
Type of Product: Surface Washing Agent (Water-based)

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Wechem, Inc.
5734 Susitna Drive
Harahan, LA 70123
Phone: (800) 426-0512
Phone: (504) 733-1152
Fax: (504) 733-2218
E-mail: mwisecarver@wechem.com or okropog@wechem.com
Website: www.wechem.com
(Mr. Mike Wisecarver)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Wechem, Inc.
5734 Susitna Drive
Harahan, LA 70123
Phone: (800) 426-0512
Phone: (504) 733-1152
Fax: (504) 733-2218
E-mail: mwisecarver@wechem.com or okropog@wechem.com
Website: www.wechem.com
(Mr. Mike Wisecarver)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable (DOT: Non-hazardous)
2. Ventilation: Not required.
3. Skin and eye contact; protective clothing; treatment in case of contact: Wear protective gloves that are chemical resistant, rubber. In case of skin contact, wash with soap and water. If irritation develops seek medical attention. Wear safety glasses/goggles for eye protection. In case of eye contact flush with water for 15 minutes. If irritation develops seek medical attention.
4.a. Maximum storage temperature: 140°F
4.b. Minimum storage temperature: 34°F
4.c. Optimum storage temperature range: >50°F and <100°F
4.d. Temperatures of phase separations and chemical changes: <35°F and >100°F.

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V. SHELF LIFEDYNAMIC GREEN™ has a shelf life of 6-10 years in sealed poly drums or totes (as delivered).

VI. RECOMMENDED APPLICATION PROCEDURES

1. Application Method: Product may be applied to any surface for removal of oils. The product can be applied through power washers, garden type sprayers, fire pump or any other portable pump with seawater or freshwater suction that is equipped with a chemical inductor or feed pump. For smaller areas properly diluted DYNAMIC GREEN™ may be applied with sponge, mop, scrub brush or cloth. Apply liberally, adjusting dilution on site if necessary.
2. Concentration/Application Rate: For heavily weathered oil on rocks, a diluted solution of 4 parts water to 1 part product is recommended. For heavily weathered oil on beaches/sand a diluted solution of 7 parts water to 1 part product is effective. For removing oil from vegetation, a diluted solution of 10/20 parts water to 1 part product is preferred. Product is effective in fresh or salt water.
3. Conditions for Use: Allow diluted product to soak for 20-30 minutes to soften and lift oil from surface. Reapplication may be necessary for severely contaminated areas. Vacuum suction equipment and sorbent boom or pads should be used to collect the washed effluent. When proper containment equipment is in place and a soak time of 20 minutes has been achieved, a diluted solution of 20 parts water to 1 part product should be applied through a pressure washer or flushing device to remove oils. Product and oil should be vacuumed up or absorbed with absorbent boom and disposed of according to EPA guidelines.

VII. TOXICITY AND EFFECTIVENESS

a. Toxicity:

Material Tested	Species	LC50 (ppm)
DYNAMIC GREEN™	Menidia beryllina	106.00 96-hr
	Mysidopsis bahia	66.60 48-hr
No. 2 Fuel Oil	Menidia beryllina	13.00 96-hr
	Mysidopsis bahia	3.16 48-hr
EO ALL PURPOSE SOAP &	Menidia beryllina	6.85 96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	3.30 48-hr
Reference Toxicant (SDS)	Menidia beryllina	2.67 96-hr
	Mysidopsis bahia	9.14 48-hr

b. Effectiveness: NA

VIII. MICROBIOLOGICAL ANALYSIS

NA

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IX. PHYSICAL PROPERTIES1. Flash Point: >200°F
2. Pour Point: -16°F
3. Viscosity: <10 cSt @ 78°F
4. Specific Gravity: 1.01 @77°F
5. pH: 7.5
6. Surface Active Agents: CONFIDENTIAL
7. Solvents: CONFIDENTIAL
8. Additives: CONFIDENTIAL
9. Solubility: Infinitely miscible

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<0.25
Cadmium	<0.25
Chromium	<0.25
Copper	<0.25
Lead	<0.25
Mercury	<2.00
Nickel	<0.25
Zinc	<0.25
Cyanide	<0.50
Chlorinated Hydrocarbons	ND

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TECHNICAL PRODUCT BULLETIN #SW-52USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: DECEMBER 9, 2010
"VERU-SOLVE™ MARINE 200 HP"

I. NAME, BRAND, OR TRADEMARK
VERU-SOLVE™ MARINE 200 HP
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
VeruTEK® Technologies
65 West Dudley Town Road, Suite 100
Bloomfield, CT 06002
Phone: (860) 242-9800
Fax: (860) 242-9899
E-mail: bmcavoy@verutek.com
Website: www.verutek.com
(Ms. Bethany McAvoy)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
VeruTEK® Technologies
65 West Dudley Town Road, Suite 100
Bloomfield, CT 06002
Phone: (860) 242-9800
Fax: (860) 242-9899
E-mail: bmcavoy@verutek.com
Website: www.verutek.com
(Ms. Bethany McAvoy)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable (DOT: Non-hazardous)
2. Ventilation: Use in a well ventilated area.
3. Skin and eye contact; protective clothing; treatment in case of contact: Prevent eye contact, wear safety glasses or goggles. If eye contact occurs remove contact lenses at once. Flush with water for at least 15 minutes. If irritation persists seek medical attention. Prevent skin contact, nitrile gloves are recommended. Boots, aprons, or bodysuits should be worn as necessary. Contact with product may cause slight redness. Prolonged or repeated exposure may cause drying of skin. If skin contact occurs wash affected area with copious amounts of soap and water. Respiratory protection is not normally required. If adequate ventilation is unavailable use NIOSH approved air-purifying respirator with organic vapor cartridge or canister. The product is not likely toxic. If ingestion occurs DO NOT induce vomiting. Rinse mouth thoroughly with water. Offer water to drink. DO NOT administer anything by mouth to an unconscious person.
4.a. Maximum storage temperature: Should not exceed 110°F (43.3°C)

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4.b. Minimum storage temperature: Above 41°F (5°C)
4.c. Optimum storage temperature range: Between 41°F and 110°F (5°C to 43.3°C)
4.d. Temperatures of phase separations and chemical changes: Stable. There is no known temperature within the maximum and minimum storage temperature that would cause phase separation, chemical changes, or other known alterations to the effectiveness of the product.

V. SHELF LIFE
Indefinite, product will not degrade over time.

VI. RECOMMENDED APPLICATION PROCEDURES
1. Application Method: VERU-SOLVE™ MARINE 200 HP is an aqueous based liquid without solids that can be readily applied through standard spray equipment. VERU-SOLVE™ MARINE 200 HP is suited for treating oil shorelines, sensitive environments, and for treating access limited areas. VERU-SOLVE™ MARINE 200 HP may be applied directly to oil on shoreline, beaches, rocks, or marsh surfaces by agricultural or standard sprayers attached to all terrain vehicles (ATVs), or workboats equipped with spray booms. The preferred and most effective method of application is to use a low-volume, low-pressure pump.
2. Concentration/Application Rate: The product can be applied undiluted to the spilled oil. VERU-SOLVE™ MARINE 200 HP should be applied as droplets, not fogged or atomized. System Calibration – Spray systems should be calibrated to insure accurate application rates for successful application and dosage control.
3. Conditions for Use: VERU-SOLVE™ MARINE 200 HP is sprayed directly on oil coated materials; and can be used on fresh or aged oil or oil combinations. Application may be limited at sub-freezing temperatures (<31°F) without inclusion of antifreeze additives. VERU-SOLVE™ MARINE 200 HP can be applied at temperatures above freezing without notable changes in viscosity with increasing temperature. Application is not affected by increasing salinity. VERU-SOLVE™ MARINE 200 HP can be used at temperatures above freezing and at temperatures above 70°F. VERU-SOLVE™ MARINE 200 HP will separate the oil and water from the sand or soiled surface. Cleaning of oil soaked surfaces should be done in a contained area and residue should be collected. For sand or vegetation cleaning, a berm may be constructed down slope that will collect the residue for disposal. Oil that has separated from sand or vegetation may be recovered from the substrate and collected for disposal. All disposal of residue should be done in accordance with federal, state, and local regulations. In general, the technique used for the collection of the oil/product residue should be determined by the On-Scene Coordinator based on the environment of the area to be cleaned, equipment and materials available for collection, and disposal regulations.

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VII. TOXICITY AND EFFECTIVENESSa. Toxicity:

Material Tested	Species	LC50 (ppm)
VERU-SOLVE™ MARINE	Menidia beryllina	418.32 96-hr
200 HP	Mysidopsis bahia	76.98 48-hr
No. 2 Fuel Oil	Menidia beryllina	13.36 96-hr
	Mysidopsis bahia	1.94 48-hr
VERU-SOLVE™ MARINE	Menidia beryllina	10.67 96-hr
200 HP & No. 2 Fuel Oil (1:10)	Mysidopsis bahia	2.51 48-hr
Reference Toxicant (SLS)	Menidia beryllina	13.36 96-hr
	Mysidopsis bahia	12.08 48-hr

b. Effectiveness: NA

VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point: >93°C
2. Pour Point: +18°F
3. Viscosity: 1.77391 cSt @ 40°C
4. Specific Gravity: 1.017 @60°F
5. pH: 7.01
6. Surface Active Agents: PROPRIETARY
7. Solvents: None
8. Additives: None
9. Solubility: Miscible in oil, water, and solvents

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	0.0025
Cadmium	<0.0010
Chromium	0.0326
Copper	0.0093
Lead	<0.0020
Mercury	0.00109
Nickel	0.0077
Zinc	0.0165
Cyanide	<0.010
Chlorinated Hydrocarbons	<0.025

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BULLETIN UPDATES IN BOLD

TECHNICAL PRODUCT BULLETIN #SW-53
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: JANUARY 26, 2011
"NATURAMA G3 A-5"

I. NAME, BRAND, OR TRADEMARK
NATURAMA G3 A-5
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT

Green Life Development, Inc.
5112 W. Charleston Boulevard, Suite C
Las Vegas, NV 89146
Phone: (702) 966-1284
Mobile: (702) 355-5102
Fax: (702) 448-6977
E-mail: david@greenlifedevelopment.com
Website: www.greenlifedevelopment.com
(Mr. David A. Levy)

Merlin-Tao Ltd.
65 Yigal Alon Street POB 91
Tel Aviv, Israel 67443
Phone: 972-3-562-8020
Fax: 972-3-562-8021
E-mail: asaf@merlin-tao.com
Website: www.merlin-tao.com
(Mr. Asaf Yaari, CEO)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS

Green Life Development, Inc.
5112 W. Charleston Boulevard, Suite C
Las Vegas, NV 89146
Phone: (702) 966-1284
Mobile: (702) 355-5102
Fax: (702) 448-6977
E-mail: david@greenlifedevelopment.com
Website: www.greenlifedevelopment.com
(Mr. David A. Levy)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION

1. Flammability: Non-flammable (DOT: Non-hazardous)
2. Ventilation: No special requirements.
3. Skin and eye contact; protective clothing; treatment in case of contact: No special equipment or clothing is required; however, goggles are recommended. If eye or skin irritation occurs, flush with plenty of water.
4.a. Maximum storage temperature: 120°F continuous, 140°F up to 5 days
4.b. Minimum storage temperature: 35°F
4.c. Optimum storage temperature range: 40°F to 120°F
4.d. Temperatures of phase separations and chemical changes: Stable

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V. SHELF LIFE
NATURAMA G3 A-5 has unlimited shelf life in sealed poly drums.

VI. RECOMMENDED APPLICATION PROCEDURES
1. Application Method: Product may be applied by any method (e.g., drum pump, pressurized spray applicator, brush, or aqueous wash tank), depending on the surface; and type and viscosity of the oil/contamination to be treated.
2. Concentration/Application Rate: The dilution ratio depends on the amount and type of contamination to be removed. For light contamination areas a 1:6 dilution ratio (product to fresh/salt water) with a 2-3 minutes wait. For heavier/thick/burnt contamination, the exact ratio should be determined by the field coordinator but a general starting point of 20-25% should remove most contamination (grease, burnt oil, diesel, tar, etc.) after a contact time of 10-15 minutes before rinsing with water/steam.
3. Conditions for Use: Cleanup residue must be collected and should be disposed of in accordance with local, state, and federal regulations. Where possible, the product/oil mixture can be recovered and processed using an oil separator system or a stagnant tank. A circulating wash tank fitted with an oil separator or filter system extends the life of NATURAMA G3 A-5 by weeks, greatly impacting the waste reduction.

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity:

Material Tested	Species	LC50 (ppm)
NATURAMA G3 A-5	Menidia beryllina	577.68 96-hr
	Mysidopsis bahia	482.97 48-hr
No. 2 Fuel Oil	Menidia beryllina	2.39 96-hr
	Mysidopsis bahia	0.32 48-hr
NATURAMA G3 A-5 &	Menidia beryllina	3.68 96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	2.24 48-hr
Reference Toxicant (SLS)	Menidia beryllina	12.25 96-hr
	Mysidopsis bahia	12.08 48-hr

b. Effectiveness: NA

VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point: >93°C
2. Pour Point: +28°F
3. Viscosity: 1.3628 cSt @ 40°C
4. Specific Gravity: 1.006 @60°F
5. pH: 8.39
6. Surface Active Agents: PROPRIETARY
7. Solvents: PROPRIETARY

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8. Additives: None
9. Solubility: Miscible in oil, water, and solvents

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	0.0092
Cadmium	<0.002
Chromium	0.0262
Copper	<0.006
Lead	0.0062
Mercury	0.0005
Nickel	<0.01
Zinc	<0.0166
Cyanide	0.014
Chlorinated Hydrocarbons	<26.30

ED_001324_00006005-00200

TECHNICAL PRODUCT BULLETIN #SW-54
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: FEBRUARY 25, 2011
"SAFE KLEEN"

I. NAME, BRAND, OR TRADEMARK
SAFE KLEEN
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Anti Slip Solutions Ltd
Bridge House
Severn Bridge
Riverside North, Bewdley, Worcestershire, DY12 1AB, UK
Phone: 44(0)1299-406-011
Fax: 44(0)1299-406-023
E-mail: info@safe-grip.co.uk
(Mr. Dan Bayliss)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
V4 Distributing
507 West Bird Avenue
Nampa, ID 83686
Phone: (208) 571-8596
E-mail: info@v4distributing.com
(Mr. Todd Vitek)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: IMO Non-flammable (DOT: Non-hazardous)
2. Ventilation: Provide adequate ventilation.
3. Skin and eye contact; protective clothing; treatment in case of contact: Chemical eye goggles should be worn. In case of contact with eyes, rinse immediately with plenty of clean water for at least 15 minutes and seek medical advice. PVC or rubber gloves are recommended. Use protective clothing. Remove contaminated clothing and wash with soap and water.
4.a. Maximum storage temperature: 130°F
4.b. Minimum storage temperature: 40°F
4.c. Optimum storage temperature range: >40°F to <130°F
4.d. Temperatures of phase separations and chemical changes: Stable

V. SHELF LIFE
Five years if stored in tightly closed containers under dry conditions within temperature range.

VI. RECOMMENDED APPLICATION PROCEDURES

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1. Application Method: For general use apply the product by spray, brush, mop, or standard pressure washing equipment.
2. Concentration/Application Rate: SAFE KLEEN is a concentrated liquid that can be used either as supplied or diluted with hot or cold, fresh or salt water. For small spills dilute 1:3 (product to water) and apply as described. For larger spills prepare a solution of SAFE KLEEN diluted with 50 percent water and apply as described. Concentrations may be adjusted to take account of temperatures, types and age of oil/contaminant and other local site conditions. Surface contact time will also be dependent on temperature. For low temperatures and conditions of heavy contamination extend the contact time, where possible agitation of the product during application time will assist the efficiency of the cleaning. Thoroughly rinse with water.
3. Conditions for Use: Response personnel can determine the best method to collect residue, which can include, but is not limited to, oil skimmers, collecting booms, vacuum equipment, absorbent materials, and other appropriate containment and collecting mechanisms. The cleanup residue should be collected and disposed of in accordance with local, state, and federal regulations.

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity:

Materials Tested	Species	LC50 (ppm)	
SAFE KLEEN	Menidia beryllina	170.00	96-hr
	Mysidopsis bahia	258.00	48-hr
No. 2 Fuel Oil	Menidia beryllina	3.30	96-hr
	Mysidopsis bahia	6.20	48-hr
SAFE KLEEN &	Menidia beryllina	2.60	96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	6.50	48-hr
Reference Toxicant (SDS)	Menidia beryllina	7.60	96-hr
	Mysidopsis bahia	16.90	48-hr

b. Effectiveness: NA

VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point: NA; water-based product
2. Pour Point: NA; water-based product
3. Viscosity: 2.33 cSt @ 40°C
4. Specific Gravity: 1.060 @68°F
5. pH: 11.5-13.0
6. Surface Active Agents: PROPRIETARY
7. Solvents: None
8. Additives: PROPRIETARY
9. Solubility: Totally soluble

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<0.31
Cadmium	<0.16
Chromium	<0.16
Copper	<0.16
Lead	<0.16
Mercury	<0.025
Nickel	<0.16
Zinc	<0.16
Cyanide	ND
Chlorinated Hydrocarbons	ND

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TECHNICAL PRODUCT BULLETIN #SW-55
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: FEBRUARY 25, 2011
"CORIBA 700 SR"
(aka, CORIBA 700 ER, CORIBA 700 OS)

I. NAME, BRAND, OR TRADEMARK
CORIBA 700 SR
(aka, CORIBA 700 ER, CORIBA 700 OS)
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Coriba Technologies, LLC
5708 Cadron Creek
North Little Rock, AR 72116
Phone: (501) 834-2972
E-mail: ronrios@bellsouth.net
(Mr. Harvey G. Cobb)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
MLU Services
573 Hawthorne Avenue
Athens, GA 30606
Phone: (706) 569-7300
Fax: (706) 425-0300
(Mr. Billy Ulm)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable
2. Ventilation: Normal (contains ammonia)
3. Skin and eye contact; protective clothing; treatment in case of contact: Avoid eye contact due to possible mild eye irritation. In case of eye contact, flush eyes with water for at least 15 minutes. In the case of skin contact, flush with water for at least 15 minutes. If irritation occurs and persists, obtain medical attention. Protective clothing is not normally required.
4.a. Maximum storage temperature: 100°F
4.b. Minimum storage temperature: 33°F
4.c. Optimum storage temperature range: 33°F - 100°F
4.d. Temperatures of phase separations and chemical changes: Does not separate.

V. SHELF LIFE
Two years unopened minimum.

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VI. RECOMMENDED APPLICATION PROCEDURES1. Application Method: CORIBA 700 SR is covered by U.S. Patent #7678201 (issued on March 16, 2010). The process is designed to remove and recover oil from sand. The product does not react with or alter the oil. Contaminated sand is transferred into a standard sand washer filled with 700 SR. The product is an aqueous solution that, upon contact, reduces the interfacial tension between the oil and the sand. The oil no longer adheres to the sand and is free to float to the surface of the processor and is removed with an auger. The cleaned sand is dried in a centrifuge and the collected liquid is recycled back to the processor. The product has a high vapor pressure and evaporates from the sand leaving no residue or contamination. The separated oil is transferred to a conical vertical tower where it concentrates at the surface and is siphoned off to be used as a fuel or sent to a refinery for further processing. The process solution that collects in the conical tower is recycled back to the processor. The clean, dry sand can be disposed as appropriate. Any sand that collects in the bottom of the conical tower is sent back through the processor. The process can be set up on a beach, waste treatment facility or on a barge for treating sensitive areas like barrier islands. The process chemical is not designed to come into contact with any body of water. There process is not designed to treat contaminated water. The process does not consume the process chemical. Any chemical that remains after the sand has been cleaned can be returned to the manufacturer or sent to an appropriate waste treatment facility.
2. Concentration/Application Rate: CORIBA 700 SR is used at full strength. It is delivered in aqueous solution. The application rate is 200 gallons/ton of oil-contaminated sand.
3. Conditions for Use: CORIBA 700 SR can be applied to contaminated sand as long as the sand mixture is not frozen.

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity:

Materials Tested	Species	LC50 (ppm)	
CORIBA 700 SR	Menidia beryllina	1470.00	96-hr
	Mysidopsis bahia	3810.00	48-hr
No. 2 Fuel Oil	Menidia beryllina	11.10	96-hr
	Mysidopsis bahia	3.29	48-hr
CORIBA 700 SR &	Menidia beryllina	22.80	96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	3.58	48-hr
Reference Toxicant (SDS)	Menidia beryllina	5.70	96-hr
	Mysidopsis bahia	9.04	48-hr

b. Effectiveness: NA

VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point: 102°F
2. Pour Point: 200°F
3. Viscosity: 1.0 cps

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4. Specific Gravity: 0.981
5. pH: 11.4
6. Surface Active Agents: None
7. Solvents: None
8. Additives: PROPRIETARY
9. Solubility: Miscible with water

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	0.05
Cadmium	<0.002
Chromium	0.031
Copper	0.25
Lead	0.02
Mercury	<0.01
Nickel	<0.01
Zinc	0.25
Cyanide	<0.1
Chlorinated Hydrocarbons	<0.1

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TECHNICAL PRODUCT BULLETIN #SW-56
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: FEBRUARY 25, 2011
"CORIBA 713 SR"
(aka, CORIBA 713 ER, CORIBA 713 OS)

I. NAME, BRAND, OR TRADEMARK
CORIBA 713 SR
(aka, CORIBA 713 ER, CORIBA 713 OS)
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Coriba Technologies, LLC
5708 Cadron Creek
North Little Rock, AR 72116
Phone: (501) 834-2972
E-mail: ronrios@bellsouth.net
(Mr. Harvey G. Cobb)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
MLU Services
573 Hawthorne Avenue
Athens, GA 30606
Phone: (706) 569-7300
Fax: (706) 425-0300
(Mr. Billy Ulm)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable
2. Ventilation: Normal (contains ammonia)
3. Skin and eye contact; protective clothing; treatment in case of contact: Avoid eye contact due to possible mild eye irritation. Use chemical safety goggles and/or full face shield where splashing is possible. In case of eye contact, flush eyes with water for at least 15 minutes. Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact. In the case of skin contact, flush with water for at least 15 minutes. If irritation occurs and persists, obtain medical attention. Protective clothing is not normally required.
4.a. Maximum storage temperature: 100°F
4.b. Minimum storage temperature: 33°F
4.c. Optimum storage temperature range: 33°F - 100°F
4.d. Temperatures of phase separations and chemical changes: Does not separate.

V. SHELF LIFE

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Two years unopened minimum.

VI. RECOMMENDED APPLICATION PROCEDURES

1. Application Method: CORIBA 713 SR is covered by U.S. Patent #7678201 (issued on March 16, 2010). The process is designed to remove and recover oil from sand. The product does not react with or alter the oil. Contaminated sand is transferred into a standard sand washer filled with 713 SR. The product is an aqueous solution that, upon contact, reduces the interfacial tension between the oil and the sand. The oil no longer adheres to the sand and is free to float to the surface of the processor and is removed with an auger. The cleaned sand is dried in a centrifuge and the collected liquid is recycled back to the processor. The product has a high vapor pressure and evaporates from the sand leaving no residue or contamination. The separated oil is transferred to a conical vertical tower where it concentrates at the surface and is siphoned off to be used as a fuel or sent to a refinery for further processing. The process solution that collects in the conical tower is recycled back to the processor. The clean, dry sand can be disposed as appropriate. Any sand that collects in the bottom of the conical tower is sent back through the processor. The process can be set up on a beach, waste treatment facility or on a barge for treating sensitive areas like barrier islands. The process chemical is not designed to come into contact with any body of water. There process is not designed to treat contaminated water. The process does not consume the process chemical. Any chemical that remains after the sand has been cleaned can be returned to the manufacturer or sent to an appropriate waste treatment facility.

2. Concentration/Application Rate: CORIBA 713 SR is used at full strength. It is delivered in aqueous solution. The application rate is 200 gallons/ton of oil-contaminated sand.

3. Conditions for Use: CORIBA 713 SR can be applied to contaminated sand as long as the sand mixture is not frozen. The process is effective at ambient temperature.

VII. TOXICITY AND EFFECTIVENESS

a. Toxicity:

Materials Tested	Species	LC50 (ppm)	
CORIBA 713 SR	Menidia beryllina	1070.00	96-hr
	Mysidopsis bahia	2350.00	48-hr
No. 2 Fuel Oil	Menidia beryllina	11.10	96-hr
	Mysidopsis bahia	3.29	48-hr
CORIBA 713 SR &	Menidia beryllina	9.55	96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	4.04	48-hr
Reference Toxicant (SDS)	Menidia beryllina	5.70	96-hr
	Mysidopsis bahia	9.04	48-hr

b. Effectiveness: NA

VIII. MICROBIOLOGICAL ANALYSIS

NA

IX. PHYSICAL PROPERTIES

1. Flash Point: 212°F

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2. Pour Point: 220°F
3. Viscosity: 1.0 cps
4. Specific Gravity: 0.997
5. pH: 11.0
6. Surface Active Agents: None
7. Solvents: None
8. Additives: PROPRIETARY
9. Solubility: Miscible with water

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	0.05
Cadmium	<0.002
Chromium	0.031
Copper	0.25
Lead	0.02
Mercury	<0.01
Nickel	<0.01
Zinc	0.25
Cyanide	<0.1
Chlorinated Hydrocarbons	<0.1

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BULLETIN UPDATES IN BOLD

TECHNICAL PRODUCT BULLETIN #SW-57
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: MAY 11, 2011
"JEP-MARINE CLEAN"
(aka, ECOVOOM-MARINE)

I. NAME, BRAND, OR TRADEMARK
JEP-MARINE CLEAN
(aka, ECOVOOM-MARINE)
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Nuance Solutions
900 E. 103rd Street, Suite D
Chicago, IL 60628
Phone: (800) 621-8553
Fax: (800) 621-1276
(Mr. Neil Houtsma)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS

Jubilee Environmental Products
406 S. Boulder, Suite 820
Tulsa, OK 74103
Phone: (918) 277-1113
Fax: (918) 296-3997
E-mail: jubilinc@aol.com
Sales and Inquiries:
Phone: (918) 277-1113
Fax: (918) 296-3997
E-mail: jubilinc@aol.com
(Mr. Thomas J. Rhein, President)

Restored Cleaner LLC
2475 Fairfield Ave.
Bridgeport, CT 06605
Phone: (203) 335-9555
Fax: (203) 335-9550
E-mail: info@restoredcleaner.com
Sales and Inquiries:
Phone: (203) 335-9555
Fax: (203) 335-9550
E-mail: info@restoredcleaner.com
(Mr. Colton Amster)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable
2. Ventilation: Normal.
3. Skin and eye contact; protective clothing; treatment in case of contact: Respiratory protection not required under normal conditions. Protect against generated mists using protective clothing in order to minimize contact (i.e., boots, apron, face shield). Use safety glasses/goggles during handling and application to prevent eye contact. Wear rubber/PVC gloves to prevent skin contact.
4.a. Maximum storage temperature: 90°F
4.b. Minimum storage temperature: 40°F

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4.c. Optimum storage temperature range: 40 – 90°F; product freezes at 32°F
4.d. Temperatures of phase separations and chemical changes: 120°F

V. SHELF LIFE
In unopened containers, shelf life is minimum 2 years.

VI. RECOMMENDED APPLICATION PROCEDURES
1. Application Method: Product may be diluted with fresh or salt water, and may be applied to any type of surfaces that have been coated with oil or other petroleum-based substances resulting from a spill (e.g., beaches, rocks). Manual pump sprayers should be used to presoak the contaminated areas, and pressure washers should be used to agitate the contaminated areas after a presoak has been applied.
2. Concentration/Application Rate: Shoreline Cleaning – presoak the surface needing to be cleaned, using a manual pump sprayer, with a dilution rate of one (1) part to three (3) parts water for approximately 10 to 15 minutes, without letting the product dry or evaporate. After the contaminated areas have been presoaking for the allotted time, run a dilution rate of one (1) part product to fifteen (15) parts water, through a pressure washer directly onto the contaminant.
3. Conditions for Use: Option temperature range for use is 45 to 212°F. When the contaminants have been released, they can be removed using sorbent pads, suction booms or skimmers, and hauled away and disposed of according to local, state, and federal law. It is recommended that for older or crustier contaminants higher pressure and stronger dilutions be used.

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity:

Materials Tested	Species	LC50 (ppm)	
JEP-MARINE CLEAN	Menidia beryllina	88.40	96-hr
	Mysidopsis bahia	153.90	48-hr
No. 2 Fuel Oil	Menidia beryllina	2.70	96-hr
	Mysidopsis bahia	1.63	48-hr
JEP-MARINE CLEAN &	Menidia beryllina	3.58	96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	2.32	48-hr
Reference Toxicant (SDS)	Menidia beryllina	8.84	96-hr
	Mysidopsis bahia	14.90	48-hr

b. Effectiveness: NA

VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point: >100°C
2. Pour Point: -14°C
3. Viscosity: 1.1 cSt
4. Specific Gravity: 1.041

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5. pH: 11.2
6. Surface Active Agents: CONFIDENTIAL
7. Solvents: Water
8. Additives: CONFIDENTIAL
9. Solubility: Miscible with water

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<0.004
Cadmium	0.084
Chromium	0.082
Copper	0.138
Lead	<0.025
Mercury	<0.0012
Nickel	<0.025
Zinc	0.219
Cyanide	0.01
Chlorinated Hydrocarbons	<0.01

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EPA HAS NOT RECEIVED UPDATED CONTACT INFORMATION FOR THIS PRODUCT: 3/23/16

TECHNICAL PRODUCT BULLETIN #SW-58
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: JUNE 28, 2011
"ETHOS CLEAN"

I. NAME, BRAND, OR TRADEMARK
ETHOS CLEAN
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
MAG7 Venture Group, LLC, DBA MAG7 Technologies
1 Lepage Place, Suite 100
Syracuse, NY 13206
Phone: (855) 255-6247
Fax: (855) 255-6247
E-mail: greg.goodell@mag7venturegroup.com or trevor.quig@mag7venturegroup.com
Website: www.mag7technologies.com/Ethos/index.htm
(Mr. Greg Goodell or Mr. Trevor Quig)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
MAG7 Venture Group, LLC, DBA MAG7 Technologies
1 Lepage Place, Suite 100
Syracuse, NY 13206
Phone: (855) 255-6247
Fax: (855) 255-6247
E-mail: greg.goodell@mag7venturegroup.com or trevor.quig@mag7venturegroup.com
Website: www.mag7technologies.com/Ethos/index.htm
(Mr. Greg Goodell or Mr. Trevor Quig)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable
2. Ventilation: Move subject to fresh air. If breathing is difficult, obtain medical help.
3. Skin and eye contact; protective clothing; treatment in case of contact: Wash affected skin area with water. Consult physician of irritation persists. Skin irritation will not occur with most users. Flush eyes with a large amount of water for at least 15 minutes. Consult physician if irritation persists. Wear safety glasses and neoprene or rubber gloves during application.
4.a. Maximum storage temperature: 120°F
4.b. Minimum storage temperature: 35°F
4.c. Optimum storage temperature range: 40°F to 120°F
4.d. Temperatures of phase separations and chemical changes: NA. Phase separation will not

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occur within the storage range. Product should be stored out of direct sunlight unless it is in an Ultraviolet (UV) light resistant container.

V. SHELF LIFE
2 years in a sealed (unopened) container (tote, drum, pail) as delivered. 1 year in an opened container).

VI. RECOMMENDED APPLICATION PROCEDURES
1. Application Method: Apply ETHOS CLEAN to oil or contaminant with sprayer, pressure washer, mop, sponge, brush, or rags. Application times will depend on the level of contaminant with a minimum of 30 minutes recommended soak time. The required soak time to remove oil will vary with oil density and degree of weathering. ETHOS CLEAN separates the oil from the physical surface to allow the oil to be sprayed off with a water rinse. ETHOS CLEAN should be mixed into soil applications to increase the effectiveness and reduce the application time.
2. Concentration/Application Rate: Pure concentrate can be used for heavy contamination. Dilution ratios for most applications range from 2 to 1 (parts water to parts ETHOS CLEAN) to 10 to 1 (parts water to parts ETHOS CLEAN). Dilution ratios are dependent on the contamination level and application with heavier crude oil spills requiring a lower dilution ratio. Dilutions up to 50 to 1 (parts water to parts ETHOS CLEAN) can be used for lighter contaminations and cleaning. Rinse with water after usage for residue free surface. Surface cleaning typically requires 5 to 1 or 10 to 1 dilution ratio. These dilution ratios will require 1 gallon of ETHOS CLEAN per 250 square feet of surface area. These dilution ratios can be used in many applications including shorelines, rocks, and beaches.
3. Conditions for Use: Salt or fresh water (temperature ranges from 35°F to 120°F). Oil or contaminant can be skimmed from the water or rinsed and captured into collection containers and disposed of per local, state, and federal regulations.

Dilution	Intended Use
2:1	Heavy contamination such as oil spills
5:1	Direct application to heavily soiled areas

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity:

Materials Tested	Species	LC50 (ppm)	
ETHOS CLEAN	Menidia beryllina	3960.00	96-hr
	Mysidopsis bahia	4510.00	48-hr
No. 2 Fuel Oil	Menidia beryllina	26.30	96-hr
	Mysidopsis bahia	4.86	48-hr
ETHOS CLEAN &	Menidia beryllina	25.00	96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	5.00	48-hr
Reference Toxicant (SDS)	Menidia beryllina	2.23	96-hr
	Mysidopsis bahia	7.93	48-hr

b. Effectiveness: NA

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VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point: 142°F
2. Pour Point: 30°F
3. Viscosity: 32 SUS @60°F
4. Specific Gravity: 1.1664 @60°F
5. pH: 11.6
6. Surface Active Agents: CONFIDENTIAL
7. Solvents: CONFIDENTIAL
8. Additives: CONFIDENTIAL
9. Solubility: Complete in water

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	ND
Cadmium	0.0813
Chromium	0.240
Copper	0.201
Lead	14.5
Mercury	5.0 (ppb)
Nickel	2.12
Zinc	ND
Cyanide	ND
Chlorinated Hydrocarbons	ND

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EPA HAS NOT RECEIVED UPDATED CONTACT INFORMATION FOR THIS PRODUCT: 3/23/16

TECHNICAL PRODUCT BULLETIN #SW-59
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: JUNE 28, 2011
"OSR-10"

I. NAME, BRAND, OR TRADEMARK
OSR-10
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
MAG7 Venture Group, LLC, DBA MAG7 Technologies
1 Lepage Place, Suite 100
Syracuse, NY 13206
Phone: (855) 255-6247
Fax: (855) 255-6247
E-mail: greg.goodell@mag7venturegroup.com or trevor.quig@mag7venturegroup.com
Website: www.mag7technologies.com/OSR10.htm
(Mr. Greg Goodell or Mr. Trevor Quig)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
MAG7 Venture Group, LLC, DBA MAG7 Technologies
1 Lepage Place, Suite 100
Syracuse, NY 13206
Phone: (855) 255-6247
Fax: (855) 255-6247
E-mail: greg.goodell@mag7venturegroup.com or trevor.quig@mag7venturegroup.com
Website: www.mag7technologies.com/OSR10.htm
(Mr. Greg Goodell or Mr. Trevor Quig)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable
2. Ventilation: Move subject to fresh air. If breathing is difficult, obtain medical help.
3. Skin and eye contact; protective clothing; treatment in case of contact: Wash affected skin area with water. Consult physician of irritation persists. Skin irritation will not occur with most users. Flush eyes with a large amount of water for at least 15 minutes. Consult physician if irritation persists. Wear safety glasses and neoprene or rubber gloves during application.
4.a. Maximum storage temperature: 120°F
4.b. Minimum storage temperature: 35°F
4.c. Optimum storage temperature range: 40°F to 120°F
4.d. Temperatures of phase separations and chemical changes: NA. Phase separation will not occur within the storage range. Product should be stored out of direct sunlight unless it is in an

Ultraviolet (UV) light resistant container.

V. SHELF LIFE
2 years in a sealed (unopened) container (tote, drum, pail) as delivered. 1 year in an opened container).

VI. RECOMMENDED APPLICATION PROCEDURES
1. Application Method: Apply OSR-10 to oil or contaminant with sprayer, pressure washer, mop, sponge, or brush. Application times will depend on the level of contaminant with a minimum of 10 minutes recommended soak time. The required soak time to remove oil will vary with oil density and degree of weathering. OSR-10 separates the oil from the physical surface to allow the oil to be sprayed off with a water rinse. OSR-10 should be mixed into soil applications and agitated to increase the effectiveness and reduce the application time.
2. Concentration/Application Rate: Dilution ratios for most applications range from 2 to 1 (parts water to parts OSR-10) to 15 to 1 (parts water to parts OSR-10). Dilution ratios are dependent on the contamination level and application with heavier crude oil spills requiring a lower dilution ratio. Rinse with water after usage for residue free surface. Surface cleaning typically requires 5 to 1 or 10 to 1 dilution ratio. These dilution ratios will require 1 gallon of OSR-10 per 300 square feet of surface area. These dilution ratios can be used in many applications including shorelines, rocks, and beaches.
3. Conditions for Use: Salt or fresh water (temperature ranges from 35°F to 120°F). Oil or contaminant can be skimmed from the water or rinsed and captured into collection containers and disposed of per local, state, and federal regulations.

Dilution	Intended Use
2:1	Heavy/severe contamination such as oil spills
5:1 to 10:1	Moderate contamination
15:1 to 30:1	Light contamination

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity:

Materials Tested	Species	LC50 (ppm)	
OSR-10	Menidia beryllina	385.00	96-hr
	Mysidopsis bahia	399.00	48-hr
No. 2 Fuel Oil	Menidia beryllina	26.30	96-hr
	Mysidopsis bahia	4.86	48-hr
OSR-10 &	Menidia beryllina	16.00	96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	4.77	48-hr
Reference Toxicant (SDS)	Menidia beryllina	2.23	96-hr
	Mysidopsis bahia	7.93	48-hr

b. Effectiveness: NA

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VIII. MICROBIOLOGICAL ANALYSIS
NA

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IX. PHYSICAL PROPERTIES1. Flash Point: 143°F
2. Pour Point: 20°F
3. Viscosity: 37 SUS @60°F
4. Specific Gravity: 1.1672 @60°F
5. pH: 11.5
6. Surface Active Agents: CONFIDENTIAL
7. Solvents: CONFIDENTIAL
8. Additives: CONFIDENTIAL
9. Solubility: Complete in water

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	ND
Cadmium	ND
Chromium	0.209
Copper	0.150
Lead	7.57
Mercury	6.8 (ppb)
Nickel	1.20
Zinc	ND
Cyanide	ND
Chlorinated Hydrocarbons	ND

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TECHNICAL PRODUCT BULLETIN #SW-60
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: JULY 13, 2011
"ACCELL CLEAN® SWA"

I. NAME, BRAND, OR TRADEMARK
ACCELL CLEAN® SWA
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Advanced BioCatalytics Corporation
18010 Skypark Circle, #130
Irvine, California 92614-6456
Office Phone: (949) 442-0880
General E-mail: info@abiocat.com
Website: www.abiocat.com
Product Management:
Mobile: (949) 981-6510
E-mail: cpodella@abiocat.com
(Mr. Carl Podella)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Advanced BioCatalytics Corporation
18010 Skypark Circle, #130
Irvine, California 92614-6456
Office Phone: (949) 442-0880
General E-mail: info@abiocat.com
Website: www.abiocat.com
Product Management:
Mobile: (949) 981-6510
E-mail: cpodella@abiocat.com
(Mr. Carl Podella)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable
2. Ventilation: Use in well-ventilated area.
3. Skin and eye contact; protective clothing; treatment in case of contact: Protective clothing is recommended. Avoid eye contact. In case of eye contact, immediately flush with large amounts of water for at least 15 minutes. Get prompt medical attention. Avoid direct contact with skin and clothing. In case of skin contact, immediately flush with large amounts of water. Remove contaminated clothing, including shoes, after flushing has begun. If irritation persists, seek medical attention. For open systems were contact is likely, wear long sleeve shirt, chemical resistant gloves, and protective chemical goggles.
4.a. Maximum storage temperature: 130°F/55°C

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4.b. Minimum storage temperature: 30°F/-1°C
4.c. Optimum storage temperature range: 40°F to 100°F/4°C to 38°C
4.d. Temperatures of phase separations and chemical changes: None

V. SHELF LIFE
The shelf life of unopened drums of ACCELL CLEAN® SWA is unlimited. Containers should always remain capped when not in use to prevent contamination and evaporation.

VI. RECOMMENDED APPLICATION PROCEDURES
1. Application Method: Spray ACCELL CLEAN® SWA onto oil-contaminated shorelines, mangroves, or seagrasses full strength as applied. Allow to soak for 15-30 minutes. Rocks may be scrubbed with a stiff bristle brush where appropriate. Rinse with fresh or salt water as appropriate. For weathered crude oil on sand, transfer oil-contaminated sand to sand washing equipment. Agitate sand/ACCELL CLEAN® SWA solution. ACCELL CLEAN® SWA will lift the oil from the sand due to its low interfacial tension. Remove water from sand by centrifuge.
2. Concentration/Application Rate: Recommended application rate is 1 gallon per 100 square feet, dependent on the amount of oil and the degree of weathering. For weathered crude oil from sand, prepare a cleaning solution of 0.25%-2.0% ACCELL CLEAN® SWA using fresh or salt water.
3. Conditions for Use: Collect the oil/product residue from the water's surface using skimmers, absorbent pads, or other conventional means. Dispose of used, clean up residue in accordance with local, state, and federal regulations. Dispose of clean sand as appropriate and ACCELL CLEAN® SWA solution can be recycled after centrifuge.

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity:

Materials Tested	Species	LC50 (ppm)	
ACCELL CLEAN® SWA	Menidia beryllina	24.12	96-hr
	Mysidopsis bahia	59.46	48-hr
No. 2 Fuel Oil	Menidia beryllina	17.13	96-hr
	Mysidopsis bahia	2.92	48-hr
ACCELL CLEAN® SWA &	Menidia beryllina	12.25	96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	2.25	48-hr
Reference Toxicant (DDS)	Menidia beryllina	10.00	96-hr
	Mysidopsis bahia	29.00	48-hr

b. Effectiveness: NA

VIII. MICROBIOLOGICAL ANALYSIS
NA

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IX. PHYSICAL PROPERTIES1. Flash Point: >180°F/82°C
2. Pour Point: 10°F/-12°C
3. Viscosity: 68 SUS @60°F
4. Specific Gravity: 1.0141 @60°F
5. pH: 8.12
6. Surface Active Agents: CONFIDENTIAL
7. Solvents: CONFIDENTIAL
8. Additives: CONFIDENTIAL
9. Solubility: Soluble in fresh or seawater

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<1.00
Cadmium	<0.50
Chromium	<1.00
Copper	<2.50
Lead	<1.00
Mercury	<0.020
Nickel	<4.00
Zinc	<6.00
Cyanide	<1.00
Chlorinated Hydrocarbons	ND

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EPA HAS NOT RECEIVED UPDATED CONTACT INFORMATION FOR THIS PRODUCT: 3/23/16

TECHNICAL PRODUCT BULLETIN #SW-61
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: OCTOBER 13, 2011
"EPA OIL FIELD SOLUTION™"
(aka, HYDRO-CLEAN™, GLOBAL ENVIRONMENTAL CLEANER™, AWAN PRA OIL FIELD SOLUTION™)

I. NAME, BRAND, OR TRADEMARK
EPA OIL FIELD SOLUTION™
(aka, HYDRO-CLEAN™, GLOBAL ENVIRONMENTAL CLEANER™, AWAN PRA OIL FIELD SOLUTION™)
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Environmental Protection Associates, Inc.
2578 Enterprise Road, Suite 141
Orange City, FL 32763
Phone: (407) 687-6742
E-mail: njrhall@epaworldwide.com
Website: www.epaworldwide.com
(Mr. Nathan Hall)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS

International Green Building Group, Inc.
10800 Main Street, Suite 150
Fairfax, VA 22030
Phone: (202) 300-8324
E-mail: info@internationalgreenbuildinggroup.com
Website: www.internationalgreenbuildinggroup.com

AWAN International General Trading
P.O. Box 75352
Kingdom of Bahrain
Phone: 973-173-111-28
Fax: 973-172-950-05
E-mail: james@awanpra.com
Website: www.awangroups.com
Website: www.awanpra.com
(Mr. James Gard)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable (DOT: Non-hazardous)
2. Ventilation: No special requirements.
3. Skin and eye contact; protective clothing; treatment in case of contact: No special equipment or clothing required, however goggles are recommended. If eye or skin irritation occurs, flush with plenty of fresh water.
4.a. Maximum storage temperature: 120°F continuous, 140°F up to 5 days

4.b. Minimum storage temperature: 35°F
4.c. Optimum storage temperature range: 40°F to 120°F
4.d. Temperatures of phase separations and chemical changes: Stable

V. SHELF LIFE
Unlimited in sealed polydrums or totes (as delivered). Avoid direct sunlight.

VI. RECOMMENDED APPLICATION PROCEDURES
1. Application Method: Product may be applied to surfaces for removal of oils. Select proper dilution depending on material surface prior to application. For treatment of large areas, properly diluted product may be applied by spraying with a pressure washer, portable fire pump, or any other suitable pump with seawater or freshwater suction that is equipped with a chemical inductor or feed pump. For smaller areas, properly diluted product may be applied with scrubber, mop, cloth or damp sponge. Apply liberally, adjusting dilution on site as necessary. For shorelines, mangroves, and seagrasses product is sprayed directly on the oiled rocky surfaces full strength as supplied. After a soak time of zero to 30 minutes, the cleaner and oil released from the shoreline surface can be collected and disposed. The soak time may vary with temperature, oil density, and degree of weathering.
2. Concentration/Application Rate: For heavily weathered oil on rocks, a diluted solution of 3 parts water to 1 part product is recommended. For heavily weathered oil on beaches/sand, a diluted solution of 5 parts water to 1 part product is ideal. For removing oil from vegetation, a diluted solution of 10-20 parts water to 1 part product is preferred. Product may be diluted with either salt or fresh water. Warmer water (greater than 78°F) and/or good agitation during application will require less of the product.
3. Conditions for Use: Best results are obtained by allowing diluted solution to soak for at least 30 minutes to soften the oil deposits. Reapplication may be necessary in severely contaminated areas. A sorbent boom or vacuum suction equipment should be positioned to collect the washed off effluent. When proper containment equipment is in place and a soaking period of at least 30 minutes has been achieved, a diluted solution of 20 parts water and 1 part product should be applied at mid-pressure (approximately 100 PSI). Adjust pressure and angle of the hose sprayer to achieve optimum results, adjusting the dilution as necessary on site. Product and effluent should be vacuumed up or absorbed in absorbent boom and disposed of according to local, state, and federal regulations. EPA Oil Field Solution™ is useful on shorelines using fresh or salt water. It can be used on all types of oil including heavily weathered and emulsified ("chocolate mousse") containing up to 50 percent water.
VII. TOXICITY AND EFFECTIVENESS
a. Toxicity:

Materials Tested	Species	LC50 (ppm)	
EPA OIL FIELD SOLUTION™	Menidia beryllina	113.76	96-hr
	Mysidopsis bahia	114.60	48-hr
No. 2 Fuel Oil	Menidia beryllina	3.00	96-hr
	Mysidopsis bahia	1.41	48-hr
EPA OIL FIELD SOLUTION™ &	Menidia beryllina	2.94	96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	1.12	48-hr
Reference Toxicant (SLS)	Menidia beryllina	12.25	96-hr

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Mysidopsis bahia 12.06 48-hr

b. Effectiveness: NA

VIII. MICROBIOLOGICAL ANALYSIS

NA

IX. PHYSICAL PROPERTIES

1. Flash Point: >95°F
2. Pour Point: -2°F
3. Viscosity: 1.137368 SUS @40°F
4. Specific Gravity: 1.11 @60°F
5. pH: 13.4
6. Surface Active Agents: Nonionic, proprietary, surfactants
7. Solvents: Proprietary
8. Additives: None
9. Solubility: Miscible in oil, water, and solvents

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<0.200
Cadmium	<0.0600
Chromium	<0.300
Copper	<0.300
Lead	<0.200
Mercury	<1.00 (ug/l)
Nickel	<0.500
Zinc	2.31
Cyanide	<0.0100
Chlorinated Hydrocarbons	<250 (ug/l)

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BULLETIN UPDATES IN BOLD

TECHNICAL PRODUCT BULLETIN #SW-62
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: MARCH 5, 2012
"PETROMAX PSC 3"
(aka, PETROMAX SOIL CLEANING AND WASHING AGENT)

I. NAME, BRAND, OR TRADEMARK
PETROMAX PSC 3
(aka, PETROMAX SOIL CLEANING AND WASHING AGENT)
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Saxon Petrotechnologies S.A.
Ancona 14-Bis
Carrasco, Montevideo
Uruguay
Phone: 598-2-604-1006
Unites States: (305) 600-4927
Fax: (508) 256-8318
E-mail: svb@saxon-technologies.com
Website: www.alfaluz.net
(Mr. Scot von Bergen)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Saxon Petrotechnologies
6405 Schiller Street
Houston, Texas 77055
Phone: (305) 600-4927
Fax: (508) 256-8138
E-mail: rbrawn@saxon-technologies.com or mvb@saxon-technologies.com
(Mr. Randy Brawn or Mrs. Marina von Bergen)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable (DOT: Non-hazardous)
2. Ventilation: No special requirements.
3. Skin and eye contact; protective clothing; treatment in case of contact: No special equipment or clothing required; however, goggles are recommended. If eye or skin irritation occurs, flush with plenty of fresh water.
4.a. Maximum storage temperature: 120°F continuous, 140°F up to 5 days
4.b. Minimum storage temperature: 35°F
4.c. Optimum storage temperature range: 40°F to 120°F

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4.d. Temperatures of phase separations and chemical changes: Stable

V. SHELF LIFE
Unlimited when stored in unopened, sealed 5 gallon containers, 55 gallon drums, polydrums, and totes.

VI. RECOMMENDED APPLICATION PROCEDURES
1. Application Method: PETROMAX PSC 3's mechanism of action is to reverse the charge of the particles (sand) holding the hydrocarbons, in such a way that the hydrocarbons and the particles reject each other thus allowing the hydrocarbons to be easily separated, removed, and collected. This is because the separated hydrocarbons maintain their globular integrity and are not dispersed nor solubilized into the water column.

PETROMAX PSC 3 is applied via hydroblaster directly to the contaminated sand/soil and as it becomes fluidized it is sucked through a four inch hose into a mobile containment tank set up for the purpose at the job site. The contaminated material is cleaned through a three phase separation process:

a) Solids Recovery: Once in the containment tank, the cleaned sand and soil particles precipitate immediately to the bottom, from which they are extracted via a slew-valve to secondary containment. Any entrained water within this containment is further recovered for reuse according to local, state, and federal regulations.
b) Oil Recovery: During this process the hydrocarbons float to the surface of the tank and are removed by skimming. These removed hydrocarbons are collected and are sent to a refinery for processing.
c) PETROMAX PSC 3/Water Recovery: This leaves only the used PETROMAX PSC 3/water solution in the tank, which can be reused or disposed of according to local, state, and federal regulations. The remaining water may contain some light particles in suspension. These particles are easily precipitated into cake residues which are then collected. The cake residues typically contain a water content below 10%. They can be dried in open air pits with plastic protection underneath or in 15 yard roll-off containers. Any contaminated water should be collected and sent to a standard water treatment facility.

2. Concentration/Application Rate: PETROMAX PSC 3 should be applied via hydroblaster lance with minimum 3200 psi pressure and 4-15 gallons per minute flow depending on material to be treated. For smaller spills, a smaller hydroblaster sprayer may be used, mixing fresh or salt water according to availability, and depending on the oil composition and viscosity in the contaminated sand and soil being treated. For large scale soil remediation and cleaning or soils and sands contaminated with heavy crude, direct PETROMAX PSC 3 directly on the spill (contaminated) material using a hydroblaster lance at a minimum pressure of 3500 psi, with a dilution ratio of approximately 1:10 (product:water). Lighter oil soil contamination will require a 1:20 to 1:30 product to water dilution ratio with pressures at 2800 psi minimum. Warmer water (greater than 70°F) may require less PETROMAX PSC 3.
3. Conditions for Use: A sorbent boom should be positioned during use to contain any runoff and the collected material should be disposed of according to local, state, and federal regulations.

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VII. TOXICITY AND EFFECTIVENESS

a. Toxicity:

Materials Tested	Species	LC50 (ppm)	
PETROMAX PSC 3	Menidia beryllina	20332.19	96-hr
	Mysidopsis bahia	13460.87	48-hr
No. 2 Fuel Oil	Menidia beryllina	1.90	96-hr
	Mysidopsis bahia	1.68	48-hr
PETROMAX PSC 3 &	Menidia beryllina	1.99	96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	1.00	48-hr
Reference Toxicant (SLS)	Menidia beryllina	12.25	96-hr
	Mysidopsis bahia	12.35	48-hr

b. Effectiveness: NA

VIII. MICROBIOLOGICAL ANALYSIS

NA

IX. PHYSICAL PROPERTIES

1. Flash Point: >185°F
2. Pour Point: +22°F
3. Viscosity: 1.5 cst @40°C
4. Specific Gravity: 1.08 @60°F
5. pH: 13.23
6. Surface Active Agents: Anionic, proprietary
7. Solvents: None
8. Additives: Proprietary
9. Solubility: Miscible in oil, water, and solvents

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	0.121
Cadmium	0.332
Chromium	0.067
Copper	<0.100
Lead	0.197
Mercury	<0.50 (ug/l)
Nickel	<0.100
Zinc	<0.100
Cyanide	<0.010
Chlorinated Hydrocarbons	<5.00 (ug/l)

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BULLETIN UPDATES IN BOLD

TECHNICAL PRODUCT BULLETIN #SW-63
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: JULY 12, 2012
"GREEN TECHNOLOGIES SOLUTIONS-OIL RECOVERY (GTS-OR)"

I. NAME, BRAND, OR TRADEMARK
GREEN TECHNOLOGIES SOLUTIONS-OIL RECOVERY (GTS-OR)
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
International Technologies and Services
302 W. 5th Street, Suite 200
San Pedro, CA 90731
Phone: (310) 791-4487
Fax: (877) 744-9975
E-mail: pilarladybug@itsenvironmental.com
Website: www.ITSEnvironmental.com
(Ms. Pilar Ortega)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
International Technologies and Services
302 W. 5th Street, Suite 200
San Pedro, CA 90731
Phone: (310) 791-4487
Fax: (877) 744-9975
E-mail: pilarladybug@itsenvironmental.com
Website: www.ITSEnvironmental.com
(Ms. Pilar Ortega)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable
2. Ventilation: Handle in well ventilated space.
3. Skin and eye contact; protective clothing; treatment in case of contact: Product may cause minor irritation, so avoid eye and skin contact by wearing protective goggles, impermeable protective gloves, and protective clothing while handling the product. Wash contaminated clothing with soap and water, and dry prior to reuse. In case of contact, flush with large amounts of water for at least 15 minutes. Product may harmful if inhaled. In case of inhalation, move affected person to fresh air, and call a physician. Product may be harmful if swallowed. In case of ingestion, induce vomiting, give water, and call a physician.
4.a. Maximum storage temperature: 120°F
4.b. Minimum storage temperature: 30°F

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4.c. Optimum storage temperature range: >50°F to <100°F
4.d. Temperatures of phase separations and chemical changes: None

V. SHELF LIFEOne year minimum when stored between 50°F and 100°F.

VI. RECOMMENDED APPLICATION PROCEDURES

1. Application Method: GTS-OR may clean oil from beaches, rocks, riprap, pilings, and seawalls. GTS-OR application method can be adjusted depending on the scale and type of area to be cleaned. For large areas, GTS-OR can be sprayed from water trucks or water boats equipped with pumps, hoses, and nozzles to deliver the product as an aerial spray. The pump should be equipped with a chemical inductor or feed pump. In smaller applications, GTS-OR can be applied directly onto oiled surfaces using a pressure washer, steam powered unit, fire hose, or chemical boom sprayer with nozzles at mid-pressure (i.e., approximately 100 PSI) that produce a shearing action. For small applications, the product may be applied with mops, cloth, or damp sponges. For application in tidally influenced areas and to maximize contact time, GTS-OR should be applied during ebb tide (i.e., receding). Oil trapped between rocks or in crevices may be released over several days, requiring containment devises to be left in place.

2. Concentration/Application Rate: For heavily weathered oil on rocks, a diluted solution of 15 parts water to 1 part product is recommended. For heavily weathered oil on beaches/sand, a diluted solution of 10 parts water to 1 part product is ideal. For lightly-to-moderately oiled shorelines, mangroves, and seagrasses, the product should be sprayed directly to the affected surface at a 1:20 dilution ratio; a 1:10 dilution ratio is preferred for heavily oiled areas.

3. Conditions for Use: GTS-OR may be used in freshwater, estuarine, and marine environments. In all applications, the product may be diluted with either salt or fresh water, and the mixture should be allowed to penetrate and dissolve weathered petroleum for at least 30 minutes. Cold weather applications will require more contact time. Reapplication may be necessary for heavily oiled areas. The product may be used on both lighter oils (e.g., No. 2 Fuel Oil) and heavy ends (e.g., crude oil, No. 6 Fuel Oil). Prior to application, booms, oil skimmers, or other appropriate containment and collection mechanism should be deployed and operational. Collected product and oil mixture should be disposed of according to local, state, and federal regulations.

VII. TOXICITY AND EFFECTIVENESS

a. Toxicity:

Materials Tested	Species	LC50 (ppm)	
GTS-OR	Menidia beryllina	3930	96-hr
	Mysidopsis bahia	916	48-hr
No. 2 Fuel Oil	Menidia beryllina	8.16	96-hr
	Mysidopsis bahia	4.47	48-hr
GTS-OR &	Menidia beryllina	5.77	96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	2.18	48-hr
Reference Toxicant (SDS)	Menidia beryllina	1.24	96-hr
	Mysidopsis bahia	4.77	48-hr

b. Effectiveness: NA

VIII. MICROBIOLOGICAL ANALYSIS

NA

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IX. PHYSICAL PROPERTIES

1. Flash Point: 171°F
2. Pour Point: 35°F
3. Viscosity: 8.5 cSt @40°C
4. Specific Gravity: 1.009 @60°F
5. pH: 9.0
6. Surface Active Agents: CONFIDENTIAL
7. Solvents: None
8. Additives: CONFIDENTIAL
9. Solubility: Soluble in water

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	0.0084
Cadmium	<0.004
Chromium	0.00064
Copper	0.180
Lead	0.00025
Mercury	<0.00010
Nickel	0.0012
Zinc	0.017
Cyanide	<0.200
Chlorinated Hydrocarbons	<2.5

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TECHNICAL PRODUCT BULLETIN #SW-64
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: JANUARY 23, 2014
"NONTOX™ SURFACE WASHING AGENT"

I. NAME, BRAND, OR TRADEMARK
NONTOX™ SURFACE WASHING AGENT
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Bio-Organic Catalyst, Inc. (wholly owned subsidiary of Neozyme International, Inc.)
711 West 17th Street, Suite E-6
Costa Mesa, CA 92627
Phone: (949) 515-1301
Phone: (800) 982-8676
Fax: (949) 515-1314
E-mail: parker@bio-organic.com
Website: www.bio-organic.com
(Mr. Parker Dale, President)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS

Government Logistics Solutions
3540 Chaneyville Road
Owings, MD 20736
Phone: (410) 286-0098
Fax: (301) 812-2878
(Mr. Charles M. Baker, Retired USAF (SMSgt sel), President)
(Kelly Davis – (240) 691-3946)

Rolling Hills Construction and Demolition Recycling Center
6990 Rolling Hills Road
Pensacola, FL 32505
Phone: (850) 477-2687
(Mr. John Levitan – Mobile (850) 497-2724)
(Mr. Scott Miller – Mobile (850) 723-5715)
(Mr. Charlie Davidson – Mobile (850) 776-2852)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: >93°C
2. Ventilation: None required. No respiratory protection required.
3. Skin and eye contact; protective clothing; treatment in case of contact: The use of protective eyewear and rubber gloves is recommended under good manufacturing practices.
4.a. Maximum storage temperature: 55°C
4.b. Minimum storage temperature: 2°C
4.c. Optimum storage temperature range: 25°C to 40°C
4.d. Temperatures of phase separations and chemical changes: No phase separations or chemical changes observed under optimum storage temperatures.

V. SHELF LIFE
A minimum of two (2) years.

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VI. RECOMMENDED APPLICATION PROCEDURE

1. Application Method: For general use apply the product by spray, mop or with standard steam and pressure wash cleaning equipment. It can also be applied using a foam generator or any convenient sprayer. Product can be used as is or by using heat and pressure or mechanical scrubbing. Rinse thoroughly with salt or fresh water for a residue-free surface. For direct applications foaming will be most effective as it will allow more contact time for the product to work. In a foam-cleaning application operation, the surface to be cleaned will be thoroughly covered with foam and allowed to stand for several minutes. The foam is rinsed away with clean water using a high pressure washer. The product can be applied with a variety of spraying or washing equipment, depending on the type and scale of the shoreline or beach to be cleaned. For large areas, such as beaches, the product can be sprayed from water trucks or other vehicles equipped with pumps, hoses and nozzles to aerially deliver the product. On smaller oily surfaces, the product can be applied with hand sprayers or portable pumps may be used to spray directly onto the contaminated areas.

2. Concentration/Application Rate: For spills on shorelines and beaches, the product can be used at a dilution of 1:17 parts product to water using salt or fresh water. After application, the product should be allowed to penetrate and dissolve the oily surface for up to 30 minutes. Longer is preferable to maximize contact time. For light cleaning use a ratio up to 1:50 parts product to water. For heavy cleaning use a ratio up to 1:17 parts product to water. Dose rates may vary depending on type and amount of petroleum spilled, and other site conditions such as water, temperatures and porosity of shoreline. Cold weather applications will require more contact time before initiating recovery.

3. Conditions for Use: The product can be used on sand beaches, gravel, cobble, and coarse sand and rocky shores. Water salinity should not negatively impact product use. Water temperatures below 2°C may impact application. Aged or highly viscous concentrations of hydrocarbons my require presoaking prior to removal. The treated product can be collected and removed by several means including, but not limited to, sorbent pads, oil skimmers, collection booms, or other appropriate containment and collection mechanism. All oily water mixtures should follow disposal procedures in accordance with current local, state and federal regulations.

VII. TOXICITY AND EFFECTIVENESS

a. Toxicity:

Material Tested	Species	LC50 (ppm)
NONTOX™ SURFACE WASHING AGENT	Menidia beryllina	203.04 96-hr
	Mysidopsis bahia	316.23 48-hr
No. 2 Fuel Oil	Menidia beryllina	2.51 96-hr
	Mysidopsis bahia	2.24 48-hr
NONTOX™ SURFACE WASHING AGENT &	Menidia beryllina	3.29 96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	2.19 48-hr
Reference Toxicant (SLS)	Menidia beryllina	12.25 96-hr
	Mysidopsis bahia	12.08 48-hr

b. Effectiveness: NA

VIII. MICROBIOLOGICAL ANALYSIS

NA

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IX. PHYSICAL PROPERTIES

1. Flash Point (ASTM 92): >93°C
2. Pour Point: 2.22°C
3. Viscosity: 2.3373 cST @ 40°C
4. Specific Gravity: 1.005 at 68°F
5. pH: 3.46
6. Surface Active Agents: CONFIDENTIAL
7. Solvents: None
8. Additives: CONFIDENTIAL
9. Solubility: 100% soluble

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<0.0100
Cadmium	<0.0050
Chromium	0.1515
Copper	0.1530
Lead	<0.0100
Mercury	<0.5000 ug/L
Nickel	<0.0250
Zinc	4.781
Cyanide	<0.0100
Chlorinated Hydrocarbons	<2.50

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TECHNICAL PRODUCT BULLETIN #SW-65
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: JULY 9, 2013
"SIMPLE GREEN® 2013 Reformulation"

I. NAME, BRAND, OR TRADEMARK
SIMPLE GREEN® 2013 Reformulation
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Sunshine Makers, Inc.
15922 Pacific Coast Highway
Huntington Beach, CA 92649
Phone: (800) 228-0709
Phone: (562) 795-6000
Fax: (562) 592-3830
E-mail: CChapin@simplegreen.com
(Ms. Carol Chapin)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Sunshine Makers, Inc.
15922 Pacific Coast Highway
Huntington Beach, CA 92649
Phone: (800) 228-0709
Phone: (562) 795-6000
Fax: (562) 592-3830
E-mail: CChapin@simplegreen.com
(Ms. Carol Chapin)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable.
2. Ventilation: Not expected to cause respiratory irritation. However, use in well ventilated areas. If adverse effect occurs, move to fresh air.
3. Skin and eye contact; protective clothing; treatment in case of contact: Not expected to cause eye irritation. However, use protective glasses if splashing or spray-back is likely. If adverse effect occurs, flush eyes with water. Not expected to cause skin irritation. However, dermally sensitive users may experience dry skin and should use protective gloves. If adverse effect occurs, rinse skin with water. General hygiene considerations include washing hands thoroughly after handling and before eating or drinking. Ensure adequate ventilation. Keep out of reach of children. If ingested, drink plenty of water to dilute.
4.a. Maximum storage temperature: 109°F
4.b. Minimum storage temperature: 41°F
4.c. Optimum storage temperature range: 42°F to 108°F
4.d. Temperatures of phase separations and chemical changes: SIMPLE GREEN® is stable and

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phase separation will not occur at temperatures within the maximum and minimum storage temperatures. If separation occurs, mix the product for reconstitution.

V. SHELF LIFE

SIMPLE GREEN® has a 5-year shelf life. Keep away from heat, sparks, open flame and direct sunlight. Do not pierce any part of the container. Keep container tightly closed. Keep in a cool dry area. Avoid prolonged exposure to direct sunlight. Do not store at temperatures above 109ºF (42.7ºC).

VI. RECOMMENDED APPLICATION PROCEDURE

1. Application Method: Spray or apply on oily surfaces (e.g., beaches, rocks, shorelines, pilings, etc.).

2. Concentration/Application Rate:

a) Mix SIMPLE GREEN® in clean water at recommended concentration for strength of surface being cleaned:

Degree that Surface is Covered in Oil	**Concentration of Simple Green®**
HEAVY – fresh, thick, viscous oil; porous surfaces	Full strength to 25%
MEDIUM – weathered, thinner coats of oil; non-porous surfaces – use pressure washer equipment	25% to 10%
LIGHT – very light oil film; non-porous surfaces	Less than 10%

b) Apply SIMPLE GREEN® or diluted solution of Simple Green® to oiled surface via sponge, mop, coarse spray, foaming applicator, or pressure washer.

c) Whenever possible, allow several minutes (5-10) of contact time to loosen oil. Do not allow product to dry on the surface or it will be difficult to remove.

d) Wash and scrub as necessary.

e) Rinse cleansed surfaces with clean water. Whenever possible, rinse should enter a pretreatment system (e.g., clarifier, oil/water separator, municipal sanitary sewer) before repurposing.

3. Conditions for Use: SIMPLE GREEN® can be used in freshwater, estuarine, and marine environments at all temperatures. Prior to application, booms, oil skimmers, or other appropriate containment and collection mechanism should be deployed and operational. Collected product and oil mixture should be disposed of according to local, state, and federal regulations.

VII. TOXICITY AND EFFECTIVENESS

a. Toxicity:

Material Tested	Species	LC50 (ppm)
SIMPLE GREEN®	Menidia beryllina	735.00 96-hr
	Mysidopsis bahia	541.00 48-hr
No. 2 Fuel Oil	Menidia beryllina	26.40 96-hr
	Mysidopsis bahia	3.37 48-hr
SIMPLE GREEN® & No. 2 Fuel Oil (1:10)	Menidia beryllina	28.50 96-hr
	Mysidopsis bahia	5.05 48-hr
Reference Toxicant (DSS)	Menidia beryllina	1.69 96-hr

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Mysidopsis bahia	6.60	48-hr

NOTE: This toxicity data was derived using the concentrated product. See Section VI of this bulletin for information regarding the manufacturer's recommendations for concentrations and application rates for field use.
b. Effectiveness: NA

VIII. MICROBIOLOGICAL ANALYSIS
SIMPLE GREEN® contains no microorganisms, enzymes, or biological material.

IX. PHYSICAL PROPERTIES
2. Flash Point (ASTM 92): 98°C
No Flash Point seen at or below 212°F (ASTM 93)
2. Pour Point: 0°C
3. Viscosity: <2.0 mm^2/s at 40°C
4. Specific Gravity: 1.0283 g/ml at 60°F
5. pH: 9.0
6. Surface Active Agents: CONFIDENTIAL
7. Solvents: None
8. Additives: CONFIDENTIAL
9. Solubility: 100% soluble

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	0.0031
Cadmium	<0.0005
Chromium	0.013
Copper	<0.0025
Lead	<0.0005
Mercury	0.0016
Nickel	0.0054
Zinc	0.016
Cyanide	<0.08
Chlorinated Hydrocarbons	<5

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BULLETIN UPDATES IN BOLD

TECHNICAL PRODUCT BULLETIN #SW-66
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: MAY 7, 2015
"FORMULA 206-1x BIO-WASH™"
(aka, CAST OFF™, FORMULA 206-1x)

I. NAME, BRAND, OR TRADEMARK
FORMULA 206-1x BIO-WASH™
(aka, CAST OFF™, FORMULA 206-1x)
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Natural Soap Formulas, Inc.
1200 Stirling Road, Suite 10A & 10B
Dania Beach, FL 33004
Phone: (954) 922-4003
Fax: (954) 922-4009
E-mail: kaylin@naturalsoapformulas.com; or michael@naturalsoapformulas.com
(Ms. Kaylin D'Aire or Mr. Michael Metcalfe)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Natural Soap Formulas, Inc.
1200 Stirling Road, Suite 10A & 10B
Dania Beach, FL 33004
Phone: (954) 922-4003
Fax: (954) 922-4009
E-mail: kaylin@naturalsoapformulas.com; or michael@naturalsoapformulas.com
(Ms. Kaylin D'Aire or Mr. Michael Metcalfe)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable (DOT: Non-Hazardous)
2. Ventilation: Normal ventilation is adequate. No respiratory protection is required. If respiratory irritation or distress occurs, remove exposed person to fresh air. Seek medical attention if respiratory irritation or distress continues.
3. Skin and eye contact; protective clothing; treatment in case of contact: Protective eyewear is advisable for operator's comfort. If eye irritation occurs, flush eyes with water. After initial flushing, removal any contact lenses and continue flushing for 1 minute. Please seek medical attention, if eye irritation symptoms persist or if there are additional concerns. Wash hands after handling. If ingested, drink 2-4 glasses of water and allow the product to pass through the digestive system naturally. Ingesting large amounts may cause gastrointestinal distress due to

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emulsification of grease and oil in the digestive tract. Please seek medical attention, if symptoms persist of if there additional concerns.

4.a. Maximum storage temperature: 120°F continuous, 130°F up to 5 days
4.b. Minimum storage temperature: 30°F
4.c. Optimum storage temperature range: 40°F to 110°F
4.d. Temperatures of phase separations and chemical changes: Stable

V. SHELF LIFE
5 years in sealed poly drums or IBC totes (as delivered).

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method: FORMULA 206-1x BIO-WASH™ may be applied to hard surfaces including beaches, shorelines, and rocks; specifically to aid in the removal of oil and oil saturated soiling. Product may be applied by spray, high pressure wash, mop, scrub brush, cloth or sponge. Once applied to target surface, allow for a 5 to 30 minute dwell time, the product may be agitated using suitable physical methods (i.e., scrubbing to increase effectiveness). For large areas such as shorelines, product can be applied by vehicle or boat; spraying from fire eduction systems or boom system, hand-held or backpack sprayers, garden type sprayers, or from hoses attached to small pumps through power washers, fire pump or other portable pump with suction that is equipped with a chemical inductor or feed pump. After application, the removal of oil or oil saturated soiling can be done by rinsing with water where practicable followed by removal with physical methods, such as sorbent pads, mop or vacuum application to prevent contamination to open water. Ensure boom containment continues to be in place during oil/product removal procedures.

2. Concentration/Application Rate: FORMULA 206-1x BIO-WASH™ is typically diluted with using tap-water at ambient temperature; and can be diluted with sea water or any other suitable field expedient water source. The product is not affected by salinity or hard water dilution. Apply using a typical dilution ratio of 1:10 in the first instance. Product dilution varies with the severity of the contamination, contaminant viscosity, area of application and porosity, and nature of the surface to be decontaminated. A dilution ratio ranging from 1:5 to 1:200 is recommended for this product, there is no specific application rate; however, for large area application, 15 to 50 U.S. gallons per acre can be considered optimal. During application, the rate and concentration of the product can be adjusted to suit the cleaning effect desired.

3. Conditions for Use: FORMULA 206-1x BIO-WASH™ is most effective on hydrocarbon and bio-organic soiling on hard surfaces including beaches, shorelines, and rocks. A sorbent boom or other containment equipment should be positioned prior and remain in place during product use to collect runoff from application and removal operations. Collect and contain runoff from oil/product mixture and dispose of such material in accordance with local, state, and federal regulations.

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity:

Material Tested	Species	LC50 (ppm)
FORMULA 206-1x BIO-WASH™	Menidia beryllina	157.00 96-hr
	Mysidopsis bahia	123.00 48-hr
No. 2 Fuel Oil	Menidia beryllina	3.60 96-hr
	Mysidopsis bahia	5.80 48-hr
FORMULA 206-1x BIO-WASH™ &	Menidia beryllina	3.90 96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	4.10 48-hr
Reference Toxicant (SDS)	Menidia beryllina	10.00 96-hr
	Mysidopsis bahia	19.00 48-hr

b. Effectiveness: NA

VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
3. Flash Point (ASTM 93): 130°F
2. Pour Point (D2500): 30°F
3. Viscosity (ASTM D88): 26 SUS @ 100°F
4. Specific Gravity (ASTM D1217): 1.0137 g/ml at 60°F
5. Ph (EPA 9040C): 10.6
6. Surface Active Agents: Natural fatty acid soaps
7. Solvents: Hydrofurfuryl Alcohol
8. Additives: NA
9. Solubility: Miscible in oil, water, and solvents

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	ND
Cadmium	ND
Chromium	0.0173
Copper	0.115
Lead	ND
Mercury	ND
Nickel	0.160
Zinc	0.556
Cyanide	ND
Chlorinated Hydrocarbons	ND

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TECHNICAL PRODUCT BULLETIN #SW-67
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: AUGUST 3, 2015
"RHAMNOWASH 10"

I. NAME, BRAND, OR TRADEMARK
RHAMNOWASH 10
Type of Product: Surface Washing Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Rhamnolipid, Inc.
511 West Bay Street, Suite 350
Tampa, FL 33606
Phone: (813) 930-5550
Direct: (704) 564-6445
E-mail: greccosg@rhamnolipid.com
Website: http://www.rhamnolipid.com/
(Mr. Samuel G. Grecco)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Rhamnolipid Companies, Inc.
511 West Bay Street, Suite 350
Tampa, FL 33606
Phone: (813) 930-5550
Direct: (704) 564-6445
E-mail: kdesanto@rhamnolipid.com
Website: http://www.rhamnolipid.com
(Mr. Keith DeSanto)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: IMO, Non-flammable; DOT, Non-Hazardous
2. Ventilation: Inhalation causes irritation. Use in properly ventilated areas, with approved respiratory mask and goggles. Avoid creating mist where possible. If inhaled, allow plenty of fresh air and loosen clothing around neck. Contact physician immediately.
3. Skin and eye contact; protective clothing; treatment in case of contact: Exposure to skin can cause irritation if person has a history of dermal allergic reaction. Limit exposure and use rubber gloves. Wash with soap and water. If product comes in contact with the eyes, excess redness and swelling of the conjunctiva may occur. Causes moderate to severe irritation, which is experienced as discomfort or pain, excessive blinking and tear production, with marked excessive redness and swelling. Corneal injury may occur. Immediately flush with water for at least 15 minutes. DO NOT remove contact lenses, if worn. Obtain medical attention without delay, preferably from an ophthalmologist. To avoid eye contact, wear goggles or a face shield. Ingestion of product can lead to nausea or diarrhea. If ingested, give two glasses of water to dilute product. DO NOT induce vomiting. Contact physician immediately. Treat as you would

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any chemical or biological material. Always wash hands thoroughly after use. Follow product sheets and SDS instructions.
4.a. Maximum storage temperature: 105°F
4.b. Minimum storage temperature: 35°F
4.c. Optimum storage temperature range: 35°F to 75°F
4.d. Temperatures of phase separations and chemical changes: Phase separation may occur over time, but mild agitation will reconstitute mixture.

V. SHELF LIFE
The shelf life of unopened containers (i.e., drums, totes, etc.) of RHAMNOWASH 10 exceeds five (5) years. Containers should always be capped when not in use to prevent spillage and/or contamination.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method: RHAMNOWASH 10 can remove oil (e.g., crude, different grades of fuel oil, gasoline, and other petrochemicals) from soil, shorelines, sandy beaches, mangroves, or sea grasses. The product may be applied by hand or using mechanical sprayers, pressure washers, or mechanical soil washing equipment. After a soak time of approximately 30 minutes to 3 to 4 hours (depending on the nature of the spill repeat as necessary), the residual mixture may be recovered using conventional methods. Actual cleaning time will likely depend on the environmental conditions, chemistry of the spilled oil, and the cleaning method employed.

2. Concentration/Application Rate: On heavy oils, use RHAMNOWASH 10 (neat) directly on the spill, or use a 1:100 dilution ratio (product:water) depending on the nature of the oil (e.g., crude vs refined) and environmental conditions (e.g., warm vs cold water). Lighter oils may need a 1:100 to 1:1000 dilution ratios depending on the oil's specific gravity and environmental conditions. RHAMNOWASH 10 maintains its surfactant properties at high levels of dilution, and works best when diluted with water (can use either saltwater or freshwater).

3. Conditions for Use: RHAMNOWASH 10 can be applied on oiled surfaces and shorelines in both freshwater and saltwater. Water temperatures less than 65°F may require higher dilution rates. Sorbent booms, oil skimmers, or other containment equipment should be positioned prior to and remain in place during product use to collect runoff from application and removal operations. Collect and contain runoff from oil/product mixture and dispose of such material in accordance with local, state, and federal regulations.

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity:

Material Tested	Species	LC50 (ppm)
RHAMNOWASH 10	Menidia beryllina	76.64 96-hr
	Mysidopsis bahia	164.61 48-hr
No. 2 Fuel Oil	Menidia beryllina	10.85 96-hr
	Mysidopsis bahia	2.27 48-hr
RHAMNOWASH 10 &	Menidia beryllina	13.70 96-hr

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No. 2 Fuel Oil (1:10)	Mysidopsis bahia	2.15 48-hr
Reference Toxicant (SDS)	Menidia beryllina	7.52 96-hr
	Mysidopsis bahia	5.47 48-hr

b. Effectiveness: NA

VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point (ASTM D-56): >100°C
2. Pour Point (ASTM D-97): 2.6°C
3. Viscosity (ASTM D-445): 2.02 cst @ 40°C
4. Specific Gravity (ASTM D1298): 1.009 at 60°F
5. pH (ASTM D-1293): 6.5
6. Surface Active Agents: Anionic and nonionic, proprietary surfactants
7. Solvents: None
8. Additives: None
9. Solubility: Miscible

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<0.250
Cadmium	<0.099
Chromium	<0.250
Copper	<0.740
Lead	<0.200
Mercury	<0.0033
Nickel	<0.200
Zinc	<5.000
Cyanide	<2.500
Chlorinated Hydrocarbons	<5.000

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TECHNICAL PRODUCT BULLETIN #S-5
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: JUNE 29, 2012
"THICKSLICK 6535"

I. NAME, BRAND, OR TRADEMARK
THICKSLICK 6535
Type of Product: Surface Collecting Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Desmi, Inc.
1119 Cavalier Boulevard
Chesapeake, VA 23323
Phone: (716) 662-0632
E-mail: pla@desmi.com
Website: http://www.desmi.com
(Mr. Peter Lane)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Desmi, Inc.
1119 Cavalier Boulevard
Chesapeake, VA 23323
Phone: (716) 662-0632
E-mail: pla@desmi.com
Website: http://www.desmi.com
(Mr. Peter Lane)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: IMO – Non-Flammable; DOT – Non-Hazardous
2. Ventilation: Use with ventilation equal to unobstructed outdoors in a moderate breeze
3. Skin and eye contact; protective covering; treatment in case of contact: May produce eye irritation in some persons and produce eye damage 24 hours or more after instillation. May cause skin irritation after prolonged or repeated exposure. Avoid skin and clothing contact. If skin contact occurs, immediately wash with large amounts of soap and water (if possible). Remove any contaminated clothing and shoes. Launder before reusing. If irritation persists, seek medical assistance. For areas where contact is likely, wear long sleeve shirt, chemical resistant gloves, and chemical resistant goggles.
4.a. Maximum storage temperature: 120°F
4.b. Minimum storage temperature: -40°F
4.c. Optimum storage temperature range: 59°F to 77°F
4.d. Temperatures of phase separations and chemical changes: None

ED_001324_00006005-00245

V. SHELF LIFE
Minimum of three years in unopened container.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method: Spray on water around the perimeter of an oil slick using a pressurized backpack sprayer or aerial applicator.
2. Concentration/Application Rate: 6.4 U.S. gallons/mile (or 15L/km).
3. Conditions for Use: THICKSLICK 6535 is designed to aid in situ burning of free oil in calm water with drift ice where fire boom would be ineffective. When sprayed on the water around the perimeter of an oil slick, THICKSLICK 6535 will concentrate the oil to a thickness suitable for igniting a burn. It works in all water temperatures and salinities and works best with fluid petroleum that has not weathered significantly.

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity

Material Tested	Species	LC50 (ppm)
THICKSLICK 6535	Menidia beryllina	138 96-hr
	Mysidopsis bahia	286 48-hr
No. 2 Fuel Oil	Menidia beryllina	37.6 96-hr
	Mysidopsis bahia	2.43 48-hr
THICKSLICK 6535 & No. 2	Menidia beryllina	5.91 96-hr
Fuel Oil (1:10)	Mysidopsis bahia	1.53 48-hr
Reference Toxicant (SDS)	Menidia beryllina	3.02 96-hr
	Mysidopsis bahia	8.23 48-hr

b. Effectiveness:
NA

VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point: >180°F
2. Pour Point: 21.2 °F
3. Viscosity: 118 SUS at 100 °F
4. Specific Gravity: 0.9745 at 60°F
5. pH: 6.45
6. Surface Active Agents: CONFIDENTIAL
7. Solvents: CONFIDENTIAL
8. Additives: None
9. Solubility in Water: Partly miscible

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

ED_001324_00006005-00246

Compound	Concentration (ppm)
Arsenic	ND
Cadmium	ND
Chromium	ND
Copper	ND
Lead	ND
Mercury	ND
Nickel	ND
Zinc	ND
Cyanide	ND
Chlorinated Hydrocarbons	ND

ED_001324_00006005-00247

TECHNICAL PRODUCT BULLETIN #S-6
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: JUNE 29, 2012
"SILTECH OP-40"

I. NAME, BRAND, OR TRADEMARK
SILTECH OP-40
Type of Product: Surface Collecting Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Desmi, Inc.
1119 Cavalier Boulevard
Chesapeake, VA 23323
Phone: (716) 662-0632
E-mail: pla@desmi.com
Website: http://www.desmi.com
(Mr. Peter Lane)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Desmi, Inc.
1119 Cavalier Boulevard
Chesapeake, VA 23323
Phone: (716) 662-0632
E-mail: pla@desmi.com
Website: http://www.desmi.com
(Mr. Peter Lane)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: IMO – Non-Flammable; DOT – Non-Hazardous
2. Ventilation: Use with ventilation equal to unobstructed outdoors in a moderate breeze
3. Skin and eye contact; protective covering; treatment in case of contact: May produce eye irritation in some persons and produce eye damage 24 hours or more after instillation. May cause skin irritation after prolonged or repeated exposure. Avoid skin and clothing contact. If skin contact occurs, immediately wash with large amounts of soap and water (if possible). Remove any contaminated clothing and shoes. Launder before reusing. If irritation persists, seek medical assistance. For areas where contact is likely, wear long sleeve shirt, chemical resistant gloves, and chemical resistant goggles.
4.a. Maximum storage temperature: 120°F
4.b. Minimum storage temperature: -40°F
4.c. Optimum storage temperature range: 59°F to 77°F
4.d. Temperatures of phase separations and chemical changes: None

V. SHELF LIFE
Minimum of three years in unopened container.

ED_001324_00006005-00248

VI. RECOMMENDED APPLICATION PROCEDURE

1. Application Method: Spray on water around the perimeter of an oil slick using a pressurized backpack sprayer or aerial applicator.
2. Concentration/Application Rate: 6.4 U.S. gallons/mile (or 15L/km).
3. Conditions for Use: SILTECH OP-40 is designed to aid in situ burning of free oil in calm water with drift ice where fire boom would be ineffective. When sprayed on the water around the perimeter of an oil slick, SILTECH OP-40 will concentrate the oil to a thickness suitable for igniting a burn. It works in all water temperatures and salinities and works best with fluid petroleum that has not weathered significantly.

VII. TOXICITY AND EFFECTIVENESS

a. Toxicity

Material Tested	Species	LC50 (ppm)
SILTECH OP-40	Menidia beryllina	3.33 96-hr
	Mysidopsis bahia	6.83 48-hr
No. 2 Fuel Oil	Menidia beryllina	40.50 96-hr
	Mysidopsis bahia	6.43 48-hr
SILTECH OP-40 & No. 2	Menidia beryllina	9.70 96-hr
Fuel Oil (1:10)	Mysidopsis bahia	3.27 48-hr
Reference Toxicant (SDS)	Menidia beryllina	2.33 96-hr
	Mysidopsis bahia	8.68 48-hr

b. Effectiveness:

NA

VIII. MICROBIOLOGICAL ANALYSIS

NA

IX. PHYSICAL PROPERTIES

1. Flash Point: >180°F
2. Pour Point: -74.2 °F
3. Viscosity: 53 SUS at 100 °F
4. Specific Gravity: 0.98816 at 60°F
5. pH: 8.03
6. Surface Active Agents: CONFIDENTIAL
7. Solvents: None
8. Additives: None
9. Solubility in Water: Partly miscible

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	ND

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Cadmium	ND
Chromium	ND
Copper	ND
Lead	ND
Mercury	ND
Nickel	ND
Zinc	ND
Cyanide	ND
Chlorinated Hydrocarbons	ND

ED_001324_00006005-00250

EPA HAS NOT RECEIVED UPDATED CONTACT INFORMATION FOR THIS PRODUCT: 3/23/16

PRODUCT NO LONGER MANUFACTURED

TECHNICAL PRODUCT BULLETIN #B-10
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: JULY 9, 1985
REVISED LISTING DATE: JANUARY 11, 1996
"INIPOL EAP 22"

I. NAME, BRAND, OR TRADEMARK
INIPOL EAP 22
Type of Product: Biological Additive

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Société CECA S.A.
12 place de l'Iris - Cedex 54
92062 Paris-la-Défense
France
Phone: 011.33.1.47.96.92.91
Telex: CECAS 611444F
Fax: 011.33.1.47.96.92.33
E-mail: serge.kuchto@ceca.fr
(Mr. Serge Kuchto)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Elf Atochem North America, Inc.
2000 Market Street, Suite 1900
Philadelphia, PA 19103

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: INIPOL EAP 22 is non-flammable.
2. Ventilation: Ventilation of the work place is not necessary.
3. Skin and eye contact; protective clothing; treatment in case of contact: In case of contact with skin or eyes, wash with plenty of water.
4.a. Maximum storage temperature: 122°F
4.b. Minimum storage temperature: 52°F
4.c. Optimum storage temperature range: 55°F-65°F
4.d. Temperatures of phase separations: <52°F and >122°F

V. SHELF LIFEThe recommended shelf life is one year. However, if the product is stored indoors within the optimum temperature range, this shelf life can be extended. For instance, the shelf life can reach 400 days if the product is stored at 60°F. On the contrary, if the storage temperature is higher than the optimum range, the shelf life will decrease. At 86°F the shelf life will be only 100 days.

VI. RECOMMENDED APPLICATION PROCEDURE

1. Application Method: Application of INIPOL EAP 22 can be made by using any spreading system, including typical spreading systems for marine dispersants. It can be sprayed from airplanes, helicopters, or ships equipped with spray racks. It can also be sprayed with fire hose nozzles or any other means allowing product spreading.
2. Concentration/Application Rate: The application rate is 10% based on amount of oil, i.e., 26 gallons per ton of oil.
3. Conditions for Use: INIPOL EAP 22 should be used in sea waters with temperatures above 52°F. It is effective on weathered oils and is recommended for shore cleanup.

VII. TOXICITY AND EFFECTIVENESS

a. Effectiveness

Bioremediation Agent Effectiveness Test (40 CFR 300.900), Federal Register September 15, 1994:

Summary Data Table

DAYS	PRODUCT 3 REPS/PROD	TOTAL MEAN ALKANES (ppm)	RED% 28 DAYS	TOTAL MEAN AROMATICS (ppm)	RED% 28 DAYS
0	CONTROL	29965.2	0	5620.5	0
	NUTRIENT	31494.8	0	6660.2	0
	INIPOL EAP 22	30823.2	0	5483.4	0
7	CONTROL	30101.5	0	5610.1	0
	NUTRIENT	8073.9	0	5026.6	0
	INIPOL EAP 22	18804.7	0	5349.8	0
28	CONTROL	28785.6	3.94	5512.7	1.92
	NUTRIENT	706.2	97.76	4863.7	26.97
	INIPOL EAP 22	1888.6	93.87	4208.5	23.25

Results of Gravimetric Analysis:

Percentage (%) Decrease in Weight of Oil on Day 28

Control	Nutrient	Product (INIPOL EAP 22)
-6.41%	50.91%	49.95%

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b. Toxicity

Material Tested	Species	LC50 (ppm)	
INIPOL EAP 22	Menidia beryllina	135.0	96-hr
	Mysidopsis bahia	23.0	48-hr
No. 2 Fuel Oil	Menidia beryllina	280.0	96-hr
	Mysidopsis bahia	47.0	48-hr
INIPOL EAP 22 &	Menidia beryllina	125.0	96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	35.0	48-hr
Reference Toxicant (DSS)	Menidia beryllina	2.7	96-hr
	Mysidopsis bahia	7.0	48-hr

NOTE: This toxicity data was derived using the concentrated product.
See Section VI of this bulletin for information regarding the manufacturer's recommendations for concentrations and application rates for field use.

VIII. MICROBIOLOGICAL ANALYSIS

In the presence of crude oil treated by INIPOL EAP 22, a considerable growth of the heterotrophic microflora can be observed; the number of bacteria increases from 1,000 per ml. to 1,000,000 per ml. This activity remains constant during the whole test period, while crude oil, just by its presence, creates a fall in the metabolic activities.

IX. PHYSICAL PROPERTIES

1. Flash Point: >212°F
2. Pour Point: 52°F
3. Viscosity: 34 Furol sec @ 72°F, (250 cPo @ 68°F)
4. Specific Gravity: 0.996
5. pH of 10% Solution: 7.0
6. Solubility: in sea water dispersible, in raw water dispersible, in hydrocarbons soluble

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

NA: INIPOL EAP 22 is a microemulsion containing nitrogen and phosphorus compounds in assimilated form. It does not contain any heavy metal, cyanide or chlorinated hydrocarbons.

ED_001324_00006005-00253

EPA HAS NOT RECEIVED UPDATED CONTACT INFORMATION FOR THIS PRODUCT: 3/23/16

TECHNICAL PRODUCT BULLETIN #B-19
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: JUNE 18, 1990
REVISED LISTING DATE: JANUARY 11, 1996
"WMI-2000"

I. NAME, BRAND, OR TRADEMARK
WMI-2000
Type of Product: Biological Additive

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
WMI International, Inc.
4901 Milwee Street, Suite 109
Houston, TX 77092
Phone: (713) 956-4001
Mobile: (832) 798-5610
Fax: (713) 956-7305
E-mail: wmiintlinc@yahoo.com
(Mr. Joseph F. Jennings, President)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
WMI International, Inc.
4901 Milwee Street, Suite 109
Houston, TX 77092
Phone: (713) 956-4001
Mobile: (832) 798-5610
Fax: (713) 956-7305
E-mail: wmiintlinc@yahoo.com
(Mr. Joseph F. Jennings, President)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability:
WMI-2000 is non-flammable.
2. Ventilation:
Avoid breathing dust or aerosol due to possibility of sensitization. Use adequate ventilation.
3. Skin and eye contact; protective clothing; treatment in case of contact:
Minimize contact with eyes, skin, and clothing. Wash hands thoroughly after handling culture.
4.a. Maximum storage temperature: 100°F
4.b. Minimum storage temperature: 35°F
4.c. Optimum storage temperature range: 45°F - 90°F
Store in a cool, dry location. Keep partially-used containers tightly closed. Prolonged exposure

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to high temperature and humidity, may lower activity of product.
4.d. Temperatures of phase separations and chemical changes: NA

V. SHELF LIFE
The shelf life of WMI-2000 is 2 years if stored at ambient temperatures

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method:
The culture should be activated for 2 hours in water, when applicable. Conditions for use vary depending on substrate concentration and type, pH, temperature, availability of nutrients, oxygen content, and liquid medium (static or flowing).
2. Concentration/Application Rate:
Inoculation concentration is 5-9 billion spores per gram.
3. Conditions for Use:
Temperature requirements are between 35°F and 100°F. The optimum dissolved oxygen content is 2 ppm at the sludge-to-water interface. Nitrogen and phosphorous are key nutrients which promote cultural growth, and should be maintained at concentrations of 15-20 ppm and 2.5-5 ppm, respectively. The optimum pH range is between 7.0 and 8.0.

VII. TOXICITY AND EFFECTIVENESS
a. Effectiveness:
Bioremediation Agent Effectiveness Test (40 CFR 300.900), Federal Register September 15, 1994:
Summary Data Table

DAYS	**PRODUCT**	**TOTAL MEAN**	**RED%**	**TOTAL MEAN**	**RED%**
	3 REPS/PROD	**ALKANES (ppm)**	**28 DAYS**	**AROMATICS (ppm)**	**28 DAYS**
0	CONTROL	2626.7	0	1850.0	0
	NUTRIENT	2763.3	0	2030.0	0
	WMI-2000	2453.3	0	1880.0	0
7	CONTROL	2246.7	0	1823.3	0
	NUTRIENT	1920.0	0	1666.7	0
	WMI-2000	1243.3	0	1456.7	0
28	CONTROL	2240.0	14.7	1866.7	-0.9
	NUTRIENT	1210.0	56.2	1480.0	27.0
	WMI-2000	973.3	60.3	1253.0	33.3

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Results of Gravimetric Analysis:
Percentage (%) Decrease in Weight of Oil on Day 28

Control	Nutrient	Product (WMI-2000)
0%	25%	44%

b. Toxicity: NA

VIII. MICROBIOLOGICAL ANALYSIS
1. Listing of all microorganisms by species and percentage in the composition:
CONFIDENTIAL
2. Optimum pH, temperature, and salinity ranges for use of the additives:
Optimum pH: 7.0
Optimum temperature: 45°F - 90°F
Optimum salinity: Fresh water to sea water
3. Minimum and maximum pH, temperature, and salinity levels below or above which the effectiveness of the additive is reduced to half its optimum capacity:
pH: 6.0 - 8.0
Temperature: 40°F - 120°F
Salinity range: Fresh to sea water
4. Special nutrient requirements:
None
5. Test results regarding the determination of the following:
Salmonella - Negative
Fecal Coliform - Negative
Shigella - Negative
Staphylococcus Coagulase positive - Negative
Beta hemolytic Streptococcus - Negative

IX. PHYSICAL PROPERTIES
NA

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS
NA

ED_001324_00006005-00256

BULLETIN UPDATES IN BOLD

TECHNICAL PRODUCT BULLETIN #B-36
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: JULY 17, 1991
REVISED LISTING DATE: OCTOBER 6, 1996
"OPPENHEIMER FORMULA"
(aka, THE OPPENHEIMER FORMULA I, MICROSORB SC)

I. NAME, BRAND, OR TRADEMARK
OPPENHEIMER FORMULA
(aka, THE OPPENHEIMER FORMULA I, MICROSORB SC)
Type of Product: Biological Additive

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Oppenheimer Biotechnology, Inc.
P.O. Box 1490
Pflugerville, TX 78691-1490
Phone: (512) 474-1016
Fax: (512) 681-0367
E-mail: jen.neve@obio.com
Website: www.obio.com
(Ms. Jen Neve)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Oppenheimer Biotechnology, Inc.
P.O. Box 1490
Pflugerville, TX 78691-1490
Phone: (512) 474-1016
Fax: (512) 681-0367
E-mail: jen.neve@obio.com
Website: www.obio.com
(Ms. Jen Neve)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable
2. Ventilation: Special ventilation is not required. Treat product as an hygroscopic powder. In closed spaces use dust protective measures.
3. Skin and eye contact; protective clothing; treatment in case of contact: The application of the dry powder requires the usual precautions of a dust irritant to membranes. The material is easily removed by washing or flushing, and in confined areas or use, a protective mask and eye glasses are recommended.
4.a. Maximum storage temperature: 130°F

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4.b. Minimum storage temperature: 32°F
4.c. Optimum storage temperature range: 82°F

V. SHELF LIFE
The shelf life of the product is approximately 5 year.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method: Optimal application is by powder seeding directly at the source of oil contamination. Application over larger areas of water surface can be accomplished by aerial powder dusting, spraying a water mixture of nutrients/formula over the oil area, or by dusting with mechanical powder pumps.
2. Concentration/Application Rate: The application rate at the source oil slick is 1 pound per cubic yard of oil. In the open sea slick, the basic application rate is 10 pounds per acre, but this may vary in different situations related to speed of clean up. In estuaries, a larger biomass is recommended and may be at a rate of up to 100 pounds per acre, depending on the oil type and concentration. Heavier oils may require a higher biomass than light oils.
3. Conditions for Use: THE OPPENHEIMER FORMULA may be used in a wide range of environmental conditions of temperature and salinities, ranging from fresh to 100 ppt salts. The formula is especially valuable in grass flats, marshes and the open sea. It has also proved effective in soil and fresh water oil clean up and municipal waste treatment, septic tanks and grease traps.

VII. TOXICITY AND EFFECTIVENESS
a. Effectiveness:
Bioremediation Agent Effectiveness Test (40 CFR 300.900), Federal Register September 15, 1994:
Summary Data Table

DAYS	**PRODUCT**	**TOTAL MEAN**	**RED%**	**TOTAL MEAN**	**RED%**
	3 REPS/PROD	**ALKANES (ppm)**	**28 DAYS**	**AROMATICS (ppm)**	**28 DAYS**
0	CONTROL	29965.2	0	5620.5	0
	NUTRIENT	31494.8	0	6660.2	0
	OPPENHEIMER	31140.6	0	5528.2	0
7	CONTROL	30101.5	0	5610.1	0
	NUTRIENT	8073.9	0	5086.6	0
	OPPENHEIMER	5019.7	0	4338.9	0
28	CONTROL	28785.6	3.9	5512.7	1.9
	NUTRIENT	706.2	97.8	4863.7	27.0
	OPPENHEIMER	3396.8	89.1	3417.8	38.2

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Results of Gravimetric Analysis:
Percentage (%) Decrease in Weight of Oil on Day 28

Control	Nutrient	Product (Oppenheimer)
- 6.4 %	50.9 %	10.4 %

b. Toxicity:
NA

VIII. MICROBIOLOGICAL ANALYSIS
1. Listing of all microorganisms by species and percentage in the composition:
Natural, ubiquitous, hydrocarbon-oxidizing, microorganisms for use in removing hydrocarbons and organic materials from soils, fresh and salt waters by natural oxidative pathways.
2. Optimum pH, temperature, and salinity ranges for use of the additive:
pH: 7.6
Temperature: 82°F
Salinity: Fresh water to 20 percent salts
Optimal: 0.5 to 3.5%
3. Minimum and maximum pH, temperature, and salinity levels below or above which the effectiveness of the additive is reduced to half its optimum capacity:
pH: 5.5-11
Temperature: 32°F-140°F
Salinity: Fresh to 15%
4. Special nutrient requirements:
NA
5. Test results regarding the determination of the presence of the following:
Salmonella: Negative
Fecal coliform: <90/100 ml
Shigella: Negative
Staphylococcus Coagulase positive: Negative
Beta hemolytic Streptococci: Negative

IX. PHYSICAL PROPERTIES
NA

X. ANALYSIS OF HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS
NA

ED_001324_00006005-00260

TECHNICAL PRODUCT BULLETIN #B-41
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: DECEMBER 18, 1991
REVISED LISTING DATE: JANUARY 21, 1997
"MICRO-BLAZE®"

I. NAME, BRAND, OR TRADEMARK
MICRO-BLAZE®
Type of Product: Biological Additive

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Verde Environmental, Inc.
9223 Eastex Freeway
Houston, TX 77093
Phone: (713) 691-6468
(800) 626-6598
Fax: (713) 691-2331
Website: www.micro-blaze.com
E-mail: bscogin@micro-blaze.com
(Mr. William L. Scogin)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Verde Environmental, Inc.
9223 Eastex Freeway
Houston, TX 77093
Phone: (713) 691-6468
(800) 626-6598
Fax: (713) 691-2331
Website: www.micro-blaze.com
E-mail: bscogin@micro-blaze.com
(Mr. William L. Scogin)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable
2. Ventilation: Normal room ventilation
3. Skin and eye contact; protective clothing; treatment in case of contact: Avoid eye contact. Wear protective gloves, and wash hands with soap and water after handling the product. Wash contaminated clothing and footwear before reuse.
4. Optimum Storage Conditions:
4.a. Maximum storage temperature: 120°F
4.b. Minimum storage temperature: 35°F
4.c. Optimum storage range temperature: NA
4.d. Temperatures of phase separations and chemical changes: NA

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V. SHELF LIFE
Minimum 10 years, with proper storage, in original containers. Freezing will not kill these microbes; however, extreme heat (over 180°F) for long periods of time will kill the microbes.

VI. RECOMMENDED APPLICATION PROCEDURE
MICRO-BLAZE® is a liquid formulation of several microbial strains, surfactants, and nutrients designed to bioremediate organics and hydrocarbons in soil and water as well as control odors.
1. Application Method: Use normal spray equipment, fire or response equipment, eductor setups, water trucks, etc. as methods of application. Mix MICRO-BLAZE®/water mixture with contaminated soils and liquids thoroughly for maximum contact. Pick up treated contamination after volatile hazard has been negated per local regulatory parameters.

For general bioremediation: For in-situ soils, mix MICRO-BLAZE®/water mixture can be tilled into the contaminated area. For shallower contamination, areas can be over sprayed with normal spray equipment, eductor setups, water trucks, etc. For deeper contamination, application can be applied through underground setups using perforated piping per regulatory recommendations. For wastewater and other operational by-product sludges and soils extracted from contaminated areas, a bioslurry or bioreactor can be setup using MICRO-BLAZE® and water in the process.
2. Concentration/Application Rate: For more viscous or less hazardous contamination, apply MICRO-BLAZE® at a 3% solution mixed with water (3 parts MICRO-BLAZE®, 97 parts water). When bioremediating soils, generally, per every 10 cubic yards of contaminated soils, use one gallon of concentrate, diluted with water according to contamination type.
3. Conditions for Use: Water Salinity: Can be mixed with any fresh, brackish or brine. However, brine reduces the effectiveness by 10%.
Water Temperature: 35°F - 180°F
pH: 4 to 11.5
Temperature: 32°F - 120°F
Nutrient Requirements: Nutrients for microbes are included in product. However, for longer-term bioremediation projects, additional applications for Bio-Catalyst may be added to boost microbial activity.

Type and Ages of Pollutants: For use on organics and hydrocarbon-based materials. These strains of bacteria provide the capability of biodegrading various straight chained, branched chained, aromatic and polynuclear aromatic hydrocarbons found in diesel and other fuels. Age of contamination is not a factor as much as its density. Tar-like substances may need to be cut for timely remediation.

VII. TOXICITY AND EFFECTIVENESS
Non-toxic, naturally-occurring spore-forming microorganisms common to soil and water. Non-pathogenic, certified by count; will not mutate.
a. Effectiveness:
Bioremediation Agent Effectiveness Test (40 CFR 300,900) Federal Register September 15, 1994.

ED_001324_00006005-00262

Microbiological Results - Average
Day 0 - 1.7×10^9 Day 7 - 8.43×10^8 Day 28 - 5.2×10^7
The organisms in this product convert to a spore state (dormant) to survive an unfavorable environment and will reactivate upon favorable conditions. Documentation available from Verde Environmental.
Summary Data Table

DAYS	PRODUCT	TOTAL MEAN	RED%	TOTAL MEAN	RED%
	3 REP/PROD	ALKANES (ppm)	28 DAYS	AROMATICS (ppm)	28 DAYS
0	CONTROL	31258.6	0	973	0
	NUTRIENT	28251.8	0	976.6	0
	MICRO-BLAZE®	29548.9	0	1081.2	0
7	CONTROL	31401.73	0	990.5	0
	NUTRIENT	20728.3	26.6	619.1	36.6
	MICRO-BLAZE®	12870.5	56.4	496.3	54.1
28	CONTROL	32465.8	0	925.7	0
	NUTRIENT	1787.2	93.7	722.6	26.0
	MICRO-BLAZE®	1758.2	94.1	566.9	47.6

Alkanes showed significant reductions with aromatic components less dramatic but still significant.

Results of Gravimetric Analysis:
Percentage (%) Decrease in Weight of Oil on Day 28

Control	Nutrient	Product (MICRO-BLAZE®)
<1%	17.6%	12%

CONCLUSIONS: The MICRO-BLAZE® product shows an initial rapid consumption of all measured hydrocarbons at seven (7) days. This rate apparently slows over 28-day period in a closed environment which may be due to a change in the environment of the flask due to the rapid degradation rates. Because of the high microbial population at the end of the test, it is to be assumed that the quantity of metabolites might account for the increased weight as determined by the gravimetric analysis.
b. Toxicity:
NA

VIII. MICROBIOLOGICAL ANALYSIS1. Listing of all microorganisms by species and percentage in the composition: CONFIDENTIAL
2. Optimum pH, temperature, salinity ranges for use of the additive:
pH: 7.5
Temperature: 45°F - 105°F
Salinity: 0-10%
3. Minimum and maximum pH, temperature, salinity levels below or above which the effectiveness of the additive is reduced to half its optimum capacity:
pH: <5.9, >9.0
Temperature: <32°F, >180°F
Salinity: <0%, 10%
4. Special nutrient requirements: None
5. Test results regarding the determination of the presence of the following:
Product is determined to be free of gram negative contamination.
Salmonella: Negative
Fecal coliform: Negative
Shigella: Negative
Staphylococcus Coagulase positive: Negative
Beta hemolytic Streptococci: Negative

IX. PHYSICAL PROPERTIES
NA

X. ANALYSIS OF HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS
NA

ED_001324_00006005-00264

TECHNICAL PRODUCT BULLETIN #B-42
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: JANUARY 3, 1992
REVISED LISTING DATE: FEBRUARY 5, 1997
"VB591™, VB997™, BINUTRIX®"

I. NAME, BRAND, OR TRADEMARK
VB591™, VB997™, BINUTRIX® – Patented, partial encapsulated oleophilic (oil-loving) nutrient
Type of Product: Biological Additive (a nutrient additive that contains no microorganisms)

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
BioNutraTech Inc.
P.O. Box 290
Porter, TX 77365
Phone: (281) 354-5900
Mobile: (713) 301-0254
Fax: (281) 354-1997
E-mail: shruza@bionutratech.com
Website: www.bionutratech.com
(Ms. Sandra L. Hruza)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
BioNutraTech Inc.
P.O. Box 290
Porter, TX 77365
Phone: (281) 354-5900
Mobile: (713) 301-0254
Fax: (281) 354-1997
E-mail: shruza@bionutratech.com
Website: www.bionutratech.com
(Ms. Sandra L. Hruza)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable
2. Ventilation: Normal ventilation is adequate.
3. Skin and eye contact; protective clothing; treatment in case of contact: Normal precautions and protective equipment for handling any type of powder, such as dust protectors and eye shield. Avoid contact with eyes and do not take internally. Upon contact with eyes, flush with water immediately for a minimum of 15 minutes. If redness or irritation continues, contact a physician. Avoid breathing dust.
4.a. Maximum storage temperature: >140°F
4.b. Minimum storage temperature: NA

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4.c. Optimum storage temperature range: 50°F to 80°F
4.d. Temperature phase separations and chemical changes: NA

V. SHELF LIFE
The shelf life is approximately three years if kept dry. Store in dry location and avoid contact with moisture. Prolonged storage may result in the formation of soft clumps, which are easily broken by mechanical disruption.

VI. RECOMMENDED APPLICATION PROCEDURE
VB591™, VB997™, BINUTRIX® is a powder, and can be applied using conventional powder spraying equipment. No pre-mixing or dilution is required.
1. Application Method: Application for localized spills can be done using hand-held pressurized dust blowers. For inland waterways, ship channels, marinas or coastal wetlands, large dust blowers mounted on barges or ships can be employed to apply the product. Application by aircraft using conventional dust spraying systems is recommended for treatment of large uncontained spreading spills or spills in open waters or at sea.
2. Concentration/Application Rate: Recommended initial application rate is 5 to 15 pounds of VB591™, VB997™, BINUTRIX® per barrel of spilled oil. Follow-up applications at 48 to 72 hour intervals should be adjusted to allow for reduction in oil due to clean-up activities and natural loss by evaporation, droplet formation and dispersion and microbial activity. Applications should not exceed 250 pounds per acre per application.
3. Conditions for Use: VB591™, VB997™, BINUTRIX® should be applied to spilled oil as soon as possible following spillage to stimulate natural oil utilizing microbial populations to maximize biodegradation activity. Application of VB591™, VB997™, BINUTRIX® to spilled oil does not significantly alter the physical consistency of the spilled oil, and as such will not adversely affect conventional cleanup activities, nor will conventional and removal activities adversely affect the activity of VB591™, VB997™, BINUTRIX®. Dispose of waste in accordance with local, state, and federal regulations. Information regarding use of VB591™, VB997™, BINUTRIX® in conjunction with chemical dispersing agents is at present not available.

VII. TOXICITY AND EFFECTIVENESS

a. Effectiveness:

Bioremediation Agent Effectiveness Test (40 CFR 300.900), Federal Register September 15, 1994:

Summary Data Table

DAYS	PRODUCT	TOTAL MEAN	RED%	TOTAL MEAN	RED%
	3 REPS/PROD	ALKANES (ppm)	28 DAYS	AROMATICS (ppm)	28 DAYS
0	CONTROL	31041.7	0	973.1	0
	NUTRIENT	28251.8	0	976.6	0
	VB591™, VB997™, BINUTRIX®	28813.8	0	932.8	0
7	CONTROL	31436.33	0	990.5	0
	NUTRIENT	20728.3	26.6	619.1	36.6
	VB591™, VB997™, BINUTRIX®	14637.4	49.2	733.1	21.4
28	CONTROL	32465.8	0	925.7	0
	NUTRIENT	1787.2	93.7	722.6	26.0
	VB591™, VB997™, BINUTRIX®	937.97	96.8	290.8	73.1

Results of Gravimetric Analysis:

Percentage (%) Decrease in Weight of Oil on Day 28

Control	Nutrient	Product
<1%	17.6%	18.0%

b. Toxicity:

NA

VIII. MICROBIOLOGICAL ANALYSIS

VB591™, VB997™, BINUTRIX® is an oleophilic nutrient additive and contains no preserved natural or mutated microorganisms of any type.

1. Listing of all microorganisms by species and percentage in the composition:

None

2. Optimum pH, temperature, and salinity ranges for use of the additive:

VB591™, VB997™, BINUTRIX® may be used under any conditions where natural populations of oil-degrading microbes are active.

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3. Minimum and maximum pH, temperature, and salinity levels below or above which the effectiveness of the additive is reduced to half its optimum capacity:
pH: NA
Temperature: NA
Salinity: NA
4. Special nutrient requirements:
None
5. Test results regarding the determination of the presence of the following:
Salmonella: NA
Fecal coliform: NA
Shigella: NA
Staphylococcus coagulase positive: NA
Beta hemolytic Streptococci: NA

IX. PHYSICAL PROPERTIES
NA

X. ANALYSIS OF HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS
NA

ED_001324_00006005-00268

TECHNICAL PRODUCT BULLETIN #B-43
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: MARCH 12, 1992
REVISED LISTING DATE: MARCH 21, 1997
"STEP ONE"
(aka, B&S INDUSTRIAL)

I. NAME, BRAND, OR TRADEMARK
STEP ONE (aka, B&S INDUSTRIAL)
Type of Product: Biological Additive

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
B&S Research, Inc.
4345 Highway 21
Embarrass, MN 55732
Phone: (218) 984-3757
Fax: (218) 984-3212
E-mail: farmforprofit@frontier.com
(Mr. H. W. Lashmett)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS

B&S Research, Inc.
4345 Highway 21
Embarrass, MN 55732
Phone: (218) 984-3757
Fax: (218) 984-3212
E-mail: farmforprofit@frontier.com
(Mr. H. W. Lashmett)

Bioremediation International
4345 Highway 21
Embarrass, MN 55732
Phone: (218) 984-3757
Fax: (218) 984-3212
E-mail: farmforprofit@frontier.com
(Mr. H. W. Lashmett)

Farm for Profit Research
and Development
4345 Highway 21
Embarrass, MN 55732
Phone: (800) 232-7692
Fax: (218) 984-3212
E-mail: farmforprofit@frontier.com
(Mr. H. W. Lashmett)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: None
2. Ventilation: Normal ventilation is adequate
3. Skin and eye contact; protective clothing; treatment in case of contact: Avoid contact with skin, especially when there are open wounds. In case of skin contact, wash with soapy water.

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The use of protective gloves is recommended. Avoid contact with eyes. In case of eye contact, immediately flush eyes with plenty of water continuously for at least 15 minutes. Consult a physician. The use of protective goggles is recommended. Avoid inhalation and ingestion. It is recommended that workers wear dust mask and not eat or smoke while handling the product(s).
4.a. Maximum storage temperature: 90°F
4.b. Minimum storage temperature: -30°F
4.c. Optimum storage temperature range: 32°F to 70°F
4.d. Temperature phase separations and chemical changes: NA

V. SHELF LIFE
Over 3 years

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method: Components of the product STEP ONE (BC101) and STEP ONE (MSE2.5) are only sold together. B&S Research will make application recommendations based on contamination and ppm of contamination at time of purchase order and employ specified application methods (spray, plowing, agitation, etc.) appropriate for a particular situation.
2. Concentration/Application Rate: Nominally, the STEP ONE water mixture can be used on most hydrocarbons, including crude and refined petroleum products, pesticides, etc., on land, fresh water or ocean water. Laboratory tests also indicate effectiveness in destruction of PCB's. In certain circumstances, B&S Research, Inc. may require laboratory soil and water contamination tests before the product may be used (see VI 1. above).

VII. TOXICITY AND EFFECTIVENESS
a. Effectiveness:
Bioremediation Agent Effectiveness Test (40 CFR 300.900), Federal Register September 15, 1994:
Summary Data Table

DAYS	**PRODUCT**	**TOTAL MEAN**	**RED %**	**TOTAL MEAN**	**RED %**
	3 REPS/PROD.	**ALKANES (ppm)**	**28 DAYS**	**AROMATICS (ppm)**	**28 DAYS**
0	CONTROL	29959.5		5391.8	
	NUTRIENT	29008.5		5163.0	
	STEP ONE	30477.8		5499.8	
7	CONTROL	33471.3		5720.9	
	NUTRIENT	22723.7		5050.1	
	STEP ONE	24196.8		3110.2	
28	CONTROL	30997.4	0.0 %	5388.9	0.0 %
	NUTRIENT	1103.9	96.19%	4582.4	11.23%

STEP ONE	17059.4	44.03%	2501.9	54.51%

Results of Gravimetric Analysis:
Percentage (%) Decrease in Weight of Oil on Day 28

Control	Nutrient	Product (STEP ONE)
0%	19%	51%

b. Toxicity:
NA

VIII. MICROBIOLOGICAL ANALYSIS
1. Listing of all microorganisms by species and percentages in the composition:
CONFIDENTIAL
2. Optimum pH, temperature, and salinity ranges for use of the additive:
pH: 6-8
Temperature: 70°F to 90°F
Salinity: Fresh or salt (ocean <110 ppm) water, land or dry surfaces
3. Minimum and maximum pH, temperature, and salinity levels below or above which the effectiveness of the additive is reduced to half its optimum capacity:
pH: <5 or <9, (apply neutralizing agents -- lime or P205
Temperature: <50°F or >135°F
Salinity: <0 or >110 ppm
4. Special nutrient requirements:
None
5. Test results regarding the determination of the presence of the following:
Salmonella: Negative
Fecal coliform: Negative
Shigella: Negative
Staphylococcus Coagulase positive: Negative
Beta hemolytic Streptococci: Negative

IX. PHYSICAL PROPERTIES
1. Flash Point: >212°F
2. Pour Point: -7°F
3. Viscosity: 2.8 cSt @ 50°F
3.5 cSt @ 32°F
5.9 cSt @ -4°F
4. Specific Gravity: 1.03 @ 59°F
5. pH: 7.2 (1:2.5:80 BC101:MSE2.5:water mixture)
6. Chemical Name and Percentage by Weight of the Total Formulation: CONFIDENTIAL
7. Surface Active Agents: Noedal
8. Solvents: None

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9. Additives: Phosphoric acid as P205
3% emulsifier <.5% by weight
10. Solubility: Infinite

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration
Arsenic	<0.0200
Cadmium	<0.0030
Chromium	0.0859
Copper	0.0177
Lead	0.0090
Mercury	0.0002
Nickel	<0.0080
Zinc	0.0602
Cyanide	0.2830
Chlorinated Hydrocarbons	<0.0050

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TECHNICAL PRODUCT BULLETIN #B-45
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: JANUARY 28, 1993
REVISED LISTING DATE: NOVEMBER 14, 1995
"SYSTEM E.T. 20" (formerly MCW.B 20)

I. NAME, BRAND, OR TRADEMARK
SYSTEM E.T. 20
Type of Product: Biological Additive

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Environmental Restoration Services
9211 Lakewood Drive
Windsor, CA 95492
E-mail: ERS.BTI@gmail.com
Phone: (619) 253-0664
(Mr. John Chase)
Phone: (760) 746-5145
Fax: (760) 746-2034
(Mr. Jack Roberts)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Environmental Restoration Services
14384 Highland Valley Road
Escondido, CA 92025
E-mail: ERS.BTI@gmail.com
Phone: (619) 253-0664
(Mr. John Chase)
Phone: (760) 746-5145
Fax: (760) 746-2034
(Mr. Jack Roberts)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: SYSTEM E. T. 20 is non-flammable
2. Ventilation: No special ventilation is required under normal use.
3. Skin and eye contact; protective clothing; treatment in case of contact: In its primary form, no special handling or storage is required. Avoid excessive inhalation, and protect the nose and mouth with a dust protection mask. Wear protective gloves, and wash hands with soap and water after handling the product.
4.a. Maximum storage temperature:
4.b. Minimum storage temperature:
4.c. Optimum storage temperature range: 4°C - 20°C (39°F - 68°F). Place in a dry area, shaded from sunlight.

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4.d. Temperatures of phase separations and chemical changes: NA

V. SHELF LIFE
2 years if maintained at 4°C (39°F).

VI. RECOMMENDED APPLICATION PROCEDURE
SYSTEM E. T. 20 can be used on a broad range of hydrocarbon compounds (including PAH's) found in open and closed water systems (salt or fresh) or in soil (beach, sands, or inland soil types). SYSTEM E.T. 20 protocols can be used with indigenous and introduced bacteria. SYSTEM E.T. 20 is an oleophilic, non-water soluble nutrient, which releases nitrogen and phosphorous enzymatically, thus allowing SYSTEM E.T. 20 to be used in water and soil applications including: conditions requiring fast degradation rates due to regulations, limited space or cost; under conditions where weathered or heavy oils, sludges or PAH's exist that require consistently high populations of hydrocarbon degrading bacteria to metabolize these long or more complex carbon chains; tropical or sub-tropical conditions that support large, indigenous, non-beneficial bacterial populations that would otherwise dilute the effectiveness of standard bioaugmentation approaches; aqueous conditions in which soluble or time release nutrient compounds would be washed away or diluted, i.e., beaches, frequent rains, floods, streams, stream banks, estuaries and areas affected by tides; sensitive environmental conditions that demand low or no toxicity; toxicity in soil or water during bioremediation may be stimulated by adding broadly available nutrients which may activate disease carrying bacilli or pathogens; controlled nutrient release to SYSTEM E. T. 20 bacteria prevents over-nitrification; conditions requiring the elimination of oil discoloration caused by the presence of polar fractions; and conditions where salt water conditions exist or where only salt water is available for bacteria application.
1. Application Methods:

Biopile	Land farm	Pump and Treat
Bioreactor	Bio slurry	
In situ	Windrow	

Topical application to discolored rocks or soil.
Topical application to beaches.
2. Concentration/Application Rate:
Concentration and rate of application will vary from site to site depending upon the type of contaminant and the area contaminated. Contact QET for specific information.
3. Conditions for Use:
Before applying SYSTEM E. T. 20, QET recommends that the site be evaluated for its physical and chemical soil characteristics (i.e., pH, salinity, conductivity, physical parameters, moisture content, hydrocarbon type and concentration, nitrogen content, etc.), and toxicity of both the soil and the contaminant, by biological screening tests.
Basic biological requirements of SYSTEM E. T. 20, site conditions and SYSTEM E. T. 20 capabilities dictate the appropriate procedures for application of SYSTEM E. T. 20.
Biological requirements for SYSTEM E. T. 20 bacteria are nutrients, adequate oxygen supply, hydrocarbon food source, neutral pH and a 15% minimum moisture level for soil remediation applications.

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VII. TOXICITY AND EFFECTIVENESS
a. Effectiveness:
Bioremediation Agent Effectiveness Test (40 CFR 300.900), Federal Register September 15, 1994:
Summary Data Table

DAYS	PRODUCT	TOTAL MEAN	RED%	TOTAL MEAN	RED%
	3 REPS/PROD	ALKANES (ppm)	28 DAYS	AROMATICS (ppm)	28 DAYS
0	CONTROL	29959.5	0	5391.8	0
	NUTRIENT	29008.5	0	5163.0	0
	SYSTEM E.T. 20	30476.1	0	5311.3	0
7	CONTROL	33471.3	0	5720.9	0
	NUTRIENT	22723.7	0	5050.1	0
	SYSTEM E.T. 20	3837.1	0	2928.8	0
28	CONTROL	30997.4	0	5383.9	0.2
	NUTRIENT	1103.9	96.2	4582.4	11.2
	SYSTEM E.T. 20	261.9	99.1	1188.0	77.0

Results of Gravimetric Analysis:
Percentage (%) Decrease in Weight of Oil on Day 28

Control	Nutrient	Product (SYSTEM E.T. 20)
0%	19%	18%

b. Toxicity:
NA

VIII. MICROBIOLOGICAL ANALYSIS
1. Listing of all microorganisms by species and percentage in the composition:
CONFIDENTIAL
2. Optimum pH, temperature, and salinity ranges for use of the additive: pH: 7.5, (6.5 to 8.5)
Temperature: 4°C to 35°C (39°F to 95°F)
Salinity: Fresh to 2.5% (average ocean salt level)
3. Minimum and maximum pH, temperature, and salinity levels below or above which the effectiveness of the additive is reduced to half its optimum capacity:
pH: <6.5 and >8.5
Temperature: <5°C and >35°C (<41°F and >95°F)
Salinity: >3%
4. Special nutrient requirements:
Recommendation is for a non-soluble nutrient. The specific types of nutrients will be dependent

ED_001324_00006005-00275

on the site requirements.
5. Test results regarding the determination of the presence of the following:
Salmonella: Negative
Fecal coliform: Negative
Shigella: Negative
Staphylococcus Coagulase positive: Negative
Beta hemolytic Streptococci: Negative

IX. PHYSICAL PROPERTIES
NA

X. ANALYSIS OF HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS
NA

ED_001324_00006005-00276

EPA HAS NOT RECEIVED UPDATED CONTACT INFORMATION FOR THIS PRODUCT: 3/23/16

TECHNICAL PRODUCT BULLETIN #B-48
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: NOVEMBER 10, 1993
REVISED LISTING DATE: AUGUST 31, 2000
"BET BIOPETRO"
(formerly BET BIOPETRO HEAVY)

I. NAME, BRAND, OR TRADEMARK
BET BIOPETRO
Type of Product: Biological Additive

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
BioEnviroTech
14615 FM 2920
Tomball, Texas 77375
(Mr. Warren Butler)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
BioEnviroTech
14615 FM 2920
Tomball, Texas 77375
(Mr. Warren Butler)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-Flammable
2. Ventilation: Normal ventilation
3. Skin and eye contact; protective clothing; treatment in case of contact: Avoid eye and skin contact. In case of eye contact, flush eyes with water or eyewash, and refrain from rubbing. For skin contact, wash with mild soap and apply hand cream if itching or redness occurs. Avoid inhalation. In case of inhalation, seek fresh air. Repeated inhalation has been associated with respiratory allergy in some persons. Such allergic individuals should wear protective clothing and eye goggles. In enclosed buildings, workers should wear single use nuisance dust masks appropriate for fine particulate dust. In outdoor field applications, no dust mask is required.
4.a. Maximum storage temperature: 105°F
4.b. Minimum storage temperature: 32°F
4.c. Optimum storage temperature range: 50°F to 75°F
4.d. Temperatures of phase separations and chemical changes: NA

V. SHELF LIFEMore than 3 years in unopened original shipping container, stored in cool dry area.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method: BET BIOPETRO is a powder containing granules of bacterial product formulated to provide performance in the bioremediation of heavy refined and crude hydrocarbon contaminants in both soil and water environments.
Application procedure and treatment schedule will vary with specific environmental conditions and bioremediation requirements. Contact BET for specific technical advice.
2. Concentration/Application Rate: Dosage will vary with specific environmental conditions and bioremediation requirements. Contact BET for specific technical advice.
3. Conditions for Use: BET BIOPETRO should be used at temperatures in the range of 45°F to 100°F, pH range of 5.5 to 8.5, and dissolved oxygen level of 3 to 5 mg/l. The product is effective in both salt and fresh waters. However, where extreme salinity is projected, testing and evaluation of the bacteria in bioremediation are advised. BET BIOPETRO cultures exhibit some resistance to toxic shocks from strong chemicals. Nonetheless, highly chlorinated compounds, acids, caustics, disinfectants, germicides, and chlorine will render the cultures ineffective, just like other bacteria. Where such chemicals are anticipated, testing and evaluation of the bacteria in bioremediation are advised.

BET BIOPETRO cultures require supplemental nutrients for optimum performance (See section VIII. 4).

VII. TOXICITY AND EFFECTIVENESS
a. Effectiveness:
Bioremediation Agent Effectiveness Test (40 CFR 300.900), Federal Register September 15, 1994:
Summary Data Table

DAYS	PRODUCT	TOTAL MEAN	RED%	TOTAL MEAN	RED %
	3 REPS/PROD	ALKANES (ppm)	28 DAYS	AROMATICS (ppm)	28 DAYS
0	CONTROL	29965.2	0	5620.5	0
	NUTRIENT	31494.8	0	6660.2	0
	BET BIOPETRO	25914.5	0	5569.1	0
7	CONTROL	30101.5	0	5610.1	0
	NUTRIENT	8073.9	0	5086.6	0
	BET BIOPETRO	373.0	0	1220.0	0
28	CONTROL	28785.6	4.0	5512.7	2.0
	NUTRIENT	706.2	98.0	4863.7	27.0

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BET BIOPETRO	350.3	99.0	1882.9	67.0

Results of Gravimetric Analysis:
Percentage (%) Decrease in Weight of Oil on Day 28

Control	Nutrient	Product (BET BIOPETRO)
0%	51%	30%

b. Toxicity:
NA

VIII. MICROBIOLOGICAL ANALYSIS
1. Listing of all microorganisms by species and percentage in the composition:
CONFIDENTIAL
2. Optimum pH, temperature, and salinity ranges for use of the additive
pH: 6.6 to 7.4
Temperature: 70°F to 95°F
Salinity: Fresh to Salt water
3. Minimum and maximum pH, temperature, and salinity levels below or above which the effectiveness of the additive is reduced to half its optimum capacity.
pH: <5.5 and >8.5
Temperature: <45°F and >105°F
Salinity: Extreme salinity
4. Special nutrient requirements
BioEnviroTech, Inc. recommends nutrient supplements for optimum performance of the product in bioremediation application. The required nutrients are dependent upon hydrocarbon contamination levels. Contact BET for specific nutrient dosing requirements.
5. Test results regarding the determination of the presence of the following:
Salmonella: Negative
Fecal coliform: Negative
Shigella: Negative
Staphylococcus Coagulase positive: Negative
Beta hemolytic Streptococci: Negative

IX. PHYSICAL PROPERTIES
NA

X. ANALYSIS OF HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS
NA

ED_001324_00006005-00279

TECHNICAL PRODUCT BULLETIN #B-53USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: AUGUST 26, 1996
REMOVAL DATE: AUGUST 16, 2005
RELISTING DATE: SEPTEMBER 18, 2009
"OIL SPILL EATER II (OSE II)"

I. NAME, BRAND, OR TRADEMARK
OIL SPILL EATER II (OSE II)
Type of Product: Bioremediation Agent (Biological Enzyme Additive [previously listed as a Nutrient Additive])

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
OSEI Corporation (Formerly Sky Blue Chems)
P.O. Box 515429
Dallas, TX 75251-5429
Phone: (972) 669-3390
E-mail: oseicorp@msn.com
Website: www.osei.us
(Mr. Steven Pedigo, Chairman, CEO, Inventor)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
OSEI Corporation (Formerly Sky Blue Chems)
P.O. Box 515429
Dallas, TX 75251-5429
Phone: (972) 669-3390
E-mail: oseicorp@msn.com
Website: www.osei.us
(Mr. Steven Pedigo, Chairman, CEO, Inventor)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Water-based, non-flammable
2. Ventilation: Needs no ventilation; aqueous-based product; does not emit hazardous vapors
3. Skin and eye contact; protective clothing; treatment in case of contact: OSE II is not a primary dermal irritant. Avoid eye contact, and wear goggles if possible for the spray to come in direct contact with eyes. Facilities for quick and copious eye flushing should be provided and prompt medical attention should be sought if exposure and irritation persists. Protective rubber gloves are suggested during handling. Before mixing the product has a smell of fermentation. The product does not give off any harmful vapors.
4.a. Maximum storage temperature: 120°F
4.b. Minimum storage temperature: None; OSE II can freeze and thaw without adverse effects
4.c. Optimum storage temperature range: 72°F
4.d. Temperatures of phase separations and chemical changes: 120°F

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V. SHELF LIFE

OSE II has a recommended shelf life of 5 years. After 5 years at optimum storage temperature, there is an approximate 10% decrease per year in product capability.

VI. RECOMMENDED APPLICATION PROCEDURE

1. Application Method:

A. Use surface spray apparatus, such as small hand held tanks, back pack, large mixing tanks with mechanical pumping devices, vessels with booms for spraying wide paths, or spray devices on airplanes or helicopters.

B. OSE II can be applied by eductor systems from vessels, fire trucks, etc. Set the eductor system to 2% and apply 1 gallon of mixed OSE II to each spilled gallon of hydrocarbon.

2. Concentration/Application Rate:

General – OSE II generally takes 3 to 30 minutes to penetrate the molecular walls of hydrocarbons. However, once you spray OSE II on the hydrocarbons, OSE II attaches itself and will eventually engulf the hydrocarbons regardless of where the hydrocarbons may spread on the surface of salt or fresh water. Additionally, once you spray OSE II, the hydrocarbons cannot attach itself to the shoreline, rocks, or any equipment in its path. OSE II breaks down the adhesion properties of hydrocarbons and causes hydrocarbons to float, thereby, eliminating secondary contamination of the water column or any other areas, and holding the contaminated area to the water's surface, the original contaminated area.

- If OSE II is to be used on ocean spills or on intertidal zones OSE II should be mixed with ocean water.
- If OSE II is to be used on lakes, rivers, streams, ponds, or on land mix the product with water from a lake, stream, or pond.
- If you are performing a cleanup, make sure the water used to mix with OSE II, and the water used to keep the area saturated, is the type of water normally associated with that area.
- If you use fresh water in an area normally contacted with salt water or vice versa, the different types of bacteria and competition could occur, not to mention the problems with salinity for fresh water organisms.

[Note: Do not mix tap water with OSE II if possible: Chlorine in tap water slows bacterial enhancement]

Spills on Water:

Dilute each gallon of OSE II with 50 gallons of fresh, brackish, or salt water – depending on the water associated with the area that has been impacted by the spill. Apply OSE II at a ratio of 1 gallon mixed OSE II to each gallon of hydrocarbon spilled. Apply using hand held sprayers, tank sprayers, booms from vessels, helicopters, or airplanes; by spraying the perimeter first then working toward the middle of the spilled area. Next spray the entire surface of the spill. If the spill is very heavy (more than 2 inches thick) it is recommended that OSE II be applied every day until you have met a 1:1 ratio of OSE II and water mixture to spilled oil/hydrocarbons.

- Use 1 gallon OSE II for every 50 gallons of hydrocarbons.
- Use 1 drum of OSE II for every 2,750 gallons of hydrocarbons.
- If you know gallons of hydrocarbons spilled, multiply gallons of hydrocarbons by 0.02 to get amount of OSE II needed [gallons of hydrocarbons x 0.02 = gallons of OSE II].

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- If you know barrels of crude oil spilled, multiply barrels of crude oil by 0.015 to get drums of OSE II needed [barrels of crude oil x 0.015 = drums of OSE II].
- If you do not know gallons of hydrocarbons or barrels of crude oil, multiply size of spill by 0.0023 to get drums of OSE II needed or by 0.12 to get gallons of OSE II needed [(yards long x yards wide x inches thick) x 0.0.0023 = drums of OSE II or (yards long x yards wide x inches thick) x 0.015 = gallons of OSE II].

Intertidal Zone:
Mix each 55 gallon drum of OSE II with 2,750 gallons of fresh, brackish, or salt water. The water used is determined by the type of water associated with the site. OSE II should be applied as the tide recedes (if there is a tide) and once the tide comes in the application should cease until the tide recedes again. Additional applications should only be warranted if spill has been allowed time to percolate into the depths of the soil.

If there is no tide, but waves have pushed the spill into the intertidal zone, then there will be direct access to the spill at all times. If possible use string or stakes to grid off the beach or intertidal zone area, and then you can calculate how much premixed OSE II to apply to a given area. If unable to grid off an area then calculate how much OSE II to apply and then determine how much premixed OSE II will flow through a nozzle (gallons per minute) then let application technician know how many gallons to apply in a given area and this can be determined by applying product for a certain time period to get the correct amount of OSE II applied to gain the 1:1 ratio.

Note: If the intertidal zone is associated with the sea then mix OSE II with salt water. If the spill area is in an area of brackish water then mix OSE II with brackish water. If the intertidal zone is associated with fresh water such as lakes, rivers, streams, ponds, creeks, aquifers, or drinking water wells then use fresh water to mix OSE II.
3. Conditions for Use:
- OSE II can remediate hydrocarbon-based material including chlorinated hydrocarbons, PCB's, dioxins, and some pesticides.
- As the age of spilled hydrocarbons increases, the time necessary for bioremediation increases. In general, fresh crude, gasoline of BTEX takes from 72 hours to 30 days to completely bioremediate.
- Variations of sea water salinity should have no effect, but as long as microbial life can exist, then OSE II will be effective.
- OSE II bioremediation slows somewhat at temperatures below 40°F. OSE II however, will continue to work at any liquid water temperature that will sustain microbial life.

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VII. TOXICITY AND EFFECTIVENESSa. Effectiveness:
Summary Data Table

DAYS	PRODUCT	TOTAL MEAN	RED%	TOTAL MEAN	RED%
	3 REPS/PROD	ALKANES (ppm)	28 DAYS	AROMATICS (ppm)	28 DAYS
0	CONTROL	43,170	-	11,435	-
	NUTRIENT	40,569	-	11,785	-
	OSE II	41,730	-	12,155	-
7	CONTROL	39,250	9.1	10,355	9.4
	NUTRIENT	34,815	14.2	9,898	16.0
	OSE II	26,316	36.9	8,072	33.6
28	CONTROL	35,797	17.1	9,534	16.6
	NUTRIENT	26,507	34.7	8,938	24.2
	OSE II	4,273	89.8	1,268	89.6

Results of Gravimetric Analysis:
Percentage (%) Decrease in Weight of Oil on Day 28

Control	Nutrient	Product
16.5%	52.0%	85.4%

b. Toxicity: NA

VIII. MICROBIOLOGICAL ANALYSIS

1. Listing of each component of the total formulation, other than enzymes, by chemical name and percentage by weight: CONFIDENTIAL
2. Enzyme Names: CONFIDENTIAL
3. I.U.B.: CONFIDENTIAL
4. Source of Enzymes: Fermentation process
5. Units: No less than 1% and no more than 50% by weight
6. Specific Gravity: 1.05
7. Optimum Conditions:
    a. pH: 7.0
    b. Temperature: 72°F
    c. Salinity Ranges: Fresh water to salt water
    d. Maximum and Minimum pH: 3.5 – 8.0
    e. Maximum and Minimum Temperature: 28°F – 128°F

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f. Maximum and Minimum Salinity Levels – Salinity level above that will support microbial activity will adversely affect OSE II's performance
g. Enzyme Shelf Life: Up to 5 years when properly stored
h. Enzyme Optimal Storage Conditions: 72°F is optimal, enzyme range is freezing to 120°F, never leave OSE II in direct sunlight for more than a couple of hours

IX. PHYSICAL PROPERTIES
NA

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS
NA

ED_001324_00006005-00284

EPA HAS NOT RECEIVED UPDATED CONTACT INFORMATION FOR THIS PRODUCT: 3/23/16

PRODUCT NO LONGER MANUFACTURED

TECHNICAL PRODUCT BULLETIN #B-54
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: JUNE 28, 1999
"PRISTINE SEA II (formerly MICROPRO D)"

I. NAME, BRAND, OR TRADEMARK
PRISTINE SEA II
Type of Product: Bioremediation Agent (Biological Additive)

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Fluid Tech, Inc.
6450 Spring Mountain Road, Suite 9
Las Vegas, NV 89146
Phone: (702) 871-1884
Fax: (702) 871-3269
(Mr. Stan True)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Fluid Tech, Inc.
6450 Spring Mountain Road, Suite 9
Las Vegas, NV 89146
Phone: (702) 871-1884
Fax: (702) 871-3269
(Mr. Stan True)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: PRISTINE SEA II is non-flammable.
2. Ventilation: Provide adequate ventilation in enclosed areas. Avoid creating dust.
3. Skin and eye contact: In case of eye or skin contact, flush affected areas thoroughly with water. Wear protective gloves, safety glasses, and dust respirators in dusty conditions. Provide eye wash facility and washing area. Exercise reasonable personal cleanliness.
4.a. Maximum storage temperature: 48°C
4.b. Minimum storage temperature: 6°C
4.c. Optimum storage temperature range: 24°C - 30°C
4.d. Temperatures of phase separations and chemical changes: NA

V. SHELF LIFE
As a dry bacterial blend, the shelf life is 1 year, and as a liquid bacterial mixture, the shelf life is

6 months.

VI. RECOMMENDED APPLICATION PROCEDURE

1. Application Method: Soak at a rate of 1 kg to 4 L influent waste and 4 L tap water, or add directly to system.
2. Concentration/Application Rate: Product dosage will vary according to contaminant, matrix, and environmental conditions. Contact technical representatives for recommendations.
3. Conditions for Use: PRISTINE SEA II can be used to treat (degrade) refinery and petrochemical waste constituents (i.e., alkanes and aromatics) such as phenol, PAHs, creosols, paraffinic intermediates, sulfides, alcohols, and related solvents. The product also improves settling and minimizes foam formation and/or production.

VII. TOXICITY AND EFFECTIVENESS

a. Effectiveness

PRISTINE SEA II is expected to be effective in the degradation of refinery and petrochemical wastes. These bioremediation test results are provided by EPA's Risk Reduction Laboratory, Cincinnati, Ohio.

DAYS	**PRODUCT**	**RED%**
11	CONTROL	28
	ALKANE	93.6
	AROMATIC	86
20	CONTROL	26
	ALKANE	95.5
	AROMATIC	90

b. Toxicity

NA

VIII. MICROBIOLOGICAL ANALYSIS

CONFIDENTIAL

IX. PHYSICAL PROPERTIES

NA

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

NA

ED_001324_00006005-00286

EPA HAS NOT RECEIVED UPDATED CONTACT INFORMATION FOR THIS PRODUCT: 3/23/16

TECHNICAL PRODUCT BULLETIN B-55
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: SEPTEMBER 10, 1999
"LAND AND SEA RESTORATION PRODUCT 001 (VELITE)"

I. NAME, BRAND, OR TRADEMARK
"LAND AND SEA RESTORATION PRODUCT 001 (VELITE)"
Type of Product: Bioremediation Agent (Nutrient Additive)

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Land and Sea Restoration LLC
4147 Acorn Hill
San Antonio, TX 78217
(Mr. T. Shawn Parker)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Land and Sea Restoration LLC
4147 Acorn Hill
San Antonio, TX 78217
(Mr. T. Shawn Parker)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Flash Point 250°C (482°F)
2. Ventilation: Normal ventilation
3. Skin and eye contact; protective clothing; treatment in case of contact: Protective clothing and glasses. In case of eye contact, flush eyes with water or eyewash and refrain from rubbing. For skin contact, wash with mild soap and apply cream if itching or redness occurs. Avoid inhalation. In case of inhalation, seek fresh air. Wear protective clothing and eye goggles. Workers should wear single use nuisance dust masks appropriate for fine particulate dust.
4.a. Maximum storage temperature: 65°C (150°F)
4.b. Minimum storage temperature: 0°C (32°F)
4.c. Optimum storage temperature range: 0°C to 65°C (32 to 150°F)
4.d. Temperatures of phase separations and chemical changes: NA

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V. SHELF LIFEMore than 5 years in unopened original shipping container, store in a cool, dry place. Avoid moisture prior to use.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method: On water, spread over contaminated area at 1 to 3 ratios. On soil, blend to depth equivalent to contamination level. On hard surfaces, spread over contaminated area. Make sure the spill is completely absorbed. For best results agitate with broom. (Will not damage cured asphalt if used as an absorbent for spills.) Remove and dispose of in accordance with all state and federal laws, after absorption is complete.
2. Concentration/Application Rate:
1 part 001 to 3 parts hydrocarbon.
3. Conditions for Use:
NA

VII. TOXICITY AND EFFECTIVENESS
a. Effectiveness:
Bioremediation Agent Effectiveness Test (40 CFR 300.900), Federal Register September 15, 1994:
Summary Data Table

DAYS	**PRODUCT**	**TOTAL MEAN**	**RED%**	**TOTAL MEAN**	**RED%**
	3 REPS/PROD	**ALKANES (ppm)**	**28 DAYS**	**AROMATICS (ppm)**	**28 DAYS**
0	CONTROL	13.8239	0	0.0443	0
	001	13.5856	0	0.0509	0
7	CONTROL	14.3292	0	0.0473	0
	001	10.1005	29.52	0.0437	0
28	CONTROL	14.4675	0	0.0401	0
	001	8.2629	42.92	0.0273	31.92

Results of Gravimetric Analysis:
Percentage (%) Decrease in Weight of Oil on Day 28

Control	Product (001)
0%	25.18%

b. Toxicity: NA

VIII. MICROBIOLOGICAL ANALYSIS
1. Listing of all microorganisms by species and percentages in the composition:
CONFIDENTIAL

2. Optimum pH, temperature, and salinity ranges for use of the additive:
pH: 6 to 8
Temperature: 25°C to 30°C (77°F to 86°F)
Salinity: Fresh to salt water
3. Minimum and maximum pH, temperature, and salinity levels below or above which the effectiveness of the additive is reduced to half its optimum capacity:
pH: NA
Temperature: NA
Salinity: NA
4. Special nutrient requirements:
The product "001" is a nutrient, therefore no nutrients are required.
5. Test results regarding the determination of the presence of the following:
Salmonella: Negative
Fecal coliform: <3
Shigella: Negative
Staphylococcus Coagulase positive: <10
Beta hemolytic Streptococci: 1,100

IX. PHYSICAL PROPERTIES
1. Flash Point: 250°C (482°F)
2. Pour Point: NA
3. Viscosity: NA
4. Specific Gravity: NA
5. pH: NA
6. Surface Active Agents: NA
7. Solvents: NA
8. Additives: NA
9. Solubility in Water: NA

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS
NA

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TECHNICAL PRODUCT BULLETIN B-56
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: JULY 24, 2002
"S-200C (formerly S-200)"

I. NAME, BRAND, OR TRADEMARK
S-200C (formerly S-200)
Type of Product: Bioremediation Agent (Nutrient Additive)

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
International Environmental Products, LLC
Two Villanova Center
795 E. Lancaster Ave., Suite 280
Villanova, PA 19085
Phone: (610) 520-7665
Fax: (610) 520-7663
E-mail: info@iepusa.com
(Mr. Jim Lynn)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
International Environmental Products, LLC
Two Villanova Center
795 E. Lancaster Ave., Suite 280
Villanova, PA 19085
Phone: (610) 520-7665
Fax: (610) 520-7663
E-mail: info@iepusa.com
(Mr. Jim Lynn)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable.
2. Ventilation: Ventilation of the work place is not necessary.
3. Skin and eye contact; protective clothing; treatment in case of contact: In case of contact with skin or eyes, wash with plenty of water.
4.a. Maximum storage temperature: 132°F
4.b. Minimum storage temperature: 32°F
4.c. Optimum storage temperature range: 55°F - 85°F
4.d. Temperatures of phase separations and chemical changes: <32°F and >140°F

V. SHELF LIFE
The recommended shelf life of S-200C is 1½ years if kept in the unopened original container.

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VI. RECOMMENDED APPLICATION PROCEDURE

1. Application Method: S-200C is a light amber liquid, and as such can be sprayed with traditional liquid spraying equipment, such as pressurized sprayers or backpack sprayers.

2. Concentration/Application Rate: The recommended application rate is approximately 10% by of the S-200C as compared to the hydrocarbon being remediated. In other words, use 1 pound of S-200C for every 10 pounds of hydrocarbon you are remediating. For applications on soil contaminated below 1 foot, the soil is turned and the material is applied. This allows air to circulate and thereby maintains an aerobic condition. On a surface application, the amount to use is approximately 0.1 to 1 pound of S-200C for every square yard of surface area. The amount sprayed is dependent on the amount of hydrocarbon on the surface you are spraying.

To remediate a sheen on water, the same application ratio for a surface application is used.

3. Conditions for Use: S-200C is a bioremediation accelerator used for the remediation of hydrocarbon spills or leaks. It is a non-intrusive, cost effective remedy for the cleanup of these hydrocarbons. These hydrocarbons include but are not limited to gasoline, No. 2 up to No. 6 diesel fuel, jet fuels, kerosene, lubricating oils, hydraulic oils, and crude oils.

VII. TOXICITY AND EFFECTIVENESS

a. Effectiveness:

Bioremediation Agent Effectiveness Test (40 CFR 300.900), Federal Register September 15, 1994:

Summary Data Table

DAYS	**PRODUCT**	**TOTAL MEAN**	**RED%**	**TOTAL MEAN**	**RED%**
	3 REPS/PROD	**ALKANES (ppm)**	**28 DAYS**	**AROMATICS (ppm)**	**28 DAYS**
0	CONTROL	27666	0	5600	0
	S-200C	29333	0	5666	0
7	CONTROL	21333	0	4333	0
	S-200C	11000	0	4400	0
28	CONTROL	18771	32	5597	0.05
	S-200C	660	98	5073	10.4

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Results of Gravimetric Analysis:
Percentage (%) Decrease in Weight of Oil on Day 28

Control	Product (001)
-18.57%	27.82%

b. Toxicity:

Material Tested	Species	LC50 (ppm)
S-200C	Menidia beryllina	39.69 96-hr
	Mysidopsis bahia	21.33 48-hr
No. 2 Fuel Oil	Menidia beryllina	35.36 96-hr
	Mysidopsis bahia	35.36 48-hr
S-200C & No. 2 Fuel Oil (1:10)	Menidia beryllina	25.33 96-hr
	Mysidopsis bahia	17.67 48-hr
Reference Toxicant (SDS)	Mysidopsis bahia	22.96 48-hr

VIII. MICROBIOLOGICAL ANALYSIS
1. Listing of all microorganisms by species and percentages in the composition:
S-200C is a nutrient bioremediation accelerator and does not contain bacterial cultures or amendments. However, with the addition of S-200C, the microbiological data shows a continued viability of microbial incubations over time.
2. Optimum pH, temperature, and salinity ranges for use of the additive:
pH: 7.0
Temperature: 86°F
Salinity: Fresh to salt water
3. Minimum and maximum pH, temperature, and salinity levels below or above which the effectiveness of the additive is reduced to half its optimum capacity:
pH: 4.5 - 10.0
Temperature: 50°F - 120°F
Salinity: 0% - 10%
4. Special nutrient requirements:
NA
5. Test results regarding the determination of the presence of the following:
Salmonella: Negative
Fecal coliform: Negative
Shigella: Negative
Staphylococcus Coagulase positive: Negative
Beta hemolytic Streptococci: Negative

IX. PHYSICAL PROPERTIES
1. Flash Point: >212°F
2. Pour Point: 40°F
3. Viscosity:100cp@70°F
4. Specific Gravity: 0.996
5. pH: 4.5
6. Surface Active Agents: NA

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7. Solvents: NA
8. Additives: NA
9. Solubility in Water: Dispersible

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

S-200C does not contain any heavy metals, cyanide, or chlorinated hydrocarbons.

ED_001324_00006005-00293

TECHNICAL PRODUCT BULLETIN B-57
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: JANUARY 8, 2007
"SPILLREMED (MARINE)®"
(aka, AGROREMED, HYDROREMED, SPILLREMED (INDUSTRIAL), VAPORREMED)

I. NAME, BRAND, OR TRADEMARK
SPILLREMED (MARINE)®
(aka, AGROREMED, HYDROREMED, SPILLREMED (INDUSTRIAL), VAPORREMED)
Type of Product: Bioremediation Agent (Biological Additive: Microbiological Culture)

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Sarva Bio Remed, LLC
25 Marianne Drive, Suite 'B'
York, PA 17406
Phone: (717) 779-0040
Phone : (877) 717-2782
Fax: (419) 710-5831
E-mail: sales@sarvabioremed.com
Website: www.sarvabioremed.com
(Mr. Satya Ganti)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS

Sarva Bio Remed, LLC
25 Marianne Drive, Suite 'B'
York, PA 17406
Phone: (717) 779-0040
Phone : (877) 717-2782
Fax: (419) 710-5831
E-mail: sales@sarvabioremed.com
Website: www.sarvabioremed.com
(Mr. Satya Ganti)

Edward R. Stephen Co., Inc.
10 Dunham Road
Billerica, MA 01821
Phone: (978) 667-6399
E-mail: bohs@erstephen.com
(Mr. Barry Ohs)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable.
2. Ventilation: No special ventilation required.
3. Skin and eye contact; protective clothing; treatment in case of contact: On contact with product, wash with plenty of water and for eye contact consult your physician. Use of gloves and eye protection is recommended during field application to protect eyes from spray.
4.a. Maximum storage temperature: 100°F
4.b. Minimum storage temperature: 32°F
4.c. Optimum storage temperature range: Ambient
4.d. Temperatures of phase separations and chemical changes: <32°F and >100°F

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V. SHELF LIFE
The recommended shelf life is one year.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method:
SPILLREMED (MARINE)® is a ready to use liquid product. It can be sprayed undiluted over the spill in open water conditions.
2. Concentration/Application Rate:
SPILLREMED (MARINE)® is applied in a product to oil ratio of 1:10. Rate of application is one gallon per 10 minutes.
3. Conditions for Use:
SPILLREMED (MARINE)® is a marine salt formulation and is not effective in fresh water conditions. Optimal effectiveness is in the salinity range of 10 to 35 ppt.

VII. TOXICITY AND EFFECTIVENESS
a. Effectiveness:
Bioremediation Agent Effectiveness Test (40 CFR 300.900), Federal Register September 15, 1994:
Summary Data Table

DAYS	**PRODUCT**	**TOTAL MEAN**	**RED%**	**TOTAL MEAN**	**RED%**
	3 REPS/PROD	**ALKANES (ppm)**	**28 DAYS**	**AROMATICS (ppm)**	**28 DAYS**
0	CONTROL	48,963.31		13,467.59	
	NUTRIENT	46,963.33		13,779.24	
	SPILLREMED (MARINE)®	52,063.18		14,143.06	
7	CONTROL	47,606.78		11,262.98	
	NUTRIENT	40,853.28		11,329.01	
	SPILLREMED (MARINE)®	43,236.67		11,076.99	
28	CONTROL	45,467.28	7	12,560.37	7
	NUTRIENT	7,210.06	98	9,927.87	28
	SPILLREMED (MARINE)®	1,310.09	97	7,442.71	47

Results of Gravimetric Analysis:

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Percentage (%) Decrease in Weight of Oil on Day 28

Control	Nutrient	Product
6.00%	76%	85%

b. Toxicity:

Material Tested	Species	LC50 (ppm)
SPILLREMED (MARINE)®	Menidia beryllina	392.30 96-hr
	Mysidopsis bahia	343.80 48-hr
No. 2 Fuel Oil	Menidia beryllina	40.50 96-hr
	Mysidopsis bahia	17.40 48-hr
SPILLREMED (MARINE)®	Menidia beryllina	37.50 96-hr
& No. 2 Fuel Oil (1:10)	Mysidopsis bahia	22.40 48-hr
Reference Toxicant (SDS)	Menidia beryllina	8.00 96-hr
	Mysidopsis bahia	15.90 48-hr

VIII. MICROBIOLOGICAL ANALYSIS

1. Listing of all microorganisms by species and percentages in the composition:
CONFIDENTIAL
2. Optimum pH, temperature, and salinity ranges for use of the additive:
pH: 7.6
Temperature: 55°F
Salinity: 30 ppt
3. Minimum and maximum pH, temperature, and salinity levels below or above which the effectiveness of the additive is reduced to half its optimum capacity:
pH: 6.5 – 6.9
Temperature: 40°F – 90°F
Salinity: 10 ppt – 35 ppt
4. Special nutrient requirements: None
5. Test results regarding the determination of the presence of the following:
Salmonella: Negative
Fecal coliform: Negative
Shigella: Negative
Staphylococcus Coagulase positive: Negative
Beta hemolytic Streptococci: Negative

IX. PHYSICAL PROPERTIES

NA

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

NA

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TECHNICAL PRODUCT BULLETIN B-58
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: DECEMBER 3, 2007
"JE1058BS"

I. NAME, BRAND, OR TRADEMARK
JE1058BS
Type of Product: Bioremediation Agent (Nutrient Additive)

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Japan Energy Corporation
Business Development Department, Bio Research Center
3-17-35 Niizo-Minami
Toda-shi, Saitama 335-8502
Japan
Phone: (81) 48-433-2191
Fax: (81) 48-444-3223
(Hisashi Saeki)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Japan Energy Corporation
Business Development Department, Bio Research Center
3-17-35 Niizo-Minami
Toda-shi, Saitama 335-8502
Japan
Phone: (81) 48-433-2191
Fax: (81) 48-444-3223
(Hisashi Saeki)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable.
2. Ventilation: Use adequate ventilation. Treat product as a hygroscopic powder.
3. Skin and eye contact; protective clothing; treatment in case of contact: Avoid contact with eyes and do not take internally. Upon contact with eyes, flush with plenty of fresh water. Avoid breathing dust. Normal protective equipment for handling of powder, such as a dust mask and eye shield can be used.
4.a. Maximum storage temperature: 105°F
4.b. Minimum storage temperature: NA
4.c. Optimum storage temperature range: 0°F - 68°F
4.d. Temperatures of phase separations and chemical changes: NA

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V. SHELF LIFE
The shelf life of the product is approximately 2 years if stored in a cool dry area.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method:
JE1058BS contains biosurfactant and has an ability to stimulate the biodegradation of oil by indigenous microorganisms. JE1058BS, which is a powder, can be applied using conventional spraying equipment, for example a powder mist duster attached with boom type multi-hole head.
2. Concentration/Application Rate:
JE1058BS is applied in a product:oil ratio of 1:10. No pre-mixing or dilution by water is required.
3. Conditions for Use:
JE1058BS may be used in a wide range of environmental conditions of temperature and salinities where natural populations of oil-degrading microbes are active. The mechanical removal of as much oil as possible should be done before the product is introduced to the slick.

VII. TOXICITY AND EFFECTIVENESS
a. Effectiveness:
Bioremediation Agent Effectiveness Test (40 CFR 300.900), Federal Register September 15, 1994:
Summary Data Table

DAYS	**PRODUCT**	**TOTAL MEAN**	**RED%**	**TOTAL MEAN**	**RED%**
	3 REPS/PROD	**ALKANES (ppm)**	**28 DAYS**	**AROMATICS (ppm)**	**28 DAYS**
0	CONTROL	48,213		11,413	
	NUTRIENT	51,833		13,056	
	JE1058BS	52,280		13,211	
7	CONTROL	48,030		11,108	
	NUTRIENT	33,423		11,755	
	JE1058BS	13,453		10,188	
28	CONTROL	48,257	0	10,429	8.6
	NUTRIENT	16,953	67.3	11,837	9.3
	JE1058BS	3,854	92.6	8,061	39.0

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Results of Gravimetric Analysis: DATA MISSING
Percentage (%) Decrease in Weight of Oil on Day 28

Control	Nutrient	Product
5.9%	60.0%	81.8%

b. Toxicity:

Material Tested	Species	LC50 (ppm)
JE1058BS	Menidia beryllina	91.70 96-hr
	Mysidopsis bahia	72.09 48-hr
No. 2 Fuel Oil	Menidia beryllina	5.56 96-hr
	Mysidopsis bahia	2.19 48-hr
JE1058BS & No. 2 Fuel Oil (1:10)	Menidia beryllina	8.68 96-hr
	Mysidopsis bahia	2.44 48-hr
Reference Toxicant (SLS)	Menidia beryllina	12.23 96-hr
	Mysidopsis bahia	11.70 48-hr

VIII. MICROBIOLOGICAL ANALYSIS
1. Listing of all microorganisms by species and percentages in the composition:
CONFIDENTIAL
2. Optimum pH, temperature, and salinity ranges for use of the additive: NA
3. Minimum and maximum pH, temperature, and salinity levels below or above which the effectiveness of the additive is reduced to half its optimum capacity:
Store in dry location and avoid contact with moisture
4. Special nutrient requirements: NA
5. Test results regarding the determination of the presence of the following:
Salmonella: Negative
Fecal coliform: Negative
Shigella: Negative
Staphylococcus Coagulase positive: Negative
Beta hemolytic Streptococci: Negative

IX. PHYSICAL PROPERTIES
NA

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS
NA

ED_001324_00006005-00299

BULLETIN UPDATES IN BOLD

TECHNICAL PRODUCT BULLETIN B-59
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: NOVEMBER 24, 2008
"BIOWORLD BIOREMEDIATION TREATMENT PRODUCTS (BIOWORLD BHTP)"

I. NAME, BRAND, OR TRADEMARK
BIOWORLD BIOREMEDIATION TREATMENT PRODUCTS (BIOWORLD BHTP)
Type of Product: Bioremediation Agent (Microbiological Additive)

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
BioWorld Products
International Headquarters
6734B W Pershing Ave
Visalia, CA 93291
Phone: (559) 651-2042
Fax: (559) 651-9041
E-mail: support@bioworldusa.com
Website: www.bioworldusa.com
(Ms. Diane R. Barnes)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
BioWorld Products
6734B W Pershing Ave
Visalia, CA 93291
Phone: (559) 651-2042
Fax: (559) 651-9041
E-mail: support@bioworldusa.com
Website: www.bioworldusa.com
(Mr. Donald E. Damschen)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-hazardous.
2. Ventilation: Use adequate ventilation. Treat dry product as a hygroscopic powder and avoid ventilation.
3. Skin and eye contact; protective clothing; treatment in case of contact: Avoid contact with eyes and do not take internally. Upon contact with eyes, flush with plenty of fresh water. Avoid breathing dust. Normal protective equipment for handling of powder, such as a dust mask and eye shield are recommended to be used. Wash hands and body contacted areas with soap and water.
4.a. Maximum storage temperature: 110°F
4.b. Minimum storage temperature: 34°F – containers may break if frozen
4.c. Optimum storage temperature range: 34°F - 90°F

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4.d. Temperatures of phase separations and chemical changes: <32°F and > 140°F

V. SHELF LIFE
The recommended shelf life exceeds 3 years when stored properly in cool, dry place out of direct sun light.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method:
BioWorld BHTP is a two part product 1) Bioremediation Enhancer liquid and 2) Hydrocarbon Digesting Microbes in a dry form. Prior to use the microbes are rehydrated in 100°F water for 10 to 300 minutes.
Example for small volume applications – best results are obtained by applying Bioremediation Enhancer first followed by the rehydrated Hydrocarbon Microbe solution in the same location.
Example for large volume applications – the two parts of BioWorld BHTP can be mixed with additional water and applied together to spray over the perimeter and over the top of the spill.
Example for soil and groundwater applications – evenly apply to soils and mix with till or discing equipment. Oxygen additions are periodically used in certain situations and can be applied with mechanical generation and/or by using oxygen release compound products.
2. Concentration/Application Rate:
BioWorld BHTP is applied at an approximate rate of 40 gallons Bioremediation Enhancer liquid and 4 pounds Hydrocarbon Microbes per surface acre treated. Increased quantities and multiple applications may be required to meet shorter cleanup time constraints and desired results.
3. Conditions for Use:
BioWorld BHTP can be used in freshwater conditions, wetlands, rock or sand shorelines, contaminated soil areas, salt marshes and salt water conditions (up to 60 ppt salinity).

VII. TOXICITY AND EFFECTIVENESS
a. Effectiveness:
Bioremediation Agent Effectiveness Test (40 CFR 300.900), Federal Register September 15, 1994:
Summary Data Table

DAYS	PRODUCT	TOTAL MEAN	RED%	TOTAL MEAN	RED%
	3 REPS/PROD	ALKANES (ppm)	28 DAYS	AROMATICS (ppm)	28 DAYS
0	CONTROL	61,234		9,395	
	NUTRIENT	64,803		8,873	
	BioWorld BHTP	63,192		9,220	
	CONTROL	57,907	5	7,290	22
7					

	NUTRIENT	49,747	14	5,956	18
	BioWorld BHTP	41,480	28	4,405	40
28	CONTROL	49,364	19	6,499	31
	NUTRIENT	21,490	67	5,259	41
	BioWorld BHTP	1,948	97	1,078	88

Results of Gravimetric Analysis:
Percentage (%) Decrease in Weight of Oil on Day 28

Control	Nutrient	Product
21%	64%	96%

b. Toxicity:

Material Tested	Species	LC50 (ppm)
BioWorld BHTP	Menidia beryllina	8,848.70 96-hr
	Mysidopsis bahia	7,348.70 48-hr
No. 2 Fuel Oil	Menidia beryllina	4.50 96-hr
	Mysidopsis bahia	3.21 48-hr
BioWorld BHTP &	Menidia beryllina	13.90 96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	7.10 48-hr
Reference Toxicant (SLS)	Menidia beryllina	15.00 96-hr
	Mysidopsis bahia	15.90 48-hr

VIII. MICROBIOLOGICAL ANALYSIS
1. Listing of all microorganisms by species and percentages in the composition:
CONFIDENTIAL
2. Optimum pH, temperature, and salinity ranges for use of the additive:
pH: 6-8
Temperature: 80°F-100°F
Salinity: 0-1 for use of the additive
3. Minimum and maximum pH, temperature, and salinity levels below or above which the effectiveness of the additive is reduced to half its optimum capacity:
pH: 3-10
Temperature: 33°F-120°F
Salinity: >5
Use under any conditions where indigenous populations of oil-degrading microbes are/are not present
4. Special nutrient requirements: Some sites may benefit with various nutrients added depending on project variables
5. Test results regarding the determination of the presence of the following:
Salmonella: Negative
Fecal coliform: <2
Shigella: Negative

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Staphylococcus Coagulase positive: <10
Beta hemolytic Streptococci: <10

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IX. PHYSICAL PROPERTIESNA

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS
NA

ED_001324_00006005-00304

BULLETIN UPDATES IN BOLD

TECHNICAL PRODUCT BULLETIN: B-60
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: OCTOBER 28, 2010
"MUNOX SR®"

I. NAME, BRAND, OR TRADEMARK
MUNOX SR®
Type of Product: Bioremediation Agent (Microbiological Culture)

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Osprey Biotechnics
1833-A 57th Street
Sarasota, FL 34243
Phone: (941) 351-2700
Fax: (941) 351-0026
E-mail: ldanielson@ospreybiotechnics.com
E-mail: vscuilla@ospreybiotechnics.com
(Ms. Lauren Danielson, President and CEO)
(Mr. Vincent Scuilla, COO)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Osprey Biotechnics
1833-A 57th Street
Sarasota, FL 34243
Phone: (941) 351-2700
Fax: (941) 351-0026
E-mail : VScuilla@ospreybiotechnics.com
(Mr. Vince Scuilla, COO)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable
2. Ventilation: No special ventilation is required under normal use.
3. Skin and eye contact; protective clothing; treatment in case of contact: No special handling necessary. In case of skin contact, wash with soap and water. In case of eye contact, flush with water. In case of eye contact, flush with water. Wear protective gloves and wash hands with soap and water after handling.
4.a. Maximum storage temperature: 100°F
4.b. Minimum storage temperature: 32°F
4.c. Optimum storage temperature range: 35°F to 95°F. Store in a cool, dry location.
4.d. Temperatures of phase separations and chemical changes: <32°F and >212°F

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V. SHELF LIFE
MUNOX SR® is stable for over one year when stored at temperatures from 35°F to 95°F.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method:
MUNOX SR® is a consortium of robust organisms that tolerate the natural salinity of seawater up to approximately 5% and water temperatures below 100°F. MUNOX SR® is effective on fresh and weathered crude oil and refined products because the metabolic pathways of the organisms are based on beta oxidation that is effective on a wide range of constituents of petroleum including aromatic, aliphatic and polyaromatic compounds. MUNOX SR® is provided with a microbial density of $1x10^8$ cfu/mL in stabilized liquid form or after the freeze-dried form is hydrated. The target population for effective treatment is $2.5x10^5$ cfu/mL.

One unit consists of one 55-gallon drum of hydrated MUNOX SR® or the amount of freeze-dried powder to mix with 55-gallons of water to formulate the equivalent hydrated microbial solution. Based on this formulation and treatment ratio, one unit of MUNOX SR® will treat approximately 22,000 gallons of impacted water.

Apply using in situ, hand sprayer, pump, pressure washer, etc. Product is ready to use and does not require dilution of additional formulation.

2. Concentration/Application Rate:
Surface water: MUNOX SR® provides organisms that can be effective in the destruction and removal of petroleum hydrocarbons in surface water. It is best applied in areas where vertical water mixing is minimal in order to maintain high microbial density in the vicinity of floating hydrocarbons and near the water surface where there is a maximal oxygen concentration..
Beach application: The best application on the beach is by mixing the microbes in the beach between the tide marks. Assuming the contractor will be mixing the microbes to a depth of 12 inches and there is 30% porosity, 5 drums per acres will provide sufficient MUNOX SR® microbes for treatment.
Marsh or wetland application: This application of MUNOX SR® provides the greatest value because it is the treatment approach that will not cause more damage to the wetlands. The microbes will be sprayed on the oiled wetland from a boat or aircraft so the vegetation is not disturbed. The recommended volume of MUNOX SR® will provide enough microbes to degrade a moderate oiling level to acceptable levels. This application rate will treat the oil in surface water, attached to vegetation, and on the soil surface. Assuming the wetland is submerged to a depth of six inches during high tide, an application rate of 8 units per acre will provide sufficient microbes for treatment.
3. Conditions for Use:
MUNOX SR® is formulated for the bioremediation and metabolism of a wide range of petroleum hydrocarbons including crude oil and refined fuels. Because petroleum in all of its forms is made up of a wide variety of components, the dosage and application of MUNOX SR® will depend on the type of hydrocarbon, degree of weathering, and environmental conditions.

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Heavy petroleum compounds such as crude oil and refined products, such as bunker fuel, with a high proportion of complex aliphatics will require a high dosage than lighter petroleum compounds such as gasoline. The dosage will be site specific and will be determined with the assistance of CL Solutions at no cost to the U.S. EPA or the user.

MUNOX SR® will tolerate a wide range of environmental conditions; however, some conditions may reduce the effectiveness of MUNOX SR®. MUNOX SR® is most effective at a neutral pH, but can tolerate a pH range from 5 to 8.5. The salinity of water should be less than 5%. MUNOX SR® will also be most effective at moderately high temperatures from 70°F to 100°F. MUNOX SR® will tolerate low temperatures and will become dormant at freezing temperatures. However, MUNOX SR® will not tolerate temperatures above 105°F.

VII. TOXICITY AND EFFECTIVENESS

a. Effectiveness:

Bioremediation Agent Effectiveness Test (40 CFR 300.900), Federal Register September 15, 1994:

Summary Data Table

DAYS	**PRODUCT**	**TOTAL MEAN**	**RED%**	**TOTAL MEAN**	**RED%**
	3 REPS/PROD	**ALKANES (ppm)**	**28 DAYS**	**AROMATICS (ppm)**	**28 DAYS**
0	CONTROL	1,003	0	3,609	0
	NUTRIENT	1,096	0	4,661	0
	MUNOX SR®	806	0	4,063	0
7	CONTROL	1,039	0	3,932	0
	NUTRIENT	815	0	3,172	0
	MUNOX SR®	199	0	3,292	0
28	CONTROL	847	15.5	3,578	0.85
	NUTRIENT	832	24	3,674	21.2
	MUNOX SR®	41	94.9	996	75.5

Results of Gravimetric Analysis:

Percentage (%) Decrease in Weight of Oil on Day 28

Control	Nutrient	Product
0.2%	9.9%	14.3%

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b. Toxicity:
NA

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VIII. MICROBIOLOGICAL ANALYSIS

1. Listing of all microorganisms by species and percentages in the composition:
CONFIDENTIAL

2. Optimum pH, temperature, and salinity ranges for use of the additive:
pH: 6-8
Temperature: 4°C-35°C
Salinity: Fresh water to salt water, <110 ppm

3. Minimum and maximum pH, temperature, and salinity levels below or above which the effectiveness of the additive is reduced to half its optimum capacity:
pH: <6.0 and >8.0
Temperature: <4°C->35°C
Salinity: >110 ppm

4. Special nutrient requirements: None required. In application, MUNOX SR® may be supplemented with the following Nutrient Mix at a ratio up to 1:10.

Nutrient Mix Composition:
Soy Peptone – 2.2%
Yeast Extract – 2.2%
Dextrose – 0.2%
Sodium Nitrate – 0.2%
Di-potassium Phosphate – 0.2%
Sodium Thiosulfate – 0.01%

5. Test results regarding the determination of the presence of the following:
Salmonella: Negative.
Fecal coliform: Negative.
Shigella: Negative.
Staphylococcus Coagulase positive: Negative.
Beta hemolytic Streptococci: Negative.

IX. PHYSICAL PROPERTIES
NA

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS
NA

ED_001324_00006005-00309

TECHNICAL PRODUCT BULLETIN: B-61
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: NOVEMBER 17, 2010
"SOIL RX"
(aka, BIO-REGEN HYDROCARBON)

I. NAME, BRAND, OR TRADEMARK
SOIL RX
(aka, BIO-REGEN HYDROCARBON)
Type of Product: Bioremediation Agent (Microbiological Culture, Nutrient Additive)

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
3 Tier Technologies LLC
Worldwide Headquarters
250 National Place, Suite 142
Longwood, FL 32750
Phone: (877) 226-7498
Fax: (877) 570-0072
E-mail: dburdette@3tiertech.com
Website: www.3tiertech.com
(Daniel J. Burdette, President)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Direct Sales
3 Tier Technologies LLC
Worldwide Headquarters
250 National Place, Suite 142
Longwood, FL 32750
Phone: (877) 226-7498
Fax: (877) 570-0072
E-mail: dburdette@3tiertech.com
Website: www.3tiertech.com
(Daniel J. Burdette, President)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable
2. Ventilation: Normal ventilation is adequate.
3. Skin and eye contact; protective clothing; treatment in case of contact: Ingestion: No effect if ingested in small amounts. A single dose of this product is rarely toxic by ingestion. Irritation of the mouth, pharynx, esophagus and stomach can develop. Give two glasses of water. Do not induce vomiting. Contact physician if needed. Eyes: Avoid eye contact. This material may cause eye irritation. Immediately flush with water for 15 minutes. Contact physician if needed. Skin: Slight redness on hands and forearms if individual has a history of dermal allergic reactions. Dermatitis and skin sensitization can develop after repeated and/or prolonged contact. Remove

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contaminated clothing and footwear. Wash with soap and water.

Always consult a physician if needed. Respirators are not required for recommended uses. Rubber gloves are not required, but recommended. Safety glasses are not required, but recommended. Wash hands with soap and water after handling product. Wash contaminated clothing and footwear before reuse.
4.a. Maximum storage temperature: 120°F
4.b. Minimum storage temperature: 34°F – do not allow product to freeze
4.c. Optimum storage temperature range: 45°F to 95°F.
4.d. Temperatures of phase separations and chemical changes: NA, stable.

V. SHELF LIFE
Shelf life exceeds 2 years when properly stored in the unopened original container.

VI. RECOMMENDED APPLICATION PROCEDURE
SOIL RX (aka, BIO-REGEN HYDROCARBON) is a concentrated liquid formulation of activated humic acid, highly concentrated hydrocarbon-oxidizing bacteria, and a readily biodegradable natural amino acid complex consisting of a nutrient-rich extract with a broad-spectrum package of identifiable amino acids, surfactants, and other proteins. This product is designed to digest organics and hydrocarbons in soil and water.
1. Application Method: SOIL RX (aka, BIO-REGEN HYDROCARBON) is a liquid concentrate that must be diluted prior to use. The product can be sprayed after dilution using standard spray application equipment, including but not limited to hand sprayers, mechanical sprayers, water trucks, fire or emergency response equipment, pressure washers, etc. Mix or saturate concentrate/water mixture with contaminated soils thoroughly for maximum performance. For shallow/surface contamination, drench affected areas with enough dilution to fully saturate the soil using normal spray equipment and water trucks. For general contamination less than two feet, contaminated soil may require tilling or excavation to properly mix concentrate/water dilution into soils. For deeper contamination greater than two feet, product application can be applied through boring the area and using perforated piping per regulatory recommendations or excavate the material and treat while land farming or bio-piling. For contaminated water, such as marshes, shoreline and open water with floating hydrocarbons, apply dilution directly to the contaminated areas using appropriate spray equipment and water cannons.
2. Concentration/Application Rate: SOIL RX (aka, BIO-REGEN HYDROCARBON) must be diluted using 1 part concentrate to 10 parts clean water prior to use. Product can be diluted up to 100 parts water as directed for specific applications. Application rates are determined by level of contamination, area of application, and speed required for cleanup. Specific application rates are determined prior to sale by the manufacturer and the distributor. A normal application rate for contaminated soil is on gallon 10:1 diluted product per cubic yard of soil. Normal application rate for water applications is three gallons 10:1 diluted product per 1000 square feet of contaminated surface area.
3. Conditions for Use: SOIL RX (aka, BIO-REGEN HYDROCARBON) is safe for application in ocean and fresh water, all soil types, and shoreline treatments.

Water Salinity: Product should be diluted with fresh, clean water. Use of brackish or brine water may be used if fresh water is not available. It should be noted that the use of brine water may slightly reduce product performance or increase overall remediation time.
Water Temperature: Water must be between 42° to 110°F for normal product performance.
pH: Optimum water pH ranges between 4 to 8.
Temperature: Temperatures are below 32° and above 120°F may decrease product performance.
Nutrient Requirements: None. Nutrients required are in the product.
Type and Age of Pollutants: For use on most organic based contaminants and hydrocarbon based materials like gasoline, jet fuels, diesel fuels, grease, tar, motor oils, crude oils, solvents, etc. Age of contamination is not a factor as much as level of contamination, depth of contamination, and length of time required for the remediation process. For materials that have hardened and are tar-like, additional procedures may be required for effective remediation.

VII. TOXICITY AND EFFECTIVENESS
a. Effectiveness:
Bioremediation Agent Effectiveness Test (40 CFR 300.900), Federal Register September 15, 1994:
Summary Data Table

DAYS	PRODUCT	TOTAL MEAN	RED%	TOTAL MEAN	RED%
	3 REPS/PROD	ALKANES (ppm)	28 DAYS	AROMATICS (ppm)	28 DAYS
0	CONTROL	34908.9	0	6051.3	0
	NUTRIENT	34863.3	0	6047.4	0
	SOIL RX	34993.0	0	6069.0	0
7	CONTROL	35206.2	+0.08	5720.9	5.45
	NUTRIENT	32894.1	5.64	5745.8	4.98
	SOIL RX	24446.0	30.14	3219.2	46.96
28	CONTROL	34287.8	1.779	5892.7	2.621
	NUTRIENT	32610.0	6.463	5205.1	13.928
	SOIL RX	17597.0	49.713	1600.1	73.635

Results of Gravimetric Analysis:
Percentage (%) Decrease in Weight of Oil on Day 28

Control	Nutrient	Product
8.01%	7.43%	30.14%

b. Toxicity:
NA

VIII. MICROBIOLOGICAL ANALYSIS
1. Listing of all microorganisms by species and percentages in the composition:
CONFIDENTIAL
2. Optimum pH, temperature, and salinity ranges for use of the additive:
pH: 4-8
Temperature: 42°F-100°F
Salinity: NA
3. Minimum and maximum pH, temperature, and salinity levels below or above which the effectiveness of the additive is reduced to half its optimum capacity:
pH: 2-10
Temperature: 34°F-125°F
Salinity: NA
4. Special nutrient requirements: None
5. Test results regarding the determination of the presence of the following:
Salmonella: Negative
Fecal coliform: Negative
Shigella: Negative
Staphylococcus Coagulase positive: Negative
Beta hemolytic Streptococci: Negative

IX. PHYSICAL PROPERTIES
NA

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS
NA

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TECHNICAL PRODUCT BULLETIN: B-62USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: DECEMBER 15, 2010
"PRO-ACT"
(aka, OILCLEAN w/ACTIVATOR)

I. NAME, BRAND, OR TRADEMARK
PRO-ACT
(aka, OILCLEAN w/ACTIVATOR)
Type of Product: Bioremediation Agent (Biological Additive: Microbiological Culture w/ Nutrient Additive)

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Pro-Act Microbial, Inc.
P.O. Box 345
Warren, RI 02885
Phone: (401) 245-7004
Fax: (401) 633-6270
E-mail: bd@proactbiotech.com
Website: www.oilclean.com
(Mr. William Donohue)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Pro-Act Microbial, Inc.
P.O. Box 345
Warren, RI 02885
Phone: (401) 245-7004
Fax: (401) 633-6270
E-mail: bd@proactbiotech.com
Website: www.oilclean.com
(Mr. William Donohue)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable
2. Ventilation: No special requirements.
3. Skin and eye contact; protective clothing; treatment in case of contact: No special equipment or clothing is required in the handling, storage and field application of this product. For skin and eye contact, wear goggles. If eye or skin irritation occurs, flush with plenty of fresh water.
4.a. Maximum storage temperature: 110°F, up to 5 days
4.b. Minimum storage temperature: 35°F, do not freeze
4.c. Optimum storage temperature range: 40°F to 90°F

ED_001324_00006005-00314

V. SHELF LIFEOne year as packaged.

VI. RECOMMENDED APPLICATION PROCEDURE
PRO-ACT (aka, OILCLEAN w/ACTIVATOR) consists of two parts: liquid microbes and activator (i.e., nutrient additive). As part of the Product Schedule, training on the proper use of PRO-ACT (aka, OILCLEAN w/ACTIVATOR) will be provided by Pro-Act Microbial, Inc. certified personnel.
1. Application Method: Site (water and/or soil) testing is highly recommended prior to product application. The testing is designed to assess the nutrient status of the contaminated site. The desired nitrogen and phosphorus concentrations are in the range of 0.5 to 2.5 mg N/L for nitrogen and 0.05 to 0.3 mg P/L for phosphorus. If there are inadequate nutrients in the water/soil, the activator portion will be needed to bring the nutrients in line with product specification. The activator portion can be applied directly to the site for treatment or it can be mixed in with the diluted liquid microbes first. Nutrient levels need to be maintained for optimal microbial action. Thus, depending on the nature of water/soil and the results of on site monitoring, activator may need to be applied more than once. It is recommended that physical methods such as skimming should be employed to recover as much oil as possible. PRO-ACT (aka, OILCLEAN w/ACTIVATOR) should be used to breakdown the residual oil after the physical methods have been used.
2. Concentration/Application Rate: Liquid microbes are to be diluted with the non-chlorinated, non-ozonated water or with the water to be treated (1:10 liquid microbe/water ratio) and applied with a sprayer, either pump or pneumatic. The amount of PRO-ACT (aka, OILCLEAN w/ACTIVATOR) needed depends on the amount of oil to be treated. One gallon undiluted liquid microbes can treat up to 1000 square feet, assuming there is less than ¼ inch of oil on surface. For example, one gallon undiluted liquid microbes is good for up to 5 gallons of spilled oil. A second application of Pro-Act (aka OilClean w/Activator) is beneficial to speed up the bioremediation process.
3. Conditions for Use: Monitoring of dissolved oxygen levels is recommended. If needed, a mechanical aeration device should be deployed to maintain DO levels above 3 mg/L. PRO-ACT (aka, OILCLEAN w/ACTIVATOR) works with fresh oil as well as weathered oil. Oil toxicity (especially from easily dissolved shorter chain hydrocarbons in the fresh oil) should not be a problem as long as physical methods are used first following a spill. The product is ideal for salt water, brackish water and fresh water, with no limitations as to usage within optimum temperature range of 20 to 400°C.

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VII. TOXICITY AND EFFECTIVENESS

a. Effectiveness:

Bioremediation Agent Effectiveness Test (40 CFR 300.900), Federal Register September 15, 1994:

Summary Data Table

DAYS	PRODUCT	TOTAL MEAN	RED%	TOTAL MEAN	RED%
	3 REPS/PROD	ALKANES (ppm)	28 DAYS	AROMATICS (ppm)	28 DAYS
0	CONTROL	41277	0	6100	0
	NUTRIENT	41670	0	6140	0
	PRO-ACT	43193	0	6460	0
7	CONTROL	41393	0	5705	0
	NUTRIENT	26370	0	3640	0
	PRO-ACT	302	0	1979	0
28	CONTROL	42451	-2.766	4546	25.475
	NUTRIENT	3654	91.231	1968	67.948
	PRO-ACT	59	99.863	378	94.149

Results of Gravimetric Analysis:

Percentage (%) Decrease in Weight of Oil on Day 28

Control	Nutrient	Product
12.624%	55.670%	65.516%

b. Toxicity:

NA

VIII. MICROBIOLOGICAL ANALYSIS

1. Listing of all microorganisms by species and percentages in the composition:

CONFIDENTIAL

2. Optimum pH, temperature, and salinity ranges for use of the additive:

pH: 7.0

Temperature: 30°C

Salinity: 0.2 to 4%

3. Minimum and maximum pH, temperature, and salinity levels below or above which the effectiveness of the additive is reduced to half its optimum capacity:

pH: <6.0 or >9.0

Temperature: <15°C or >45°C

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Salinity: <0.02% or >5%
4. Special nutrient requirements: PRO-ACT (aka, OILCLEAN w/ACTIVATOR)
5. Test results regarding the determination of the presence of the following:
Salmonella: Negative
Fecal coliform: Negative
Shigella: Negative
Staphylococcus Coagulase positive: Negative
Beta hemolytic Streptococci: Negative

IX. PHYSICAL PROPERTIES
NA

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS
NA

BULLETIN UPDATES IN BOLD

TECHNICAL PRODUCT BULLETIN: B-63
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: DECEMBER 15, 2010
"BIOREM-2000 OIL DIGESTER™"
(aka, BIOREM-2000 SC)

I. NAME, BRAND, OR TRADEMARK
BIOREM-2000 OIL DIGESTER™
(aka, BIOREM-2000 SC)
Type of Product: Bioremediation Agent (Biological Additive: Microbiological Culture)

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Clift Industries, Inc.
P.O. Box 471578
Charlotte, NC **28247**
Customer Service:
Phone: (800) 996-9901
Product Management:
Phone: (704) 752-0031
Fax: (704) 544-2532
E-mail: matt@cliftindustries.com
(Mr. Matt Barnhill)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Clift Industries, Inc.
P.O. Box 471578
Charlotte, NC **28247**
Customer Service:
Phone: (800) 996-9901
Product Management:
Phone: (704) 752-0031
Fax: (704) 544-2532
E-mail: matt@cliftindustries.com
(Mr. Matt Barnhill)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable
2. Ventilation: No special requirements.
3. Skin and eye contact; protective clothing; treatment in case of contact: No special equipment or clothing is required in the handling, storage and field application of this product. For skin and eye contact, wear gloves and goggles.
4.a. Maximum storage temperature: 140°F

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4.b. Minimum storage temperature: 35°F
4.c. Optimum storage temperature range: 85°F
V. SHELF LIFE
The shelf life of the product is two (2) years when stored within the storage temperature range in the original container.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method: Spray from boats, aircraft, fire eductor systems on boats, helicopter buckets, hand-held or backpack sprayers, or from hoses attached to small pumps, water trucks and aerial spray, including typical spreading systems.
2. Concentration/Application Rate:
Shoreline Treatment:
To treat beaches, coarse sand, rocks, rip rap, sea walls, cobble shorelines and rocky shores, oiled pilings and piers use one (1) part BIOREM-2000 OIL DIGESTER™ diluted with five (5) parts water. Use one (1) gallon per 1,500 square feet of contaminated area.
Treating Marine Vegetation/Wetlands:
Dilute one (1) part BIOREM-2000 OIL DIGESTER™ with five (5) parts water and apply with non-pressure, non-impact spraying equipment onto reeds, grasses, trees, and rocks in marsh areas and vegetated wetlands. Use one (1) gallon per 1,500 square feet of contaminated area.
For Treating Water:
Do no dilute BIOREM-2000 OIL DIGESTER™ and apply directly spraying onto the surface of oil.
Small Applications:
BIOREM-2000 OIL DIGESTER™ may be applied with hand sprayers or portable pumps to spray the product directly onto oiled surfaces. Dose rates will vary with the type and amount of petroleum spilled, the extent of weathering, and other site-specific conditions, including temperature, porosity of surface, and residence time available to let the product contact the oil.
3. Conditions for Use: Effective at temperatures above 40°F.

VII. TOXICITY AND EFFECTIVENESS
a. Effectiveness:
Bioremediation Agent Effectiveness Test (40 CFR 300.900), Federal Register September 15, 1994:
Summary Data Table

DAYS	**PRODUCT**	**TOTAL MEAN**	**RED%**	**TOTAL MEAN**	**RED%**
	3 REPS/PROD	**ALKANES (ppm)**	**28 DAYS**	**AROMATICS (ppm)**	**28 DAYS**
0	CONTROL	43163	0	6001	0
	NUTRIENT	36643	0	4813	0

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	BIOREM-2000 OIL DIGESTER ™	36492	0	4634	0
7	CONTROL	39249	9.0	5067	15.5
	NUTRIENT	2946	91.9	3832	20.0
	BIOREM-2000 OIL DIGESTER ™	5390	85.2	4114	11.0
28	CONTROL	33961	21.0	3812	36.0
	NUTRIENT	106	99.7	729	84.0
	BIOREM-2000 OIL DIGESTER ™	64	99.8	1324	71.0

Results of Gravimetric Analysis:
Percentage (%) Decrease in Weight of Oil on Day 28

Control	Nutrient	Product
10.7%	68.9%	67.0%

b. Toxicity:
NA

VIII. MICROBIOLOGICAL ANALYSIS
1. Listing of all microorganisms by species and percentages in the composition:
CONFIDENTIAL
2. Optimum pH, temperature, and salinity ranges for use of the additive:
pH: 7.0
Temperature: 85°F
Salinity: <10%
3. Minimum and maximum pH, temperature, and salinity levels below or above which the effectiveness of the additive is reduced to half its optimum capacity:
pH: 3.0 or 11.5
Temperature: <35°F or >125°F
Salinity: >40%
4. Special nutrient requirements: None
5. Test results regarding the determination of the presence of the following:
Salmonella: Negative
Fecal coliform: Negative
Shigella: Negative
Staphylococcus Coagulase positive: Negative
Beta hemolytic Streptococci: Negative

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IX. PHYSICAL PROPERTIES
NA

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS
NA

ED_001324_00006005-00321

BULLETIN UPDATES IN BOLD

TECHNICAL PRODUCT BULLETIN: B-64
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: FEBRUARY 22, 2011
"DRYLET™ MB BIOREMEDIATION"

I. NAME, BRAND, OR TRADEMARK
DRYLET™ MB BIOREMEDIATION
Type of Product: Bioremediation Agent (Biological Additive: Microbiological Culture)

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
DryLet LLC
2150 South Central Expressway
Suite 200
McKinney, Texas 75070
Phone: (972) 521-3472
E-mail: sellis@drylet.com
(Mr. Steve Ellis)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
DryLet LLC
2150 South Central Expressway
Suite 200
McKinney, Texas 75070
Phone: (972) 521-3472
E-mail: sellis@drylet.com
(Mr. Steve Ellis)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable (DOT: Non-hazardous)
2. Ventilation: No special requirements. In closed spaces, uses dust protective measures.
3. Skin and eye contact; protective clothing; treatment in case of contact: No special equipment or clothing is required; however, goggles and dust mask are recommended. Applying dry powder may cause irritation to membranes. If eye or skin irritation occurs, flush with plenty of water.
4.a. Maximum storage temperature: 120°F continuous
4.b. Minimum storage temperature: 35°F
4.c. Optimum storage temperature range: 40°F to 120°F

V. SHELF LIFE
Minimum 5 years, with proper storage, in original packaging. Freezing does not harm shelf life; however, extreme heat (over 180°F) for long periods of time can shorten shelf life.

ED_001324_00006005-00322

VI. RECOMMENDED APPLICATION PROCEDURE1. Application Method: Apply DRYLET ™ MB BIOREMEDIATION directly to oil contamination. DRYLET™ MB BIOREMEDIATION may be applied by the usual methods of aerial or manual broadcast spreading. For smaller spills, manual broadcast will deliver the best results. Larger spills in open water, marsh, wetlands, or estuary areas should be treated by aerial powder dusting or dusting with mechanical powder pumps.
2. Concentration/Application Rate: Apply DRYLET™ MB BIOREMEDIATION directly on the spill. Apply 0.4 pounds of product per cubic yard of soil, or 50 pounds per acre of open water slick. In marsh, wetlands, and estuaries application rates may be up to 75 pounds per acre depending on the oil type and contamination level.
3. Conditions for Use: Water salinity: can be used in fresh or salt water. pH: 4 to 11.5. Temperature: 32°F – 120°F. Water Temperature: 35°F - 170°F. Nutrient Requirements: Nutrients are included with the product. However, for longer term project, additional nutrients may be added to increase microbial activity. Types and Ages of Contamination: For use on organic and hydrocarbon-based contamination. Tar like contamination may require mechanically breaking the structure to obtain timely results.

VII. TOXICITY AND EFFECTIVENESS
a. Effectiveness:
Bioremediation Agent Effectiveness Test (40 CFR 300.900), Federal Register September 15, 1994:
Summary Data Table

DAYS	**PRODUCT**	**TOTAL MEAN**	**RED%**	**TOTAL MEAN**	**RED%**
	3 REPS/PROD	**ALKANES (ppm)**	**28 DAYS**	**AROMATICS (ppm)**	**28 DAYS**
0	CONTROL	60871	0	8729	0
	NUTRIENT	61995	0	8170	0
	PRODUCT	61459	0	8790	0
7	CONTROL	56197	0	6224	0
	NUTRIENT	42501	0	4833	0
	PRODUCT	12303	0	4140	0
28	CONTROL	27314	55.0	5030	42.4
	NUTRIENT	47	99.9	533	93.5
	PRODUCT	820	98.6	1305	85.1

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Results of Gravimetric Analysis:
Percentage (%) Decrease in Weight of Oil on Day 28

Control	Nutrient	Product
0.30%	50.0%	84.8%

b. Toxicity:
NA

VIII. MICROBIOLOGICAL ANALYSIS
1. Listing of all microorganisms by species and percentages in the composition:
CONFIDENTIAL
2. Optimum pH, temperature, and salinity ranges for use of the additive:
pH: 6.0-8.0
Temperature: 85°F to 110°F
Salinity: 0.5-4.0
3. Minimum and maximum pH, temperature, and salinity levels below or above which the effectiveness of the additive is reduced to half its optimum capacity:
pH: 4.0 or 11.5
Temperature: 35°F or 180°F
Salinity: 0.5 or 5.0 (above 4.5 reduces effectiveness by half)
4. Special nutrient requirements: None
5. Test results regarding the determination of the presence of the following:
Salmonella: Negative
Fecal coliform: Negative
Shigella: Negative
Staphylococcus Coagulase positive: Negative
Beta hemolytic Streptococci: Negative

IX. PHYSICAL PROPERTIES
NA

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS
NA

ED_001324_00006005-00324

BULLETIN UPDATES IN BOLD

TECHNICAL PRODUCT BULLETIN: B-65
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: MAY 18, 2011
"DUALZORB®"
(aka, TRAILZORB, WHITZORB)

I. NAME, BRAND, OR TRADEMARK
DUALZORB®
(aka, TRAILZORB, WHITZORB)
Type of Product: Bioremediation Agent (Biological Additive: Microbiological Culture)

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
LBI Renewable
P.O. Box 637
22 Plains Drive
Buffalo, WY 82834
CUSTOMER SERVICE:
Phone: (307) 684-9340
Fax: (307) 684-5815
E-mail: aaron@lbirenewable.com
(Mr. Aaron Larsen)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS

DUALZORB® and TRAILZORB:
LBI Renewable
P.O. Box 637
22 Plains Drive
Buffalo, WY 82834
CUSTOMER SERVICE:
Phone: (307) 684-9340
Fax: (307) 684-5815
E-mail: aaron@lbirenewable.com
(Mr. Aaron Larsen)

WHITZORB:
Whitmore Manufacturing Co.
930 Whitmore Drive
Rockwall, TX 75032
CUSTOMER SERVICE:
Phone: (972) 771-1000, ext. 241
Fax: (972) 722-4561
E-mail: mkellis@whitmores.com
(Ms. Mary Kathryn Ellis)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: DUALZORB® is classified as non-flammable by DOT regulations (49 CFR 173. 124)
2. Ventilation: DUALZORB® is not volatile and does not require ventilation.
3. Skin and eye contact; protective clothing; treatment in case of contact: Avoid eye contact due to mechanical abrasion. In case of eye contact, immediately flush eyes with large amounts of water until particles are evacuated. Goggles are recommended during use.

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4.a. Maximum storage temperature: 200°F continuous
4.b. Minimum storage temperature: NA
4.c. Optimum storage temperature range: 32°F to 100°F
4.d. Temperatures of phase separation and chemical changes: DUALZORB® should be stored out of the weather and should not be exposed to direct sun light for extended periods of time.

V. SHELF LIFE
Guaranteed shelf life of unopened product is 5 years if not exposed to weather or direct sunlight.

VI. RECOMMENDED APPLICATION PROCEDURE
DUALZORB® is a dehydrated product that must be hydrated for maximum effectiveness to bioremediate hydrocarbons in soil and water. Hydration can be accomplished with fresh or sea water. Additionally, it can be applied on a surface and hydrated with natural precipitation.
1. Application Method: This product can be applied by hand, mechanical spreaders, portable mixer or blown onto a surface using an air conveyor. Mix hydrated DualZorb® with oil contaminated soil, sand, or rocks by either hand, shovel or till into the soil with power equipment. DUALZORB® will absorb approximately 80% of the oil from soil and sand in the first 2 hours of application, with continued bioremediation of oil. The bioremediation effect of this product is not affected by water salinity, temperature, or oil type and age. However, the oil absorption capacity is reduced in the presence of salt water as it will also absorb salts. For hard surface stains and cleanup, hydrated product can be rubbed by hand over the surface until it will no longer absorb oil. Place the spent product in an approved, labeled container in accordance with local, state, federal, international, or country specific regulations. Depending upon the compound(s) absorbed, this product may be disposed in a landfill, incinerated, or land farmed. This product has a heat value of 8421Btu/pound and an ash content of 0.35%. For in situ applications, the hydrated DUALZORB® can be tilled into the contaminated soil.
2. Concentration/Application Rate: DUALZORB® is packaged in a dehydrated form and expands three times its original volume when rehydrated with either fresh or 1.5 times with salt water. This product should be mixed on a 1:1 volume basis with hydration water. For every 1 gallon of oil, 4 pounds of DUALZORB® is recommended. For in situ applications, 50 pounds of hydrated DUALZORB® is recommended per cubic yard of soil.
3. Conditions for Use: DUALZORB® is manufactured for land use and will absorb hydrocarbon, waste oil, and fuel spills. DUALZORB® is not affected by cold water but may require additional contact time.

VII. TOXICITY AND EFFECTIVENESS
a. Effectiveness:
Bioremediation Agent Effectiveness Test (40 CFR 300.900), Federal Register September 15, 1994:
Summary Data Table

DAYS	PRODUCT	TOTAL MEAN	RED%	TOTAL MEAN	RED%

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	3 REPS/PROD	ALKANES (ppm)	28 DAYS	AROMATICS (ppm)	28 DAYS
0	CONTROL	255,568	0	10,816	0
	NUTRIENT	255,414	0	10,821	0
	PRODUCT	248,869	0	12,738	0
7	CONTROL	244,841	0	10,290	0
	NUTRIENT	79,688	0	9,963	0
	PRODUCT	14,254	0	11,168	0
28	CONTROL	215,169	15.8	7,908	26.9
	NUTRIENT	2,407	99.1	9,393	13.2
	PRODUCT	1,545	99.4	950	92.5

Results of Gravimetric Analysis:
Percentage (%) Decrease in Weight of Oil on Day 28

Control	Nutrient	Product
0.4%	15.4%	30.0%

b. Toxicity:

Materials Tested	Species	LC50 (ppm)	
DUALZORB®	Menidia beryllina	1,414.21	96-hr
	Mysidopsis bahia	1,096.05	48-hr
No. 2 Fuel Oil	Menidia beryllina	7.08	96-hr
	Mysidopsis bahia	1.13	48-hr
DUALZORB® &	Menidia beryllina	8.43	96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	2.70	48-hr
Reference Toxicant (SLS)	Menidia beryllina	12.25	96-hr
	Mysidopsis bahia	11.71	48-hr

VIII. MICROBIOLOGICAL ANALYSIS
1. Listing of all microorganisms by species and percentages in the composition:
CONFIDENTIAL
2. Optimum pH, temperature, and salinity ranges for use of the additive:
pH: 6.5-7.5
Temperature: 60°F to 100°F
Salinity: 0-10%
3. Minimum and maximum pH, temperature, and salinity levels below or above which the effectiveness of the additive is reduced to half its optimum capacity:
pH: 5.5-9.0

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Temperature: 45°F and 105°F
Salinity: 0-10%
4. Special nutrient requirements: LBI Renewable recommends nutrient supplement s of maximum performance for bioremediation or in-situ applications. Contact LSI Renewable for project specific nutrient dosing.
5. Test results regarding the determination of the presence of the following:
Salmonella: Negative
Fecal coliform: Negative
Shigella: Negative
Staphylococcus Coagulase positive: Negative
Beta hemolytic Streptococci: Negative

IX. PHYSICAL PROPERTIES
1. Flash Point: NA
2. Pour Point: NA
3. Viscosity: NA
4. Specific Gravity: 2.25 g/mL
5. pH: NA
6. Surface Washing Agents: NA
7. Solvents: NA
8. Additives: None
9. Solubility: NA

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	0.185
Cadmium	0.185
Chromium	0.500
Copper	0.537
Lead	<0.185
Mercury	<0.00303
Nickel	<0.463
Zinc	9.35
Cyanide	<0.060
Chlorinated Hydrocarbons	<0.024

ED_001324_00006005-00328

LISTING CHANGES PENDING, FOLLOWING VERIFICATION BY MANUFACTURER AND EPA

TECHNICAL PRODUCT BULLETIN: B-66
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: JUNE 08, 2011
"REMEDIADE™"
(aka, SP 7010)

I. NAME, BRAND, OR TRADEMARK
REMEDIADE™
(aka, SP 7010)
Type of Product: Bioremediation Agent (Nutrient Additive)

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
JDMV Holdings, LP
15995 N. Barkers Landing, Suite 143
Houston, TX 77079
Phone: (281) 558-3433
Fax: (281) 870-1200
E-mail: msuttle@jdmvholdings.com
Website: www.jdmvholdingslp.com
(Mr. Michael Suttle)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS

JDMV Holdings, LP
15995 N. Barkers Landing, Suite 143
Houston, TX 77079
Phone: (281) 558-3433
Fax: (281) 870-1200
E-mail: msuttle@jdmvholdings.com
Website: www.jdmvholdingslp.com
(Mr. Michael Suttle)

VariChem International, Inc.
78330 HiWay 35 North
Bay City, TX 77414
Phone: (979) 245-7278
Fax: (979) 245-0612
E-mail: Gordon@varichemusa.com
Website: www.varichemusa.com
(Mr. Gordon Winfrey)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable (DOT: Non-hazardous)
2. Ventilation: No special requirements
3. Skin and eye contact; protective clothing; treatment in case of contact: As defined by OSHA's Hazard Communication Standard, this product is non-hazardous with no evidence of adverse effects. Use safety glasses when handling for eye protection. Store in a cool dry place. Flush eyes and wash skin if contacted. In the event of contact with skin, wash with water. In the event of contact with eyes, rinse with water. In the event of contact with clothing or surfaces such as floors or counter tops, rinse with water and dry. In the event of spilling onto land or water, no

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handling or rinsing requirements are needed. No other safety or handling precautions need to be adhered to in the event of contact or spills.
4.a. Maximum storage temperature: 115°F continuous
4.b. Minimum storage temperature: 32°F
4.c. Optimum storage temperature range: 40°F to 98°F
4.d. Temperatures of phase separation and chemical changes: NA

V. SHELF LIFE
Shelf life of product unopened is 2 years. If the container has been opened, but uncontaminated and is resealed properly, the shelf life is 1 year after initial opening.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method: Product may be applied to any surface for removal of hydrocarbons. For treatment of large areas, properly diluted product may be applied by spraying with a pressure washer, portable fire pump or any other suitable pump with non-chlorinated fresh water or salt water. Application can also be made with normal spray equipment via a 1" or larger hose and a spray nozzle, similar to a fire nozzle. Eductor setups, water trucks as well as fire or other emergency response equipment may be used. Aircraft application is also effective in covering large areas or contaminated water.
2. Concentration/Application Rate: For in-situ soils, till the REMEDIADE™/water mixture onto the contaminated area. Soil treatment rate guidelines are 1 gallon of concentrate for 30 cubic yards of soil for each 20,000 TPH contamination level. Example: 40,000 TPH level would be 2 gallons per 30 cubic yards. Clay soils may take more product and sandy soils may take less. After the treatment rate is established, apply 1/3rd of the product mixture on the first day, wait 5 to 7 days and apply the second 1/3rd of the product mixture, wait another 5 to 7 days and apply the final 1/3rd of the product mixture. During each of the three applications apply ½ of the product mixture to the affected soil. Till or blade in this application before applying the second ½ of the product mixture. This will help the product get good coverage and disperse well into the soil.
In the event of oil spills on water, treatment guidelines are 1 gallon of concentrate per 30 square foot of surface area. After the treatment rate is established, apply 1/3rd over the area and wait 5 to 7 days and apply the second treatment. Then wait 2 to 5 days and apply the third treatment. Light gravity oils may take more. When spraying the product over oil, good agitation of the contaminant with the product can only help. This helps add to surface contact and aids in the bioremediation process. Salinity of the water will not make a difference in the effectiveness of the product.
3. Conditions for Use: Product must be mixed with non-chlorinated water, but it can be used with fresh, salt or brackish water. Reapplication may be necessary in severely contaminated areas. Be sure to apply the product on three separate days, allowing time in between the days, this helps keep bacteria counts up at a more consistent level through the process. Adding all the product in one treatment will only prove to waste product and slow the effectiveness of the overall remediation process.

ED_001324_00006005-00330

VII. TOXICITY AND EFFECTIVENESS

a. Effectiveness:

Bioremediation Agent Effectiveness Test (40 CFR 300.900), Federal Register September 15, 1994:

Summary Data Table

DAYS	PRODUCT	TOTAL MEAN	RED%	TOTAL MEAN	RED%
	3 REPS/PROD	ALKANES (ppm)	28 DAYS	AROMATICS (ppm)	28 DAYS
0	CONTROL	255,568	0	10,822	0
	NUTRIENT	255,414	0	10,821	0
	PRODUCT	245,168	0	10,816	0
7	CONTROL	244,841	0	10,920	0
	NUTRIENT	215,169	0	9,963	0
	PRODUCT	79,688	0	9,393	0
28	CONTROL	21,469	91.6	9,067	16.2
	NUTRIENT	4,198	98.4	7,908	26.9
	PRODUCT	2,404	99.0	607	94.4

Results of Gravimetric Analysis:

Percentage (%) Decrease in Weight of Oil on Day 28

Control	Nutrient	Product
0.0%	17.8%	36.0%

b. Toxicity:

NA

VIII. MICROBIOLOGICAL ANALYSIS

The product is a nutrient additive and does not contain microbiological cultures or enzyme additives.

1. Listing of each component of the formulation by chemical name and percentage by weight:

CONFIDENTIAL

2. Optimum storage conditions:

Temperature: 40°F to 98°F

IX. PHYSICAL PROPERTIES

ED_001324_00006005-00331

NA

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS
NA

ED_001324_00006005-00332

EPA HAS NOT RECEIVED UPDATED CONTACT INFORMATION FOR THIS PRODUCT: 3/23/16

TECHNICAL PRODUCT BULLETIN: B-67
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: JULY 27, 2011
"ERGOFIT MICROMIX AQUA"

I. NAME, BRAND, OR TRADEMARK
ERGOFIT MICROMIX AQUA
Type of Product: Bioremediation Agent (Microbiological Culture, Enzyme Additive, Nutrient Additive)

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
ERGOFIT USA LLC
40 E. Main Street #379
Newark, DE 19711
Phone: (302) 235-3085
Fax: (801) 846-8043
E-mail: info@micromix-usa.com
Website: www.micromix-usa.com
(Mr. Warren Russell, Factory Representative)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
ERGOFIT USA LLC
40 E. Main Street #379
Newark, DE 19711
Phone: (302) 235-3085
Fax: (801) 846-8043
E-mail: info@micromix-usa.com
Website: www.micromix-usa.com
(Mr. Warren Russell, Factory Representative)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Water-based, Non-flammable
2. Ventilation: Needs no ventilation; aqueous-based organic product; does not emit hazardous vapors. Some CO_2 may build up.
3. Skin and eye contact; protective clothing; treatment in case of contact: ERGOFIT MICRO MIX AQUA is not a dermal irritant. Avoid eye contact, and wear goggles when using product. Eyewash for quick and copious eye flushing should be available on site. Seek prompt medical attention should contact occur and if irritation persists. Protective rubber gloves are suggested during handling. ERGOFIT MICRO MIX AQUA has a smell of fermentation and yeast. The product does not give off harmful vapors. Long storage will cause build up of CO_2 in water

vapor.
4.a. Maximum storage temperature: 104°F
4.b. Minimum storage temperature: 32°F
4.c. Optimum storage temperature range: 57°F to 97°F
4.d. Temperatures of phase separation and chemical changes: above 113°F

V. SHELF LIFE
ERGOFIT MICROMIX AQUA has a recommended shelf life of 5 years. After 5 years at optimum storage in cool temperature there is an approximate 10% decrease per year in product effectiveness. Shelter from direct sunlight or extreme cold or heat source. In the event of fire, wash with water.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method: ERGOFIT MICROMIX AQUA can be applied with any commercially available spray apparatus, such as small hand held tanks, back packs, large mixing tanks with mechanical pumping devices, vessels with booms for spraying wide paths, or liquid spray devices on crop duster airplanes or helicopters. ERGOFIT MICROMIX AQUA can also be applied by eductor systems from vessels, fire trucks, or any other outfitted vehicle.
2. Concentration/Application Rate: General. ERGOFIT MICROMIX AQUA generally takes 5 to 50 minutes to penetrate the molecular walls of hydrocarbons. Warmer conditions favor faster biological action whereas colder conditions may reduce the speed of decomposition. Once ERGOFIT MICROMIX AQUA is applied to the targeted areas, the microbes will attach themselves to the hydrocarbons and start to attack their carbon structure and metabolize into natural organic substances from the humus family. Aquatic plants and animal life will feed on this nutrient. Within hours odor will be negligent and changes will be noticeable in seven days, depending on the temperature. ERGOFIT MICROMIX AQUA will also break down the adhesive properties of the hydrocarbons, preventing oils from attaching to animals, vegetation, rocks, and earth.

Dilution Rates**:** ERGOFIT MICROMIX AQUA should always be mixed with the native water of the affected area. Note: Do not use city water that has been treated with chlorine with ERGOFIT MICROMIX AQUA. This means that if you are treating an affected saltwater area, then saltwater should be used as your base carrier for the product. Likewise if you are treating a lake or river, then that carrier water would be the freshwater from that source. For general applications and light oil films, dilute each gallon of ERGOFIT MICROMIX AQUA with source water (e.g., fresh, brackish, or saltwater) at a ratio of 1:50. For oil mousse like formation in intertidal zones, use a dilution of 1:30. If the spill is very heavy and the oil layer is thick (more than 1 inch) it is recommended that ERGOFIT MICROMIX AQUA be applied at a lower ratio of 1:20. On land not involving water bodies, it is recommended that an organic absorbent be applied prior to using ERGOFIT MICROMIX AQUA to treat oil spills to remediate the C1 and C35 Petroleum Hydrocarbons. This is to increase the contact surface area for ERGOFIT MICROMIX AQUA to convert spills oil and absorbent to organic humus.

Application on Coastal Water: Apply the mixed solution using hand held sprayers, tank sprayers, booms from vessels, helicopters, or airplanes. First, start by spraying the outer perimeter of the

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spill and systematically work towards the middle of the affected area, making sure to cover the entire surface area of the spill. Use 1.5 gallons of ERGOFIT MICROMIX AQUA concentrate for every 1000 gallons of hydrocarbons spilled. Dilute it with 30 gallons of seawater per gallon of concentrate for spraying. [To calculate gallons of ERGOFIT MICROMIX AQUA required, multiply estimated gallons of hydrocarbons by 0.0015.] For denser hydrocarbons, like in the case of crude oil, multiply barrels of crude oil by 42 to get gallons of crude and apply above ratios. If you do not know gallons of hydrocarbons or barrels of crude oil, estimate size of spill by (1000 square yards x 2 inch average thickness) to arrive at gallons of oil spilled. Use 10 kg/22 lbs of ERGOFIT MICROMIX AQUA diluted to 50 gallons in water to cover this area. As a rule, 2 kg/4.4 lbs ERGOFIT MICROMIX AQUA is required per metric ton of oil spilled. Dilution varies depending on oil thickness or simple sheen floating on water surface.

Application for Intertidal Zones: ERGOFIT MICROMIX AQUA should be applied at low tide, when the affected areas are exposed to the elements, allowing the product to securely attach to the hydrocarbons. Cease application if the tide rises and resume once the water level has receded again. Continue application cycle until the entire affected area has been coated. The recommended mix ratio is 1:30. In areas where a combination of high tide and waves have pushed the contamination beyond the intertidal zone, oil rag layer looking like chocolate mousse, cordon off the area and start spraying ERGOFIT MICROMIX AQUA diluted at a ratio of 1:20 in water. The objective is to get an application rate of between 1 to 2 gallons of concentrated ERGOFIT MICROMIX AQUA sprayed per 1000 gallons of hydrocarbons spilled.
3. Conditions for Use: ERGOFIT MICROMIX AQUA acts on all organic hydrocarbons on sea, fresh water, and land. As the age of spilled hydrocarbons increases, so does the time necessary for bioremediation. In general, fresh crude, gasoline of BTEX takes anywhere from 30 days to 12 months to completely bioremediate depending on weather conditions and density of spill. However, the remediation process will be noticeable throughout the process. Variations in seawater salinity, has no effect, as long as microbial life can exist, then ERGOFIT MICROMIX AQUA will be effective in salt and brackish water with a maximum salinity of 4.9 percent. ERGOFIT MICROMIX AQUA bioremediation slows somewhat at temperatures below 40°F. However, it will continue to work in any water temperatures that will sustain microbial life. Decreasing the amount of ERGOFIT MICROMIX AQUA per square yard from recommended dosage rates lengthens the remediation time. When nitrogen and carbon is added to ERGOFIT MICRO MIXAQUA the initiation of bacterial-enzymatic activity is enhanced many fold to begin bioremediation within 2 hours of application.

VII. TOXICITY AND EFFECTIVENESS
a. Effectiveness:
Bioremediation Agent Effectiveness Test (40 CFR 300.900), Federal Register September 15, 1994:
Summary Data Table

DAYS	PRODUCT	TOTAL MEAN	RED%	TOTAL MEAN	RED%

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	3 REPS/PROD	ALKANES (ppm)	28 DAYS	AROMATICS (ppm)	28 DAYS
0	CONTROL	239,235	0	16,502	0
	PRODUCT	239,686	0	17,431	0
7	CONTROL	217,023	9.30	10,942	33.70
	PRODUCT	17,819	92.6	9,606	44.90
28	CONTROL	188,379	21.3	8,989	45.50
	PRODUCT	2,216	99.10	3,100	82.20

Results of Gravimetric Analysis:
Percentage (%) Decrease in Weight of Oil on Day 28

Control	Product
1.7%	45.6%

b. Toxicity:
NA

VIII. MICROBIOLOGICAL ANALYSIS
Microbiological Culture:
1. Listing of all microorganisms by species and percentage in the composition:
CONFIDENTIAL
2. Optimum pH, temperature, and salinity ranges for use of the additive:
pH: 6.5 to 7.5.
Temperature: 57°F to 97°F.
Salinity: The maximum permissible salinity is up to 4.9% sodium by solution
3. Minimum and maximum pH, temperature, and salinity levels below or above which the effectiveness of the additive is reduced to half its optimum capacity:
pH: Lower than 4.5 or higher than 8.5 reduces the product efficiency by 50 percent.
Temperature: Lower than 32°F or higher than 104°F reduces the product efficiency by 50 percent.
Salinity: The maximum permissible salinity is up to 4.9% sodium by solution
4. Special nutrient requirements: NA
5. Test results regarding the determination of the presence of the following:
Salmonella: Negative
Fecal coliform: Negative
Shigella: Negative
Staphylococcus Coagulase positive: Negative
Beta Hemolytic Streptococci: Negative

Enzyme Additive:

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8. Listing of each component of the total formulation, other than enzymes, by chemical name and percentage by weight: CONFIDENTIAL
9. Enzyme Names: CONFIDENTIAL
10. I.U.B.: CONFIDENTIAL
11. Source of Enzymes: Plant or Fungi/Fermentation process
12. Units: No less than 1% and no more than 50% by weight
13. Specific Gravity: 1.00
14. Optimum Conditions:
    a. pH: 7.0
    b. Temperature: 72°F
    c. Salinity Ranges: Fresh water to salt water up to 4.9%
    d. Minimum and Maximum pH: 4.5 – 8.5
    e. Minimum and Maximum Temperature: 32°F – 104°F
    f. Minimum and Maximum Salinity Levels: Salinity level that will support microbial activity will not adversely a ERGOFIT MICRO MIX AQUA performance
    g. Enzyme Shelf Life: Up to 5 years when properly stored
    h. Enzyme Optimal Storage Conditions: 72°F is optimal, enzyme range is freezing to 104°F, never leave ERGOFIT MICRO MIX AQUA in direct sunlight for more than a couple of hours

Nutrient Additive:
1. Listing of each component of the formulation by chemical name and percentage by weight: CONFIDENTIAL
2. Optimum storage conditions:
Temperature: 32°F to 104°F

IX. PHYSICAL PROPERTIES
NA

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS
NA

LISTING CHANGES PENDING, FOLLOWING VERIFICATION BY MANUFACTURER AND EPA

TECHNICAL PRODUCT BULLETIN: B-68
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: AUGUST 8, 2011
"SHAMANTRA GREEN"
(aka, SHAMANTRA BIO)

I. NAME, BRAND, OR TRADEMARK
SHAMANTRA GREEN
(aka, SHAMANTRA BIO)
Type of Product: Bioremediation Agent (Nutrient Additive)

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Molecular Mediation LLC
3422 Old Capitol Trail
Suite 1627
Wilmington, DE 19808
Phone: (302) 861-0400
Fax: (302) 861-0410
E-mail: info@molecularmediation.com
(Mr. Ronen Hazarika, Director, Molecular Mediation LLC)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Molecular Mediation LLC
3422 Old Capitol Trail
Suite 1627
Wilmington, DE 19808
Phone: (302) 861-0400
Fax: (302) 861-0410
E-mail: info@molecularmediation.com
(Mr. Ronen Hazarika, Director, Molecular Mediation LLC)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable (DOT: Non-hazardous)
2. Ventilation: No special requirements
3. Skin and eye contact; protective clothing; treatment in case of contact: No special equipment or clothing required, however goggles are recommended. If eye or skin irritation occurs, flush with plenty of fresh water.
4.a. Maximum storage temperature: 200°F
4.b. Minimum storage temperature: None
4.c. Optimum storage temperature range: 40°F to 140°F
4.d. Temperatures of phase separation and chemical changes: Stable

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V. SHELF LIFE
>3 years when stored in sealed silos, polydrums, poly bags or totes.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method:
Recommended Uses and Product Description
Shamantra Green is recommended for use on water and near shoreline oil spills. Shamantra is a natural product made using humic acid. The product has been processed to have a strong affinity for collecting natural oils. The process makes applying and removing the product to/from the environment easy and safe.

Water Applications
For small scale spills on fresh or salt water, Shamantra Green can be broadcast directly onto the spill by hand or a hand held spreader. Agitation is not necessary when using Shamantra Green on small scale spills.

Shamantra Green can also be used in booms, sacks, and pillows.

For large spills on fresh or salt water, Shamantra Green can be deployed into the spill using an air or water stream.

Shamantra Green will remove oils and other hazardous hydrocarbon based materials from both salt and fresh water very effectively using an encapsulation process on the spilled oil. Once encapsulated into the carbon matrix of Shamantra Green, the spilled oil will not leach out, even under pressure. The humic acid then acts as a nutrient to stimulate microbial activity and enhance the bioremediation of the spilled oil.

Any encapsulated residue can be removed from the water with hand vacuums, vacuum barges, commercial nets, centrifuges, etc. Encapsulated materials can be sent to landfill or used as a fuel source for generating heat ensuring that any material disposed of is in accordance with all applicable federal, state, and local regulations.

Shoreline Applications
For spills on shorelines, Shamantra would be applied in the same manner and ratios as with the water applications. The product can also be applied by sand-blasting equipment, fire hoses or pneumatic spreading equipment. Agitation is not necessary for most applications.

To recover encapsulated oil or hazardous materials from spills on land, the encapsulated product can be collected and removed efficiently and effectively using a variety of manual and mechanical methods including picking up by hand, using brooms, rakes and shovels to remove and pick up encapsulated petroleum waste product. Mechanical means include using hand held vacuums, portable vacuum units, and vacuum vehicles.

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Once the Shamantra Green has been saturated with oil or hazardous materials, it will not leach the contaminants, even under pressure, so any encapsulated materials can be disposed of appropriately or used as a fuel source for generating heat ensuring that any material disposed of is in accordance with all applicable federal, state, and local regulations.

Proper precautions, including testing as necessary to identify the characteristics of wastes encapsulated by Shamantra Green should be taken to determine the safe and legally required means of recovering, handling, storing, transporting, treating, recycling, or disposing of materials on land in accordance with all applicable federal, state, and local regulations.

2. Concentration/Application Rate:
Shamantra Green is usually applied at a ratio of 1:5–1:30 to waste by weight to remediate light, medium, and heavy hydrocarbons. Shamantra Green can also be used very effectively on heavier crudes including Bunker C using the aforementioned application ratios. The specific ratio will depend on many factors including the composition of the waste, the ambient temperatures, pH of the contaminated water and age of the waste spill. Optimum application ratios should be determined on a case by case basis.

3. Conditions for Use:
Shamantra Green initially behaves like a synthetic sorbent, then encapsulates the oil through a chemical and physical process. Once encapsulated, the spilled oil is captured within the pore matrix contained within the carbon structure.

Shamantra Green is effective in all environments and under a broad range of weather conditions. Depending upon the age, viscosity, and composition of the spilled material, varying amounts of Shamantra Green may be required to obtain complete remediation. Any encapsulated residue can be recovered and disposed of in accordance with all applicable federal, state, and local regulations.

VII. TOXICITY AND EFFECTIVENESS
a. Effectiveness:
Bioremediation Agent Effectiveness Test (40 CFR 300.900), Federal Register September 15, 1994:
Summary Data Table

DAYS	**PRODUCT**	**TOTAL MEAN**	**RED%**	**TOTAL MEAN**	**RED%**
	3 REPS/PROD	**ALKANES (ppm)**	**28 DAYS**	**AROMATICS (ppm)**	**28 DAYS**
0	CONTROL	43,457	0	6,451	0
	NUTRIENT	43,047	0	6,263	0
	PRODUCT	43,153	0	6,262	0

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7	CONTROL	40,943	0	5,283	0
	NUTRIENT	214	0	2,389	0
	PRODUCT	9,859	0	1,338	0
28	CONTROL	39,066	10.1	4,429	31.3
	NUTRIENT	76	99.8	685	89.1
	PRODUCT	122	99.7	297	95.3

Results of Gravimetric Analysis:
Percentage (%) Decrease in Weight of Oil on Day 28

Control	Nutrient	Product
14.4%	0.0%	25.4%

b. Toxicity:
NA

VIII. MICROBIOLOGICAL ANALYSIS
Nutrient Additive:
No special requirements are required other than the product can be stored in dry conditions with an optimum storage temperature of 40°F to 140°F and a maximum storage temperature of 200°F.

IX. PHYSICAL PROPERTIES
NA

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS
NA

ED_001324_00006005-00341

EPA HAS NOT RECEIVED UPDATED CONTACT INFORMATION FOR THIS PRODUCT: 3/23/16

TECHNICAL PRODUCT BULLETIN: B-69
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: OCTOBER 13, 2011
"SUMP SAFE BIO-RECLAIM"

I. NAME, BRAND, OR TRADEMARK
SUMP SAFE BIO-RECLAIM
Type of Product: Bioremediation Agent (Biological Additive/Microbiological Culture)

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Teamwork Distributing
P.O. BOX 2506
Stony Plain, Alberta
T7Z 1X1
Phone: (780) 968-5367 (Plant)
Mobile: (780) 238-2741
Fax: (780) 958-9070
E-mail: marlin@teamwrk.ca
(Mr. Marlin Rudolph)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
PNE Corporation
55 International Way
Longview, WA 98632
Phone: (360) 423-2245
Fax: (360) 423-2272
E-mail: garyh@pnecorp.com
Website: www.pnecorp.com
(Mr. Gary Healea)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable (DOT: Non-hazardous)
2. Ventilation: No special requirements
3. Skin and eye contact; protective clothing; treatment in case of contact: No special equipment or clothing required, however goggles are recommended. If eye or skin irritation occurs, flush with plenty of fresh water.
4.a. Maximum storage temperature: 110°F maximum, must be used within 24 hours from constitution
4.b. Minimum storage temperature: 45°F
4.c. Optimum storage temperature range: 60°F to 90°F
4.d. Temperatures of phase separation and chemical changes: Stable

V. SHELF LIFE

The material must be used within 24-48 hours of constitution of the powdered bacteria portion in water. The dry material must be kept at -20°C and is stable for two years at this temperature. Once sent to the field, the material may be stored on ice for up to two weeks prior to constitution.

VI. RECOMMENDED APPLICATION PROCEDURE

1. Application Method: Product may be applied by the usual methods. For smaller spills a drum pump with sprayer may be used, mixing with fresh water typically. The concentrate is used at 25:1 dilution rate with water and is typically applied at a rate of 6 gallons per cubic meter of soil. It is important that the soil be broken up into small clumps (rototilling is acceptable) to ensure effective application. The soil is left and biodegradation is expected to complete in approximately 12 weeks. Analysis using approved sampling procedures is performed to confirm biodegradation.

For larger volume projects, any auger based soil homogenizer is employed to break up large clumps of soil, which are dug out from the contaminated area using a standard hoe. The broken up soil is taken up a conveyor and has the diluted concentrate (25:1) at a rate of 6 gallons per cubic meter of soil. Piles up to 20 feet high may be formed. The soil is left and biodegradation is expected to be complete in approximately 12-18 weeks. Analysis using approved sampling procedures is performed to confirm biodegradation. Proper safety rules must be employed to ensure that any holes dug out are not accessible to employees or unauthorized personnel.

For oil spills on open water, it is recommended that a 25:1 dilution of the product be applied via spraying. In this way, the bacteria can contact the floating oil and immediately begin to form a bio-film. The spray would also be applied on any soil contaminated on banks, etc. It is important to ensure complete coverage of the water/oily surface and soil during spray application. Degradation will be visible visually and can be confirmed by Fats, Oil and Grease (FOG) analysis.

For smaller, contained volumes of oily water (typically emulsified, white water), it is recommended that sufficient concentrate be added to the contaminated water such that it results in a 2.5% concentration of the concentrate in the contaminated water. Preferably, aeration can be performed, using even a small, fish tank aeration unit. Visual evidence of biodegradation should be apparent within one week or less and can be confirmed by FOG analysis.

2. Concentration/Application Rate: The concentrate is used at 25:1 dilution rate with water and is typically applied at a rate of 6 gallons per cubic meter of soil.

3. Conditions for Use: The product can be used in fresh or salt water and may be applied at temperatures between 40°F and 120°F. However, the product is most effective when applied at water temperatures between 70°F-90°F. Further, the product is effective on fresh spills or aged hydrocarbons. Note for preparation of the product to be applied while in the field: all components listed in the product are packaged as a complete unit and are applied as such. The

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microbial portion of the product is supplied in bags which are either drum (55 gallon) or pail (5 gallon) sizes. Fresh water, if available, is added to fill the bag (bags are placed in pails or open headed drums) to 55 gallon of 5 gallons respectively. Depending upon which of these are being constituted with water, a high-density polyethylene (HDPE) bottle with the appropriate quantity of surfactant is added into the container (bottles are labeled Bio-Reclaim Surfactant – Drum Size (or Pail Size)). In the same way, HDPE containers with appropriate amounts of sodium nitrite are added and are labeled Bio-Reclaim Salt – Drum Size (or Pail Size)).

VII. TOXICITY AND EFFECTIVENESS

a. Effectiveness:

Bioremediation Agent Effectiveness Test (40 CFR 300.900), Federal Register September 15, 1994:

Summary Data Table

DAYS	**PRODUCT**	**TOTAL MEAN**	**RED%**	**TOTAL MEAN**	**RED%**
	3 REPS/PROD	**ALKANES (ppm)**	**28 DAYS**	**AROMATICS (ppm)**	**28 DAYS**
0	CONTROL	40770	0	5229	0
	NUTRIENT	41329	0	5326	0
	PRODUCT	40609	0	5384	0
7	CONTROL	37530	0	4824	0
	NUTRIENT	21788	0	4634	0
	PRODUCT	38354	0	5298	0
28	CONTROL	31456	22.8	3692	24.2
	NUTRIENT	502	98.8	3052	42.7
	PRODUCT	21356	47.4	3742	49.0

Results of Gravimetric Analysis:

Percentage (%) Decrease in Weight of Oil on Day 28

Control	Nutrient	Product
6.36%	33.00%	3.00%

b. Toxicity:

NA

VIII. MICROBIOLOGICAL ANALYSIS

1. Listing of each component of the total formulation, other than microorganisms, by chemical name and percentage by weight: CONFIDENTIAL

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2. Listing of all microorganisms by species and percentages of each species in the composition of the additive: CONFIDENTIAL
3. Optimum pH, temperature, and salinity ranges for use of the additive:
pH: 6-8
Temperature: 90°F
Salinity: Not applicable
3. Minimum and maximum pH, temperature, and salinity levels below or above which the effectiveness of the additive is reduced to half its optimum capacity:
pH: 4.8 – 9
Temperature: 59°F – 104°F
Salinity: Not applicable
4. Special nutrient requirements: A combination of 70 percent live active yeast mixed with 30 percent fine ground corn cob is used as a nutrient. In a 55 gallon drum of concentrate, approximately 1.1 kg of this mix will be found (relative to the 1.1 kg, the actual bacteria represent the negligible mass of several grams). There are no storage requirements for the nutrient portion of the formula; however, as they are in a homogenous mixture with the bacteria, they must be stored as described in Part V of this bulletin.
5. Test results regarding the determination of the presence of the following:
Salmonella: Negative
Fecal coliform: Negative
Shigella: Negative
Staphylococcus Coagulase positive: Negative
Beta hemolytic Streptococci: Negative

IX. PHYSICAL PROPERTIES
NA

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS
NA

ED_001324_00006005-00345

BULLETIN UPDATES IN BOLD

TECHNICAL PRODUCT BULLETIN: B-70
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: FEBRUARY 7, 2013
"WASTE AWAY®"

I. NAME, BRAND, OR TRADEMARK
WASTE AWAY®
Type of Product: Bioremediation Agent (Biological Additive/Microbiological Culture)

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Chem-X International, LLC (aka, CXI)
1100 East Sandy Lake Road
Coppell, Texas 75019
Phone: (972) 471-7775
Fax: (972) 393-2011
E-mail: dhowardcxi@outlook.com
Website: www.cxinternational.com
(Mr. David Howard)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS

Prime-Dirt
20810 Avenue 332
Woodlake, California 93286
Phone: (555) 787-7278
Fax: (555) 787-8560
E-mail: james@prime-dirt.com
Website: www.prime-dirt.com
(Mr. James Henderson)

Microbial Matrix
33935 Highway 99E, Suite B
Tangent, Oregon 97389
Phone: (541) 967-0554
E-mail: lrogers@microbialmatrix.com
Website: www.microbialmatrix.com
(Ms. Lynn Rogers)

Back-To-Nature Compost
P.O. Box 190
5407 Slaton Highway
Slaton, Texas 79364
Phone: (888) 282-2000
Phone: (806) 745-1170
E-mail: greg@backtonaturecompost.com or bj@backtonaturecompost.com
Website: www.backtonaturecompost.com
(Mr. Greg Schilling)

Advanced Biologicals
314 N 7th Street
Clear Lake, Iowa 50428
Phone: (641) 357-0706
E-mail: michael@advancedbiologicalsllc.com or josh@advancedbiologicalsllc.com
Website: www.advancedbiologicalsllc.com
(Mr. Michael O'Brien or Josh O'Brien)

Trans-Environmental Services
740 South I-35 Frontage Road
Valley View, Texas 76272
Phone: (214) 620-6166
Phone: (877) 861-0473
E-mail: mtemplin@transenvironmental.com

Damon Berry
1075 CR 226
Florence, Texas 76527
Phone: (254) 702-3797

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Website: www.trans-environmental.com
(Mr. Mike Templin)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION

1. Flammability: Non-flammable (DOT: Non-hazardous)
2. Ventilation: No special requirements
3. Skin and eye contact; protective clothing; treatment in case of contact: No special equipment or clothing required; however, gloves and goggles are recommended. If eye or skin irritation occurs, flush with plenty of fresh water. If ingested, may cause nausea or vomiting, seek medical attention. Do not induce vomiting. In case of spills, disperse with water, treat like a surfactant or soap spill.
4.a. Maximum storage temperature: 100°F continuous, 120°F up to 5 days
4.b. Minimum storage temperature: 35°F
4.c. Optimum storage temperature range: 50°F to 100°F
4.d. Temperatures of phase separation and chemical changes: Stable

V. SHELF LIFE

Two years when product remains in sealed bottles, poly drums, or totes (as delivered).

VI. RECOMMENDED APPLICATION PROCEDURE

1. Application Method: Product may be applied by any type of liquid delivery system (i.e., boom sprayers, spray pumps). For smaller spills a drum pump with sprayer may be used, mixing with fresh or salt water as required depending on the type and viscosity of oil being treated. Typically containment is not necessary.
2. Concentration/Application Rate:
a. On heavy oils: use product directly on the spill, or up to approximately a 1:10 dilution ratio (product:water). Lighter oils will require a 1:10 to 1:30 product to water ratio. Warmer waters (greater than 78 °F) and/or good agitation during application will require less product.
b. Lagoon application: 2 gallons per surface acre of lagoon or 16 ounces per 3,000 cubic feet. Maintain daily at 50 percent initial application. Use spray applicator for even distribution.
c. Shoreline application: 1 gallon per 10 cubic yards of contaminated soil applied at 3 percent concentration. Maintain weekly with 50 percent initial application. Use spray applicator for even distribution. Till soil after application or use gravity fed drip system.
3. Conditions for Use: Effective in salt water or fresh water, with no limitations as to usage within optimum temperature parameters (application may be made at or above 35°F, with optimum above 48°F). Product may be used on any age crude and any type. Optimum salinity range is from fresh water to salt water of 110 ppt.

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VII. TOXICITY AND EFFECTIVENESS

a. Effectiveness:

Bioremediation Agent Effectiveness Test (40 CFR 300.900), Federal Register September 15, 1994:

Summary Data Table

DAYS	PRODUCT	TOTAL MEAN	RED%	TOTAL MEAN	RED%
	3 REPS/PROD	ALKANES (ppm)	28 DAYS	AROMATICS (ppm)	28 DAYS
0	CONTROL	99715	0	11056	0
	NUTRIENT	94558	0	10228	0
	PRODUCT	98187	0	10270	0
7	CONTROL	54816	0	9690	0
	NUTRIENT	48670	0	9329	0
	PRODUCT	51534	0	6019	0
28	CONTROL	46847	53.0	6452	40.8
	NUTRIENT	3581	96.2	6136	40.0
	PRODUCT	776	99.2	4038	60.7

Results of Gravimetric Analysis:

Percentage (%) Decrease in Weight of Oil on Day 28

Control	Nutrient	Product
6.41%	50.91%	49.95%

b. Toxicity:

Material Tested	Species	LC50 (ppm)
WASTE AWAY®	Menidia beryllina	552,762.06 96-hr
	Mysidopsis bahia	353,302.46 48-hr
No. 2 Fuel Oil	Menidia beryllina	10.22 96-hr
	Mysidopsis bahia	2.11 48-hr
WASTE AWAY® & No. 2 Fuel Oil (1:10)	Menidia beryllina	12.54 96-hr
	Mysidopsis bahia	2.11 48-hr
Reference Toxicant (SLS)	Menidia beryllina	11.87 96-hr
	Mysidopsis bahia	13.29 48-hr

VIII. MICROBIOLOGICAL ANALYSIS

1. Listing of each component of the total formulation, other than microorganisms, by chemical name and percentage by weight: CONFIDENTIAL

ED_001324_00006005-00348

2. Listing of all microorganisms by species and percentages of each species in the composition of the additive: CONFIDENTIAL
3. Optimum pH, temperature, and salinity ranges for use of the additive:
pH: 7.5, range 6.0 to 8.0
Temperature: 72°F, range 60°F to 60°F
Salinity: 40 ppt, range 0 to 110 ppt
3. Minimum and maximum pH, temperature, and salinity levels below or above which the effectiveness of the additive is reduced to half its optimum capacity:
pH: 4.0 – 11.0
Temperature: 40°F – 125°F
Salinity: 0 – 110
4. Special nutrient requirements: Not applicable
5. Test results regarding the determination of the presence of the following:
Salmonella: Negative
Fecal coliform: Negative
Shigella: Negative
Staphylococcus Coagulase positive: Negative
Beta hemolytic Streptococci: Negative

IX. PHYSICAL PROPERTIES
NA

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS
NA

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TECHNICAL PRODUCT BULLETIN: B-71
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: APRIL 7, 2014
"ACT TERRA FIRMA"
(aka, ACT-TF)

I. NAME, BRAND, OR TRADEMARK
ACT TERRA FIRMA
(aka, ACT-TF)
Type of Product: Bioremediation Agent (Biological Additive/Microbiological Culture)

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Franssen Enterprises, Inc.
511 N. McKinley Avenue
Fort Lupton, CO 80621
Phone: (303) 833-5393
Fax: (303) 833-2872
E-mail: actcleaners@comcast.net
Website: www.actcleaners.com
(Mr. Todd Franssen)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
American Cleaning Technologies, Inc.
(ACT BioRemediation Products)
511 N. McKinley Avenue
Fort Lupton, CO 80621
Phone: (303) 833-5393
Phone: (866) 919-2872
Fax: (303) 833-2872
E-mail: actcleaners@comcast.net
Website: www.actcleaners.com
(Mr. Todd Franssen)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable (DOT: Non-hazardous)
2. Ventilation: Standard industrial hygiene ventilation practices should be used to control human exposures to this product. Respiratory protection equivalent to either N100 or the older HEPA filter (APR with a DFM (purple) cartridge) will provide adequate protection.
3. Skin and eye contact; protective clothing; treatment in case of contact: Recommendations are guidelines and may not apply to every situation. To prevent skin contact, standard work clothing and standard work or latex gloves will provide adequate protection. To prevent eye contact, standard safety glasses with side shields are recommended.
4.a. Maximum storage temperature: 48°C continuous, 60°C up to 5 days

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4.b. Minimum storage temperature: -45°C
4.c. Optimum storage temperature range: 4°C to 38°C
4.d. Temperatures of phase separation and chemical changes: Stable

V. SHELF LIFE
Store product in a dry area. If kept in a sealed container with desiccant bag the shelf life is 5 years.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method: Apply ACT TERRA FIRMA directly to surfaces by broadcasting product with a scoop or grass seed drop spreader. DO NOT add fertilizers or nutrients.
2. Concentration/Application Rate:
Hard Surface with Limited Permeability (e.g., concrete, asphalt, stone, etc.): Apply a small amount of ACT TERRA FIRMA with a scoop or grass seed drop spreader to the surface. Using a soft bristle broom spread ACT TERRA FIRMA over the surface. If desired results are not achieved within two weeks repeat application. DO NOT sweep or wash cleaner off. ACT TERRA FIRMA will dissipate over time. One pound covers approximately 100 square feet. DO NOT add fertilizers or nutrients. Prior to application, appropriate containment mechanisms should be used deployed to prevent runoff of the product/oil mixture.

Permeable Surfaces (e.g., packed sand, gravel, or soil; loose, bulk material that may be excavated and stockpiled for treatment): Apply ACT TERRA FIRMA product directly to surfaces by broadcasting product using a scoop or grass seed drop spreader over the contaminated area. Check the contamination levels every 15 days, reapplying as needed. Tilling may be needed for contamination 12 inches or deeper. One pound covers approximately 50 square feet. DO NOT add fertilizers or nutrients. Prior to application, appropriate containment mechanisms should be deployed to prevent runoff of the product/oil mixture.

Applications to Water: ACT TERRA FIRMA is recommended for use in conditions where the water is not actively flowing. Apply to water surface at a rate of one pound over approximately a 200 square foot surface area. Using a scoop or a handheld broadcast spreader to ensure that ACT TERRA FIRMA is dispersed evenly. DO NOT add fertilizers or nutrients.

Conditions for Use: Product usage is not affected by salinity. Water temperature range should be -2°C to 46°C and can be used on frozen water in temperatures as low as -65°C. ACT TERRA FIRMA is best used on contamination levels of 3% to 5% TPH. Contact Act BioRemediation Products for usage on higher contamination levels.

VII. TOXICITY AND EFFECTIVENESS

a. Effectiveness:

Bioremediation Agent Effectiveness Test (40 CFR 300.900), Federal Register September 15, 1994:

Summary Data Table

DAYS	ACT Terra Firma	TOTAL MEAN	RED%	TOTAL MEAN	RED%
	3 REPS/PROD	ALKANES (ppm)	28 DAYS	AROMATICS (ppm)	28 DAYS
0	CONTROL	29,969	0	9,018	0
	NUTRIENT	29,102	0	8,582	0
	ACT TERRA FIRMA	27,685	0	8,240	0
7	CONTROL	24,289	0	6,974	0
	NUTRIENT	18,132	0	6,377	0
	ACT TERRA FIRMA	2,614	0	3,306	0
28	CONTROL	18,909	36.9	4,426	50.8
	NUTRIENT	1,465	94.9	5,609	34.6
	ACT TERRA FIRMA	113	99.6	475	94.2

Results of Gravimetric Analysis:

Percentage (%) Decrease in Weight of Oil on Day 28

Control	Nutrient	ACT Terra Firma
0.0%	17.0%	9.7%

b. Toxicity:

Material Tested	Species	LC50 (ppm)
ACT TERRA FIRMA	Menidia beryllina	223.60 96-hr
	Mysidopsis bahia	74.10 48-hr
No. 2 Fuel Oil	Menidia beryllina	4.24 96-hr
	Mysidopsis bahia	1.99 48-hr
ACT TERRA FIRMA & No. 2 Fuel Oil (1:10)	Menidia beryllina	2.61 96-hr
	Mysidopsis bahia	1.19 48-hr
Reference Toxicant (SLS)	Menidia beryllina	12.25 96-hr
	Mysidopsis bahia	12.27 48-hr

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VIII. MICROBIOLOGICAL ANALYSIS

1. Listing of each component of the total formulation, other than microorganisms, by chemical name and percentage by weight: CONFIDENTIAL
2. Listing of all microorganisms by species and percentages of each species in the composition of the additive: CONFIDENTIAL
3. Optimum pH, temperature, and salinity ranges for use of the additive:
pH: range 4.0 to 9.0
Temperature: range -20°C to 52°C
Salinity: Freshwater 0 to 500 ppm; Ocean Saltwater 35,000 ppm
3. Minimum and maximum pH, temperature, and salinity levels below or above which the effectiveness of the additive is reduced to half its optimum capacity:
pH: 3.0 and 13.0
Temperature: -50°C and 65°C
Salinity: Freshwater and 45,000 ppm
4. Special nutrient requirements: Not applicable. DO NOT add fertilizers or nutrients.
5. Test results regarding the determination of the presence of the following:
Salmonella: Negative
Fecal coliform: Negative
Shigella: Negative
Staphylococcus Coagulase positive: Negative
Beta hemolytic Streptococci: Negative

IX. PHYSICAL PROPERTIES

1. Flash Point: NA
2. Pour Point: NA
3. Viscosity: NA
4. Specific Gravity: 0.8 g/cm^3
5. pH: 7.0 – 12.0
6. Surface Active Agents: CONFIDENTIAL
7. Solvents: NA
8. Additives: CONFIDENTIAL
9. Solubility: <5% (estimated)

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<0.13
Barium	1.30
Cadmium	0.077
Chromium	0.17
Copper	NA
Lead	<0.25
Mercury	<0.00010

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Selenium	0.67
Silver	<0.030
Zinc	NA
Cyanide	NA
Chlorinated Hydrocarbons	NA

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BULLETIN UPDATES IN BOLD

TECHNICAL PRODUCT BULLETIN #M-12
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: AUGUST 31, 1992
REVISED LISTING DATE: SEPTEMBER 13, 1995
"PES-51"

I. NAME, BRAND, OR TRADEMARK
PES-51
Type of Product: Miscellaneous Oil Spill Control Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Practical Environmental Solutions (Formerly known as Petroleum Environmental Services)
P.O. Box 12563
San Antonio, Texas 78212
Phone: (210) 493-7172
Mobile Phone: (210) 875-4011
Fax: (210) 493-7172
E-mail: simsbi@aol.com
E-mail: bill.sims@pes51.com
Website: www.pes51.com
(Mr. Bill Sims)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Practical Environmental Solutions (Formerly known as Petroleum Environmental Services)
P.O. Box 12563
San Antonio, Texas 78212
Phone: (210) 493-7172
Mobile Phone: (210) 875-4011
Fax: (210) 493-7172
E-mail: simsbi@aol.com
E-mail: bill.sims@pes51.com
Website: www.pes51.com
(Mr. Bill Sims)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: 124°F
2. Ventilation: Handle product in a normal well ventilated place.
3. Skin and eye contact; protective clothing; treatment in case of contact: Although PES-51 is expected not to pose any specific health hazard, the following precautions are recommended due to possible irritation from the biological by-products contained in the product: Avoid contact with skin, eyes, and clothing. Avoid prolonged or repeated contact with skin, breathing mist, and

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do not take internally. Keep product away from heat, sparks, and flames, and store in a cool, dry, well ventilated place, away from incompatible materials. Vent container in warm weather to relieve pressure. Do not cut, grind, weld, or drill on or near product containers. Handle empty containers just as would the full ones.
4.a. Maximum storage temperature: NA.
4.b. Minimum storage temperature: NA
4.c. Optimum storage temperature range: NA
4.d. Temperatures of phase separations and chemical changes: Not applicable, but PES-51 freezes at -142°F.

V. SHELF LIFE
6 years (unopened drum), 1 year (opened drum).

VI. RECOMMENDED APPLICATION PROCEDURE
1.Application Method: The following PES-51 application methods are applicable for the full range of PES-51 industrial uses, including shoreline and surface treatment, tank cleaning and equipment decontamination. The selection of the method(s) will be dependent on the level and extent of hydrocarbon contamination, type of oil, and its degree of weathering/emulsion and the nature and type of surface to be treated or cleaned. Equipment availability, logistics and manpower requirements should also be considered. Application methods may be combined, if necessary. In addition, for shoreline cleaning, the treatment area will be boomed and contained prior to PES-51 usage. For equipment decontamination, the use of portable de-con pools or secondary containment liners are recommended.

PORTABLE EQUIPMENT
Hand Held Spraying - Spray PES-51 on the contaminated area using a Chapin Steel Sprayer #1729 (or equivalent), 2.5 gallons capacity, or the AU 8000 MicroNair sprayer. After application, allow 3 to 5 minutes for soaking without allowing evaporation of PES-51 (weather dependent). When saturation is attained, hydrocarbon will be seen running off the impacted surface. Rinse the treated surface with available water (fresh or sea water) from the pump until no hydrocarbon remains. The water should be used at ambient temperature. Depending on level and extent of contamination, a pressure washer may also be used for rinsing (ambient may be used). Collect the effluent hydrocarbons with absorbent booms and pads, and squeeze off the oil contaminants from the booms and pads for reuse as process oil.

Airless Sprayer - Depending on the level and extent of the hydrocarbon contamination and the nature of the impacted surface, an airless type sprayer may be used for direct product application. Common types of airless sprayers are: Airlessco, Graeco or equivalents. These airless sprayers can have single or multi-hose attachments and can include wand extensions as required.

Application rate and pressure will vary depending on the equipment type and site specific conditions. After spraying with PES-51, allow to soak for 3 to 5 minutes (weather dependent) avoiding evaporation, rinse/flush surfaces with pumps, fire hoses, deluge headers or pressure washers (ambient).

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Pressure Washer with Syphon Feed System - Depending on the level and extent of the hydrocarbon contamination and the nature of the impacted surface proposed for treatment, a pressure washer may be used for direct product application. In most applications, hot water (greater than 120°F) is not necessary. Common types of pressure washers are: Hotsy and Lambda, or equivalents. These pressure washers have a variable rate "detergent syphon feed" system for PES-51 application and can have single or multi-hose attachments which can include wand extensions. Application rate and pressure will vary depending on equipment type and site specific conditions.

After spraying with PES-51, allow to soak for 3 to 5 minutes (weather dependent) avoiding evaporation, rinse/flush surfaces with pumps, fire hoses, deluge headers or pressure washers (ambient).

Air Knife (Modified for PES-51 Application) - PES has developed a patent-pending modified air knife system for product application. This method was developed primarily for rocky, cobble, bedrock type shorelines with both surface subsurface oil. The modified air knife delivers the PES-51 in both a liquid stream (125 psi) or as an aerosol. Compressed air is used to dilate subsurface sediments and allow for distribution of the PES-51. The air knife method is also applicable for surface treatment of impacted rocks, bulkheads, seawalls, rip-rap jetties, etc. After spraying with PES-51, allow to soak for 3 to 5 minutes (weather dependent) avoiding evaporation, rinse/flush surfaces with pumps, fire hoses, deluge headers or pressure washers (ambient). For subsurface treatment, continue flushing with large quantities of low-pressure seawater at ambient temperatures.

MOBILE EQUIPMENT

Boat Spraying – The recommended application rate is 1 to 5 gallons per 200 sq. ft., from a boat with speed of 1 to 3 knots, depending on the sea conditions and oil film thickness on the rocks. For a boat with a mounted AU-8110 MicroNair sprayer (or equivalent sprayer) and a spray swath of about 20 feet, traveling at approximately two knots, 25 acres/hr will be treated.
After spraying, rinse PES-51 off the rocks with a hard, coarse spray of sea water. Standard size pumps with fire hoses or deluge headers may be used. Higher pressure rinses may be required if oil is thick and weathered. The shoreline may also be sprayed from the beach side, which will force the oil into the containment boom.

Helicopter Deployed Spraying – Aerial spraying can be utilized for shore treatments and pretreatment with the AU 5000 atomizer (MicroNair) or equivalent sprayer.
The recommended aerial application of PES-51 is 14 to 23 liters/minute. The AU 5000 (or equivalent) can be used with fixed-wing aircraft and helicopters operating at speeds of 90 MPH (145 km/hr) and more. The smaller AU 7000 sprayer (or equivalent) is recommended for use at airspeeds below 90 MPH. After spraying, the hydrocarbons can be rinsed off the shore rocks as described above with hand held pumps, deluge headers or boat spraying.

Vehicular Spraying – The recommended vehicular spraying is 50 to 150 ft^2/gallon depending on climatic conditions. A MicroNair vehicle-mounted sprayer is recommended. This unit is a self-

contained sprayer kit that combines the AU 8000 sprayhead (or equivalent) with a powerful 4-stroke engine and a 60 liter chemical tank to give complete product coverage. After spraying, the hydrocarbons can then be rinsed off the shore rocks as described above with hand held pumps, deluge headers or boat spraying.
2. Concentration/Application Rate: The product comes already mixed, and ready for use. For specific application, see rate of application as indicated above.
3. Conditions for Use: Water temperature and salinity do not affect the product performance. PES-51 is effective against hydrocarbons only, and the age of the hydrocarbon is not relevant.

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity:

Material Tested	Species	LC50 (ppm)
PES-51	Menidia beryllina	137.00 96-hr
	Mysidopsis bahia	54.00 48-hr
No. 2 Fuel Oil	Menidia beryllina	200.00 96-hr
	Mysidopsis bahia	11.50 48-hr
PES-51 &	Menidia beryllina	435.00 96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	14.50 48-hr
Reference Toxicant (DSS)	Menidia beryllina	2.20 96-hr
	Mysidopsis bahia	9.80 48-hr

NOTE: This toxicity data was derived using the concentrated product. See Section VI of this bulletin for information regarding the manufacturer's recommendations for concentrations and application rates for field use.
b. Effectiveness:
NA

VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point: 124°F
2. Pour Point: -50°F at 30 min.
3. Viscosity: 30 cSt at 28°C
4. Specific Gravity: 0.840 at 25°C
5. pH: 6.7
6. Chemical Name and Percentage by Weight of the Total Formulation: CONFIDENTIAL
7. Surface Active Agents: CONFIDENTIAL
8. Solvents: CONFIDENTIAL
9. Additives: CONFIDENTIAL
10. Solubility: NA

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	< 0.005

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Cadmium	< 0.01
Chromium	< 0.05
Copper	< 0.05
Lead	< 0.05
Mercury	< 0.005
Nickel	< 0.01
Zinc	< 0.05
Cyanide	< 1.00
Chlorinated Hydrocarbons	< 0.01

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TECHNICAL PRODUCT BULLETIN #M-17USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: FEBRUARY 25, 1994
REVISED LISTING DATE: JUNE 14, 1995
"CIAGENT"
(formerly CI AGENT, CHEAP INSURANCE, & PETRO-CAPTURE)

I. NAME, BRAND, OR TRADEMARK
CIAGENT (formerly CI AGENT, CHEAP INSURANCE, & PETRO-CAPTURE)
Type of Product: Miscellaneous Oil Spill Control Agent – Solidifier

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
CIAGENT Solutions, LLC
11760 Commonwealth Dr.
Louisville, KY 40299
Phone: (502) 267-0101
(800) 255-6073
Fax: (502) 267-0181
E-mail: dan@ciagent.com
(Mr. Dan Parker)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
CIAGENT Solutions, LLC
11760 Commonwealth Dr.
Louisville, KY 40299
Phone: (502) 267-0101
(800) 255-6073
Fax: (502) 267-0181
E-mail: dan@ciagent.com
(Mr. Dan Parker)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Flammable solid at >210°F.
2. Ventilation: Normal ventilation is adequate.
3. Skin and eye contact; protective clothing; treatment in case of contact: Product may cause slight eye irritation if in contact with eyes. Use protective eye goggles when handling the product. In case of eye contact, flush eyes with water. In an enclosed environment, workers should wear a dust mask for personal comfort. In case of a confined space fire, do not enter without full bunker gear and positive pressure NIOSH approved self-contained breathing apparatus. Maintain fire watch at 450°F.
4.a. Maximum storage temperature: 190°F
4.b. Minimum storage temperature: None
4.c. Optimum storage temperature range: 50°F - 80°F
4.d. Temperatures of phase separations and chemical changes: None. Avoid contact with strong

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oxidizing agents due to possible oxidation reaction with the product.

V. SHELF LIFE
> 5 years, if stored in cool dry area, away from direct sunlight.

VI. RECOMMENDED APPLICATION PROCEDURES
1. Application Method: For small scale spills on water (salt or fresh), CIAGENT can be broadcast directly onto the spill, spreading a thin layer from the outer edge into the middle of the spill. Agitation is not necessary. The product is also available in oil absorbent, water repellant booms and pillows. For large spills on water (fresh or salt), CIAGENT may be deployed with an air or water stream directed at the leading edge of the spill. Because of its fine particulate nature, static buildup may occur if the product is applied in dry form at a high rate of delivery. Dispensing material should be properly grounded to prevent this. The product is relatively non-abrasive and should not harm machinery or pumping systems. Agitation is not necessary.
The polymer has a specific gravity of less than one and will tend to separate and move to the surface when mixed with water. Therefore, in the case of water carrying media, the product should be introduced "just in time" as the media is sprayed, or agitation will be needed to keep the product suspended. The product will remove oils and other hazardous hydrocarbon based materials from fresh or salt water. CIAGENT may be used in a flow-through filter to remediate contaminated water. CIAGENT encapsulates and solidifies the oil, while continuing to float even after saturation. The solidified oil or hazardous material may be removed from water using a vacuum pump or fish net. The material should be put into appropriate containers and disposed of in accordance with federal, state and local regulations. For spills on land, the product would be applied in the same manner as in the water-based spill situation. Agitation is not necessary. To recover solidified oil or hazardous materials from spills on land, the spent material may be collected and swept up using an industrial vacuum cleaner, broom, or shovel. The material should be put into appropriate containers and disposed of in accordance with federal, state and local regulations.
2. Concentration/Application Rate: In general, a 10% to 30% by weight application is required to solidify light, medium, and heavy oils. Solidification may occur faster if additional CIAGENT is applied.
3. Conditions for Use: CIAGENT is equally effective in fresh or salt water, and under any weather conditions; however, colder temperatures may slow the solidification process. The product is most effective on water temperatures between 32°F and 120°F. Depending on the age and/or viscosity of the material, varying amounts of CIAGENT may be required to obtain complete solidification. The recovered solidified oil or hazardous materials may be landfilled, incinerated, used as a secondary fuel, or otherwise disposed of according to federal, state and local regulations.

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VII. TOXICITY AND EFFECTIVENESS

a. Toxicity

Material Tested	Species	LC50 (ppm)
CIAGENT	Menidia beryllina	2227.00 96-hr
	Mysidopsis bahia	2617.00 48-hr
No. 2 Fuel Oil	Menidia beryllina	4.36 96-hr
	Mysidopsis bahia	1.45 48-hr
CIAGENT &	Menidia beryllina	5.93 96-hr
No. 2 Fuel (1:10)	Mysidopsis bahia	1.73 48-hr
Reference Toxicant (DSS)	Menidia beryllina	3.68 96-hr
	Mysidopsis bahia	6.82 48-hr

NOTE: This toxicity data was derived using the concentrated product. See Section VI of this bulletin for information regarding the manufacturer's recommendations for concentrations and application rates for field use.

b. Effectiveness:

NA

IX. PHYSICAL PROPERTIES AND COMPONENTS

1. Flash Point: No flash observed at 210EF.
2. Pour Point: Not applicable; solid samples
3. Viscosity: Not applicable; solid samples
4. Specific Gravity: 0.94 g/cm3
5. pH: 7.81
6. Chemical Name and Percentage by Weight of the Total Formulation: CONFIDENTIAL
7. Surface Active Agents: None
8. Solvents: None
9. Additives: None
10. Solubility: Negligible

X. ANALYSIS FOR HEAVY METALS AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<1.0
Cadmium	<2.5
Chromium	<2.0
Copper	<2.5
Lead	<5.0
Mercury	<0.050
Nickel	<5.0
Zinc	<2.5
Cyanide	<0.50
Chlorinated Hydrocarbons	ND

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BULLETIN UPDATES IN BOLD

TECHNICAL PRODUCT BULLETIN #M-18
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: MARCH 29, 1994
REVISED LISTING DATE: MARCH 12, 1997
"ZYME-FLOW"
(aka, ZYME-TREAT, MARI-ZYME, UNITED 658 PETRO-ZYME)

I. NAME, BRAND, OR TRADEMARK
ZYME-FLOW
(aka, ZYME-TREAT, MARI-ZYME, UNITED 658 PETRO-ZYME)Type of Product: Miscellaneous Oil Spill Control Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
United Laboratories, Inc.
320 37th Avenue
St. Charles, IL 60174
Phone: (630) 377-0900 **x7408** or (800) 323-2594
Fax: (630) 377-0960
E-mail: nsherrel@unitedlabsinc.com
(Ms. Nancy Sherrel)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
United Laboratories, Inc.
320 37th Avenue
St. Charles, IL 60174
Phone: (630) 377-0900 **x7408** or (800) 323-2594
Fax: (630) 377-0960
E-mail: nsherrel@unitedlabsinc.com
(Ms. Nancy Sherrel)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable
2. Ventilation: No mechanical ventilation required
3. Skin and eye contact; protective clothing; treatment in case of contact: Avoid eye contact due to possible mild eye irritation. In case of eye contact, flush eyes with water. Protective clothing is normally not required.
4.a. Maximum storage temperature: 120°F
4.b. Minimum storage temperature: 0°F
4.c. Optimum storage temperature range: 0°F - 120°F
4.d. Temperatures of phase separations and chemical changes: > 3 freeze-thaw cycles.

ED_001324_00006005-00363

V. SHELF LIFE
1 year minimum.

VI. RECOMMENDED APPLICATION PROCEDURE
1.Application Method: United's ZYME-FLOW is a chemically designed product that will make heavy crudes more pumpable, and break the adhesion between oils and soil, rock or sand. ZYME-FLOW can be applied where the contaminated soil or sand is temporarily removed and placed into a device that can provide mechanical agitation (e.g., a cement mixer or a fractionating tank). Unagitated tanks may also be used, but more time will be required to achieve the goal.

Add ZYME-FLOW solution to the tank. As agitation continues, oils with a specific gravity of less than one will float, while oils with a specific gravity of greater than one will settle.
The floating or settled oil can then be removed from the soil or sand. As ZYME-FLOW will not emulsify oils, the recovered oils are almost anhydrous, and the water can be collected and reused.
Another method is to physically isolate a small area that is to be cleaned with damming collars, sand bags or other means on the sides and a none permeable layer on the bottom (if possible). Then wash the contaminated area with ZYME-FLOW solution using a pressurized water stream. Keep the area super-saturated with water for several hours to allow oil residues to float to the surface for collection.

ZYME-FLOW can be used to wash the inside or outside of a ship or barge that has been contaminated with oil, using a high pressure sprayer. Bilges of a ship, or barge can also be cleaned using a 1% ZYME-FLOW solution, and allowing the natural movement of the ship to provide the agitation.
2. Concentration/Application Rate: The exact dilution of ZYME-FLOW will vary between 50:1 and 200:1 depending on temperature, viscosity and type of petroleum product.
3. Conditions for Use: ZYME-FLOW is effective in all non-frozen waters with greater efficacy as the temperature increases. The product efficiency is not affected by salinity, but it will be affected by tar sand.

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity:

Material Tested	Species	LC50 (ppm)
ZYME-FLOW	Menidia beryllina	35.00 96-hr
	Mysidopsis bahia	26.00 48-hr
No. 2 Fuel Oil	Menidia beryllina	6.90 96-hr
	Mysidopsis bahia	3.70 48-hr
ZYME-FLOW &	Menidia beryllina	8.70 96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	1.60 48-hr
Reference Toxicant (SDS)	Menidia beryllina	7.07 96-hr
	Mysidopsis Bahia	18.60 48-hr

ED_001324_00006005-00364

NOTE: This toxicity data was derived using the concentrated product. See Section VI of this bulletin for information regarding the manufacturer's recommendations for concentrations and application rates for field use.
b. Effectiveness:
NA

IX. PHYSICAL PROPERTIES
1. Flash Point: None
2. Pour Point: 32°F
3. Viscosity: <10 cps
4. Specific Gravity: 0.99
5. pH: 7.0 - 8.0
6. Chemical Name and Percentage by Weight of the Total Formulation: CONFIDENTIAL
7. Surface Active Agents: CONFIDENTIAL
8. Solvents: NA
9. Additives: CONFIDENTIAL
10. Solubility: Soluble

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	0.005
Cadmium	0.002
Chromium	0.002
Copper	0.020
Lead	0.007
Mercury	0.0004
Nickel	0.070
Zinc	0.040
Cyanide	0.300
Chlorinated Hydrocarbons	<1.00

ED_001324_00006005-00365

EPA HAS NOT RECEIVED UPDATED CONTACT INFORMATION FOR THIS PRODUCT: 3/23/16

TECHNICAL PRODUCT BULLETIN #M-19
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: APRIL 22, 1996
"WASTE-SET #3200®"

I. NAME, BRAND, OR TRADEMARK
WASTE-SET #3200®
Type of Product: Miscellaneous Oil Spill Control Agent – Oil Spill Solidifying Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER
Environmental & Fire Technology, LLC
3374 West River Dr. NW
Grand Rapids, MI 49544
(Mr. Cal Blystra)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Environmental & Fire Technology, LLC
3374 West River Dr. NW
Grand Rapids, MI 49544
(Mr. Cal Blystra)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Product will not burn unless preheated. Avoid elevated temperatures (>200°F) for extended periods (>5 days).
Product has a tendency to accumulate a static charge during transport, which is a potential fire hazard if used near flammables.
2. Ventilation: Avoid generating dust clouds.
3. Skin and eye contact; protective clothing; treatment in case of contact: May cause mild mechanical irritation to eyes, skin and respiratory tract. Dust may cause coughing and watery eyes. Pre-existing eye, skin and respiratory disorders may be aggravated by this product. Wear NIOSH-approved respirator to prevent overexposure. Refer to transitional occupational exposure limits established by OSHA in 29CFR 1910.1000. Flush eyes with water; wash skin with soap and water; if molten, treat as for burns. Remove person(s) to fresh air if excessive amounts of dust have been inhaled. Protective gloves and safety glasses should be worn.
If material is released or spilled, sweep up or vacuum and place in an approved container.
4.a. Maximum storage temperature: 200°F
4.b. Minimum storage temperature: None
4.c. Optimum storage temperature range: <200°F
4.d. Temperatures of phase separations and chemical changes: >450°F

V. SHELF LIFE

Unlimited.

VI. RECOMMENDED APPLICATION PROCEDURE
1.Application Method:
Spills on Water - For spills on water, surround the spill with WASTE-SET® 3200 to prevent migration. Reinforce containment line with a boom or sweep if necessary. WASTE-SET® and the resulting reacted material will float.

If the interior of the diked spill is not to be reclaimed, fill in the remaining surface area of the spill by broadcasting additional WASTE-SET® 3200 evenly over the spill until the WASTE-SET® no longer reacts with the spill. Alternatively, the product may be introduced under the surface of the spill to rise and react with oils in the suspension layer.
WASTE-SET® can then be swept or netted from the surface of the water.
Spills on Hard Surfaces - For spills on hard surfaces, apply WASTE-SET 3200® heavily to perimeter of spill to prevent migration. After surrounding the spill, reinforcement of the containment line thus formed with a boom or sweep may be advisable depending on the volume and flow rate.

If the interior of the diked spill is not to be reclaimed, fill in the remaining surface of the spilled material by evenly distributing additional WASTE-SET 3200® until the WASTE-SET® no longer reacts with the spill and remains white and on the surface.

Disposal - Dispose of reacted material in accordance with local, state, and federal regulation. Under the EPA Toxicity Characteristic Leaching Procedures (TCLP), WASTE-SET encapsulated material may be eligible for disposal in landfills. Incineration results in extremely low ash content. Dependent upon the nature of the encapsulated material, it may also be disposed of by incorporation into synthetic surfaces such as asphalt.

WASTE-SET® will effectively "encapsulate" crude oil and petroleum-based products, such as gasoline, kerosene, and diesel fuel; in addition to the various following liquid and vapor-phase contaminants:

Aliphatic hydrocarbons	Esters
Aromatic hydrocarbons	Ethers
Chlorinated hydrocarbons	Ketones
Alcohols	Other hydrocarbons

2. Concentration/Application Rate: One pound WASTE-SET® per five pounds of oil (May vary with viscosity and temperature).
3. Conditions for Use: No limitations.

ED_001324_00006005-00367

VII. TOXICITY AND EFFECTIVENESS

a. Toxicity

Material Tested	Species	LC50 (ppm)	
WASTE-SET 3200®	Menidia beryllina	>10000.0	96-hr
	Mysidopsis bahia	5431.0	48-hr
No. 2 Fuel Oil	Menidia beryllina	274.0	96-hr
	Mysidopsis bahia	29.0	48-hr
WASTE-SET 3200® &	Menidia beryllina	552.0	96-hr
No. 2 Fuel Oil	Mysidopsis bahia	58.0	48-hr
Reference Toxicant (SDS)	Menidia beryllina	1.8	96-hr
	Mysidopsis bahia	4.9	48-hr

NOTE: This toxicity data was derived using the concentrated product. See Section VI of this bulletin for information regarding the manufacturer's recommendations for concentrations and application rates for field use.

b. Effectiveness:

NA

VIII. MICROBIOLOGICAL ANALYSIS

NA

IX. PHYSICAL PROPERTIES

1. Flash Point: No flash observed at 310°F
2. Pour Point: NA
3. Viscosity: NA
4. Specific Gravity: 0.94
5. pH: NA
6. Chemical Name and Percentage by Weight of the Total Formulation: CONFIDENTIAL
7. Surface Active Agents: NA
8. Solvents: None
9. Additives: None
10. Solubility: Insoluble

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	ND
Cadmium	ND
Chromium	0.44
Copper	0.98
Lead	0.08
Mercury	ND
Nickel	0.38
Zinc	3.1
Cyanide	ND
Chlorinated Hydrocarbons	ND

ED_001324_00006005-00368

EPA HAS NOT RECEIVED UPDATED CONTACT INFORMATION FOR THIS PRODUCT: 3/23/16

TECHNICAL PRODUCT BULLETIN #M-20
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: APRIL 22, 1996
"WASTE-SET #3400®"

I. NAME, BRAND, OR TRADEMARK
WASTE-SET #3400®
Type of Product: Miscellaneous Oil Spill Control Agent – Oil Spill Solidifying Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER
Environmental & Fire Technology, LLC
3374 West River Dr. NW
Grand Rapids, MI 49544
(Mr. Cal Blystra)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Environmental & Fire Technology, LLC
3374 West River Dr. NW
Grand Rapids, MI 49544
(Mr. Cal Blystra)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Product will not burn unless preheated. Avoid elevated temperatures (>200°F) for extended periods (>5 days). Product has a tendency to accumulate a static charge during transport, which is a potential fire hazard if used near flammables.
2. Ventilation: Avoid generating dust clouds.
3. Skin and eye contact; protective clothing; treatment in case of contact: May cause mild mechanical irritation to eyes, skin and respiratory tract. Dust may cause coughing and watery eyes. Pre-existing eye, skin and respiratory disorders may be aggravated by this product. Wear NIOSH-approved respirator to prevent overexposure. Refer to transitional occupational exposure limits established by OSHA in 29CFR 1910.1000. Flush eyes with water; wash skin with soap and water; if molten, treat as for burns. Remove person(s) to fresh air if excessive amounts of dust have been inhaled. Protective gloves and safety glasses should be worn.
If material is released or spilled, sweep up or vacuum and place in an approved container.
4.a. Maximum storage temperature: 200°F
4.b. Minimum storage temperature: None
4.c. Optimum storage temperature range: <200°F
4.d. Temperatures of phase separations and chemical changes: >450°F

V. SHELF LIFE

ED_001324_00006005-00369

Unlimited.

VI. RECOMMENDED APPLICATION PROCEDURE

1. Application Method:

Spills on Water – For spills on water, surround the spill with WASTE-SET® 3400 to prevent migration. Reinforce containment line with a boom or sweep if necessary. WASTE-SET® and the resulting reacted material will float. If the interior of the diked spill is not to be reclaimed, fill in the remaining surface area of the spill by broadcasting additional WASTE-SET 3400® evenly over the spill until the WASTE-SET® no longer reacts with the spill. Alternatively, the product may be introduced under the surface of the spill to rise and react with oils in the suspension layer. WASTE-SET® can then be swept or netted from the surface of the water.

Spills on Hard Surfaces – For spills on hard surfaces, apply WASTE-SET® 3400 heavily to perimeter of spill to prevent migration. After surrounding the spill, reinforcement of the containment line thus formed with a boom or sweep may be advisable depending on the volume and flow rate. If the interior of the diked spill is not to be reclaimed, fill in the remaining surface of the spilled material by evenly distributing additional WASTE-SET® 3400 until the WASTE-SET® no longer reacts with the spill and remains white and on the surface.

Disposal – Dispose of reacted material in accordance with local, state, and federal regulation. Under the EPA Toxicity Characteristic Leaching Procedures (TCLP), WASTE-SET® encapsulated material may be eligible for disposal in landfills. Incineration results in extremely low ash content. Dependent upon the nature of the encapsulated material, it may also be disposed of by incorporation into synthetic surfaces such as asphalt.

WASTE-SET® will effectively "encapsulate" crude oil and petroleum-based products, such as gasoline, kerosene, and diesel fuel; in addition to the various following liquid and vapor-phase contaminants:

Aliphatic hydrocarbons	Esters
Aromatic hydrocarbons	Ethers
Chlorinated hydrocarbons	Ketones
Alcohols	Other hydrocarbons

2. Concentration/Application Rate: One pound WASTE-SET® per five pounds of oil (May vary with viscosity and temperature).

3. Conditions for Use: No limitations.

VII. TOXICITY AND EFFECTIVENESS

a. Toxicity

Material Tested	Species	LC50 (ppm)
WASTE-SET 3400®	Menidia beryllina	>10000.0 96-hr
	Mysidopsis bahia	>10000.0 48-hr
No. 2 Fuel Oil	Menidia beryllina	274.0 96-hr
	Mysidopsis bahia	29.0 48-hr
WASTE-SET 3400® &	Menidia beryllina	442.0 96-hr
No. 2 Fuel Oil	Mysidopsis bahia	36.0 48-hr

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Reference Toxicant (SDS)	Menidia beryllina	1.8	96-hr
	Mysidopsis bahia	4.9	48-hr

NOTE: This toxicity data was derived using the concentrated product. See Section VI of this bulletin for information regarding the manufacturer's recommendations for concentrations and application rates for field use.

b. Effectiveness:

NA

VIII. MICROBIOLOGICAL ANALYSIS

NA

IX. PHYSICAL PROPERTIES

1. Flash Point: No flash observed at 350°F
2. Pour Point: NA
3. Viscosity: NA
4. Specific Gravity: 0.91
5. pH: NA
6. Chemical Name and Percentage by Weight of the Total Formulation: CONFIDENTIAL
7. Surface Active Agents: NA
8. Solvents: None
9. Additives: None
10. Solubility: Insoluble

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	ND
Cadmium	ND
Chromium	0.41
Copper	0.97
Lead	0.08
Mercury	ND
Nickel	3.3
Zinc	4.0
Cyanide	ND
Chlorinated Hydrocarbons	ND

ED_001324_00006005-00371

TECHNICAL PRODUCT BULLETIN #M-22
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: FEBRUARY 27, 1998
REVISED LISTING DATE: OCTOBER 5, 1998
"PX-700™"

I. NAME, BRAND, OR TRADEMARK
PX-700™
Type of Product: Miscellaneous Oil Spill Control Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Enviro-Tech
1907 Southwest 47th Street
Cape Coral, FL 33914
Phone: (239) 997-6300
Fax: (239) 549-8550
Website: www.px700.com
E-mail: info@envirotechofamerica.com
(Mr. Charlie Jones)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Enviro-Tech
1907 Southwest 47th Street
Cape Coral, FL 33914
Phone: (239) 997-6300
Fax: (239) 549-8550
Website: www.px700.com
E-mail: info@envirotechofamerica.com
(Mr. Charlie Jones)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Not flammable; no special precautions necessary.
2. Ventilation: None required; no vapor emissions at normal temperatures, summer and winter.
3. Skin and eye contact; protective clothing; treatment in case of contact: Product contains a surfactant; avoid prolonged skin contact. Mild eye irritant; in case of eye contact, flush with copious amounts of water. No protective clothing required. Contact treatment is to flush with water. Product is acidic (pH 3.5-4.0). Eye protection is recommended as a precaution against splashing.
4.a. Maximum storage temperature: 120°F
4.b. Minimum storage temperature: 30°F
4.c. Optimum storage temperature range: 65°F - 85°F
4.d. Temperatures of phase separations and chemical changes: Separation may occur after 3 months. Separation will not affect product performance.

ED_001324_00006005-00372

V. SHELF LIFE
Two years.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method: To remove oily sheen from areas surrounding an oil spill, spray undiluted PX-700™ directly over area at an application rate of one gallon for every 900 to 1200 square feet of surface area. Dilute PX-700™ 25:1 for cleaning equipment and other surfaces. Either spray or immerse equipment, as applicable. Dilute PX-700™ 50:1 for immersing wildlife to remove oil.
2. Concentration/Application Rate: At normal temperatures product is free flowing and applied full strength to remove oily sheen from aquatic environments, soils, and wastewater.
3. Conditions for Use: Water salinity, water temperature, types and ages of pollutants. Do not allow product to freeze, as separation may occur. Product may work more slowly at low temperatures. At full strength or diluted with fresh water, product will have a specific gravity lower than sea water and should float. Use of PX-700™ should aid skimming and other conventional oil recovery operations.

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity

Material Tested	Species	LC50 (ppm)
PX-700™	Menidia beryllina	380.00 96-hr
	Mysidopsis bahia	297.00 48-hr
No. 2 Fuel Oil	Menidia beryllina	7.07 96-hr
	Mysidopsis bahia	1.89 48-hr
PX-700™	Menidia beryllina	5.65 96-hr
& No. 2 Fuel Oil (1:10)	Mysidopsis bahia	2.77 48-hr
Reference Toxicant (DDS)	Menidia beryllina	6.16 96-hr
	Mysidopsis bahia	23.00 48-hr

NOTE: This toxicity data was derived using the concentrated product. See Section VI of this bulletin for information regarding the manufacturer's recommendations for concentrations and application rates for field use.
b. Effectiveness
NA

VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point: Not flammable
2. Pour Point: 30°F
3. Viscosity: Equivalent to water
4. Specific Gravity: 1.0
5. pH: 3.5 to 4.0 standard units

ED_001324_00006005-00373

6. Chemical Name and Percentage by Weight of the Total Formulation: CONFIDENTIAL
7. Surface Active Agents: Less than 5% Cocamide
8. Solvents: None
9. Additives: Citric acid for pH control
10. Solubility: 100% soluble

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	0.47
Cadmium	ND
Chromium	ND
Copper	0.14
Lead	ND
Mercury	ND
Nickel	ND
Zinc	0.77
Cyanide	ND
Chlorinated Hydrocarbons	CONFIDENTIAL

ED_001324_00006005-00374

TECHNICAL PRODUCT BULLETIN #M-23
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: NOVEMBER 23, 1998
"ALSOCUP"

I. NAME, BRAND, OR TRADEMARK
ALSOCUP
Type of Product: Miscellaneous Oil Spill Control Agent – Solidifier

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
REVCOM Associates
1550 Rimpau Avenue #53
Corona, CA 92881
Phone: (951) 737-0104
E-mail: revcom@sbcglobal.net
(Mr. Dave Naylor, President)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Marketed under trade name:
"Oil Lift Super Absorbent"

Environmental Building Science, Inc.
100-9200 Van Horne Way
Richmond, British Columbia
V6Z 1W3 Canada
Website: www.oillift.net
Phone: (866) 543-8645
Phone: (604) 279-9994
Fax: (604) 279-9934
(Mr. Kevin Daum)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: NA
2. Ventilation: NA
3. Skin and eye contact; protective clothing; treatment in case of contact: ALSOCUP is practically non-irritating to the eyes and is non-irritating to the skin. Safety glasses and protective clothing should be worn when applying the material. The product is not expected to cause irritation to the nose, throat, or respiratory tract.
4.a. Maximum storage temperature: 163°F
4.b. Minimum storage temperature: 0°F
4.c. Optimum storage temperature range: 0°F to 163°F
4.d. Temperatures of phase separations and chemical changes: NA

ED_001324_00006005-00375

V. SHELF LIFE
ALSOCUP has a shelf life of five years.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method: ALSOCUP is used to collect petroleum-based products spilled on water or land. When ALSOCUP comes into contact with a petroleum product it chemically bonds and traps the petroleum. Once captured, spilled product cannot be released from ALSOCUP. ALSOCUP does not absorb water and will not sink. The product can be collected by skimming with pumps or mechanical devices.
2. Concentration/Application Rate: ALSOCUP is used by applying one pound of product to each 10 pounds of spilled petroleum products.
3. Conditions for Use: Water temperature does not appear to affect the ability of ALSOCUP to collect petroleum products. Heavy seas may prevent containment of an oil spill, and the product would lose efficiency if the oil product dispersed. Booms and dams that contain the petroleum product into an area are most effective when using ALSOCUP. In water the motion of the sea will mix the product with oil. On land a mechanical means is necessary to combine the oil with ALSOCUP. ALSOCUP will collect petroleum products at any stage; however, it is most effective early in the spill before dispersion.

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity:
ALSOCUP is a non-toxic substance. The product is generally considered to have a low order of acute oral toxicity.

Material Tested	Species	LC50 (ppm)	
ALSOCUP	Menidia beryllina	>100	96-hr
	Mysidopsis bahia	>100	48-hr
No. 2 Fuel Oil	Menidia beryllina	8.1	96-hr
	Mysidopsis bahia	3.9	48-hr
ALSOCUP & No. 2 Fuel Oil (1:10)	Menidia beryllina	14.0	96-hr
	Mysidopsis bahia	10.0	48-hr
Reference Toxicant (DSS)	Menidia beryllina	NA	
	Mysidopsis bahia	NA	

VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point: NA
2. Pour Point: NA
3. Viscosity: NA
4. Specific Gravity: NA
5. pH: NA
6. Surface Active Agents: NA
7. Solvents: NA

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8. Additives: NA
9. Solubility in Water: NA

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	0.0211
Cadmium	0.090
Chromium	0.456
Copper	0.445
Lead	0.454
Mercury	0.00492
Nickel	0.474
Zinc	0.433
Cyanide	ND
Chlorinated Hydrocarbons	NA

ED_001324_00006005-00377

TECHNICAL PRODUCT BULLETIN #M-24
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: JANUARY 26, 2001
"RAPIDGRAB 2000™"

I. NAME, BRAND, OR TRADEMARK
RAPIDGRAB 2000™
Type of Product: Miscellaneous Oil Spill Control Agent – Solidifier

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
GlobeMark Resources Ltd.
1312 Mill Creek Drive
Salado, TX 76517
Mobile: (254) 231-2251
E-mail: joannie@globemarkresources.com or fiddler656@gmail.com
Website: www.globemarkresources.com
(Ms. Joannie Docter)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
GlobeMark Resources Ltd.
1312 Mill Creek Drive
Salado, TX 76517
Mobile: (254) 231-2251
E-mail: joannie@globemarkresources.com or fiddler656@gmail.com
Website: www.globemarkresources.com
(Ms. Joannie Docter)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: IMO - Non-flammable; DOT - Non-hazardous
2. Ventilation: Use with ventilation equal to unobstructed outdoors in a moderate breeze.
3. Skin and eye contact; protective covering; treatment in case of contact: Avoid skin and clothing contact. If skin contact occurs, immediately wash with large amounts of water and soap (if possible). Remove any contaminated clothing or shoes. Launder before reusing. If irritation persists, seek medical assistance. For areas where contact is likely, wear long sleeve shirt, chemical resistant gloves, and chemical resistant goggles.
4.a. Maximum storage temperature: 120°F
4.b. Minimum storage temperature: 0°F
4.c. Optimum storage temperature range: 32°F to 90°F
4.d. Temperatures of phase separations and chemical changes: None

V. SHELF LIFE
The shelf life of unopened drums of RAPIDGRAB 2000™ is unlimited. Containers should be capped when not being used to prevent contamination and evaporation.

ED_001324_00006005-00378

VI. RECOMMENDED APPLICATION PROCEDURE

1.Application Method: RAPIDGRAB 2000™ is a non-ionic liquid formulation that may be effectively applied by mist spraying onto floating oil slicks and sheens that are often found in harbors and at sea as the result of oil leakage and spills from ships. It instantly reduces and confines floating oils by the oleophitic synergistic effect of contraction and congealment into a physical state that greatly simplifies cleanup operations. Oil slicks and sheens may be reduced by up to 1,000 percent or more. The broad temperature range for RAPIDGRAB 2000™ sprays are from 32°F to 120°F.

Aerial Spraying - Typical application altitudes of 30 to 50 feet are advised although higher altitudes may be used if condition warrant. Spray nozzle should be about ¼ inches in diameter at 104 knots or more to create enough air shear sufficient to break the RAPIDGRAB 2000™ into proper sized droplets. A ½-inch diameter nozzle may be needed for temperatures below 50°F.

Boat Spraying - Mist sprays may be applied from shipboard by power "foggers."

2. Concentration/Application Rate: RAPIDGRAB 2000™ should be mist sprayed full strength on surface oil until sufficient herding results are achieved. Results will vary depending on oil type, temperature, wave action, and viscosity.

3. Conditions for Use: RAPIDGRAB 2000™ is designed to be used after oil has been contained by booms or other similar apparatus. Timely treatment with RAPIDGRAB 2000™, even at low application rates, can help to contain the sheen/spreading effect of the oil slick.

VII. TOXICITY AND EFFECTIVENESS

a. Toxicity

Material Tested	Species	LC50 (ppm)
RAPIDGRAB 2000™	Menidia beryllina	5.13 96-hr
	Mysidopsis bahia	2.29 48-hr
No. 2 Fuel Oil	Menidia beryllina	9.34 96-hr
	Mysidopsis bahia	3.12 48-hr
RAPIDGRAB 2000™ &	Menidia beryllina	4.07 96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	2.60 48-hr
Reference Toxicant (SRTT)	Menidia beryllina	2.97 96-hr
	Mysidopsis bahia	6.71 48-hr

b. Effectiveness:

NA

VIII. MICROBIOLOGICAL ANALYSIS

NA

IX. PHYSICAL PROPERTIES

1. Flash Point: 110°C
2. Pour Point: 30°F
3. Viscosity: 20.2

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4. Specific Gravity: 0.84
5. pH: 6.95
6. Surface Active Agents: Oleophitic surfactant
7.Solvents: Proprietary formulation oleophitic surfactants
8. Additives: None
9.Solubility in Water: Miscible in oil and solvents

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	ND
Cadmium	ND
Chromium	ND
Copper	ND
Lead	ND
Mercury	<0.1
Nickel	ND
Zinc	ND
Cyanide	2.8
Chlorinated Hydrocarbons	ND

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TECHNICAL PRODUCT BULLETIN #M-25
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: NOVEMBER 9, 2006
"OIL SOLUTIONS POWDER"
(aka, AQUA N-CAP™ POLYMER)

I. NAME, BRAND, OR TRADEMARK
OIL SOLUTIONS POWDER
(aka, AQUA N-CAP™ POLYMER)
Type of Product: Miscellaneous Oil Spill Control Agent – Solidifier

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Oil Solutions International
35 Mill Street
Amityville, NY 11701
Phone: (631) 608-8889
Fax: (631) 789-1676
E-mail: 4oilgreen@gmail.com
Website: www.cleaningupoil.com
(Mr. Dennis J. Traina, President)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Oil Solutions International
35 Mill Street
Amityville, NY 11701
Phone: (631) 608-8889
Fax: (631) 789-1676
E-mail: 4oilgreen@gmail.com
Website: www.cleaningupoil.com
(Mr. Dennis J. Traina, President)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable
2. Ventilation: Work in a well-ventilated area. Avoid excessive inhalation of dust.
3. Skin and eye contact; protective covering; treatment in case of contact: Skin contact – No recommendation is made specifying the need for personal protective clothing to prevent skin contact. Person(s) should wash daily at the end of each work shift. Exposed areas should be thoroughly washed with water. Eye contact – Product may cause irritation as any normal dust. Wear appropriate eye protection, compliant with ANSI Standard Z87.1, to prevent eye contact. If eye irritation or redness is experienced, promptly wash eyes with large amounts of water, for at least 15 minutes, occasionally lifting the lower and upper lids. Should eye irritation persist, seek medical attention immediately. Contact lenses should not be worn when working with this product. Inhalation – Wear appropriate respiratory protection, compliant with OSHA standard 29

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CFR 1910.134, to prevent inhalation. If a respiratory disorder is observed, remove person(s) from the work area immediately. Should respiratory disorder persist, seek medical attention immediately. Ingestion – Rinse mouth with water and seek medical attention immediately.
4.a. Maximum storage temperature: 185°F
4.b. Minimum storage temperature: NA
4.c. Optimum storage temperature range: 185°F
4.d. Temperatures of phase separations and chemical changes: None. Polymer may accumulate static charge during transport, handling, and processing. Static charge can be a potential fire hazard in the presence of volatile or flammable materials or in high airborne dust conditions.

V. SHELF LIFE
Not limited.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method: Apply OIL SOLUTIONS POWDER along the outer edges of spill area to prevent spill migration. Proceed by applying product onto remaining spill area, until a light white excess of product is observed. OIL SOLUTIONS POWDER may be broadcast onto the spill by hand or with a mechanical blower. Lighter hydrocarbons and synthetic oils will clump into a soft cluster like material easily recoverable with a net or other means as appropriate.
2. Concentration/Application Rate: Apply OIL SOLUTIONS POWDER at a rate of 0.5 to 2 lbs per gallon of spilled hydrocarbon. Depending on the type of hydrocarbon and recovery operations employed, more or less product may be used to achieve recoverable solid mat/residue. Allow approximately 30 – 60 minutes of contact time, product will form an elastic or rubber-like mat material. Mat like material may be removed whole or segmented as appropriate.
3. Conditions for Use: OIL SOLUTIONS POWDER differs from traditional sorbents in that it initially behaves like a synthetic sorbent, then as a solidifier as the molecular microencapsulating process occurs. Once encapsulated, the spilled oil is captured within the polymer matrix. OIL SOLUTIONS POWDER is designed to cleanup a wide variety of crude oil, refined hydrocarbon products (i.e., fuels, oils, hydraulic fluids), and synthetic fluids spilled on water and surfaces.

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity

Material Tested	Species	LC50 (ppm)	
OIL SOLUTIONS POWDER	Menidia beryllina	484,000	96-hr
	Mysidopsis bahia	104,000	48-hr
No. 2 Fuel Oil	Menidia beryllina	15.80	96-hr
	Mysidopsis bahia	1.45	48-hr
OIL SOLUTIONS POWDER &	Menidia beryllina	22.50	96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	2.13	48-hr
Reference Toxicant (SRTT)	Menidia beryllina	3.65	96-hr
	Mysidopsis bahia	9.55	48-hr

b. Effectiveness:
NA

VIII. MICROBIOLOGICAL ANALYSIS

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NA

IX. PHYSICAL PROPERTIES
1. Flash Point: 230°F
2. Pour Point: NA
3. Viscosity: NA
4. Specific Gravity: 0.91
5. pH: 4.08
6. Surface Active Agents: NA
7. Solvents: NA
8. Additives: None
9. Solubility in Water: Negligible

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<1.0
Cadmium	<0.05
Chromium	<0.325
Copper	17.25
Lead	<0.08
Mercury	0.02
Nickel	<0.225
Zinc	<0.45
Cyanide	<0.1
Chlorinated Hydrocarbons	ND

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TECHNICAL PRODUCT BULLETIN #M-26USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: JUNE 30, 2008
"ELASTOL"
(aka, SEPARATE, LIQUID ELASTOL)

I. NAME, BRAND, OR TRADEMARK
ELASTOL
(aka, SEPARATE, LIQUID ELASTOL)
Type of Product: Miscellaneous Oil Spill Control Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Action Additives, Inc.
205 Industrial Road
P.O. Box 965
Ducktown, TN 37326
Phone: (423) 496-5000
Phone: (800) 496-5110
(Mr. Tim Kaylor)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Design Engineering Systems Analysis
P.O. Box 293
Alexandria, VA 22313
Phone: (703) 4613912
E-mail: escambos@actionadditivesinc.com
(Mr. Ernest T. Scambos)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Autoignition temperature for product is 392°F. Product is combustible in liquid form and can form combustible mixtures and possibly explosive mixtures above the flash point. Use water spray to cool fire exposed surfaces and to protect personnel. Isolate "fuel" supple from fire. Use foam, dry chemical, or water spray to extinguish fire. Avoid spraying water directly into storage containers due to danger of boil over. Product is volatile and gives off invisible vapors. Either the liquid or vapor may settle in low areas or travel some distance along the ground or surface to ignition source where they may ignite.
2. Ventilation: Product is moderately volatile. Ensure proper ventilation. Avoid formation and inhalation of spray mist and vapors. Do not wear contaminated clothing. Keep away from fire and heated objects. Avoid formation of aerosols. Avoid squirting and use dosage pump when transferring.
3. Skin and eye contact; protective covering; treatment in case of contact: Protection depends on use and condition of work environment. Ensure good personal hygiene, wash hands regularly with soap and water. Avoid contact with skin and eyes and inhalation of fumes/aerosols. All new protective gear must be of CE standard. There must be an eye rinsing kit available at the

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work place. Where there is danger of inhalation, use mask with brown filter. If the product is sprayed and there is a risk of aerosol formation, use mask with combination filter A2-P2. When used regularly, measuring routines for solvent measurement should be implemented. Level of contamination should be kept as low as possible.
4.a. Maximum storage temperature: ~160°F
4.b. Minimum storage temperature: -100°F
4.c. Optimum storage temperature range: 40-70°F
4.d. Temperatures of phase separations and chemical changes: None

V. SHELF LIFE
At least 5 years when stored at temperatures below 150°F.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method: ELASTOL can be applied to the surface of an oil/water separator tank or added to a waste stream before it enters a separation tank. ELASTOL floats on water, dissolving when it comes in contact with petroleum products (e.g., gasoline, diesel, jet fuel, fuel oil, crude, etc.). It remains effective for long periods, but naturally degrades when exposed to the atmosphere over longer periods. ELASTOL treated oil may increase the performance of containment and recovery equipment:

- Containment booms – may have higher current and tow speed capability
- Mechanical skimming equipment – may be improved 2 to 10 times its normal recovery rates
- Drum skimmers – may recover little or no water with the oil

When applied early to a spill, ELASTOL may reduce emulsification and dispersion of oil. In addition, it may reduce the penetration of oil into porous soils and sandy beaches.
2. Concentration/Application Rate: ELASTOL can be used at very low concentrations from 100-1,500 ppm (0.01% to 0.15%). The amount of ELASTOL to be used is dependent upon the viscosity of the oil being removed. For example, one gallon of ELASTOL will remove:

- 13 gallons of gasoline
- 34 gallons of diesel
- 84 gallons of medium oil
- 150 gallons of heavy oil

3. Conditions for Use: ELASTOL may be used on fresh or salt water (under warm or cold temperatures). Prompt application may maximize effectiveness. The older the pollutants the few light oil elements remain in the oil, which may reduce the effectiveness of recovery.

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VII. TOXICITY AND EFFECTIVENESSa. Toxicity

Material Tested	Species	LC50 (ppm)	
ELASTOL	Menidia beryllina	1,333	96-hr
	Mysidopsis bahia	94	48-hr
No. 2 Fuel Oil	Menidia beryllina	5.4	96-hr
	Mysidopsis bahia	3.3	48-hr
ELASTOL &	Menidia beryllina	8.2	96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	3.7	48-hr
Reference Toxicant (SDS)	Menidia beryllina	7.4	96-hr
	Mysidopsis bahia	10.7	48-hr

b. Effectiveness:
NA

VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point: 176°F
2. Pour Point: -71°F
3. Viscosity: 3.46 cSt @ 77°F
4. Specific Gravity: 0.83@t 60°F
5. pH: 6.8 – 7.0
6. Surface Active Agents: CONFIDENTIAL
7. Solvents: CONFIDENTIAL
8. Additives: CONFIDENTIAL
9. Solubility in Water: Insoluble

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	ND
Cadmium	ND
Chromium	ND
Copper	ND
Lead	ND
Mercury	ND
Nickel	ND
Zinc	1.4
Cyanide	ND
Chlorinated Hydrocarbons	ND

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TECHNICAL PRODUCT BULLETIN #M-27
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: JUNE 03, 2010
"OIL BOND®"

I. NAME, BRAND, OR TRADEMARK
OIL BOND®
Type of Product: Miscellaneous Oil Spill Control Agent - Solidifier

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Solidification Products International, Inc.
P.O. Box 35
524 Forrest Road
Northford, CT 06472
Phone: (203) 484-9494
Toll Free: (800) 758-3634
Fax: (203) 484-9492
E-mail: dgannon@oilbarriers.com
(Ms. Donna Gannon)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Solidification Products International, Inc.
P.O. Box 35
524 Forrest Road
Northford, CT 06472
Phone: (203) 484-9494
Toll Free: (800) 758-3634
Fax: (203) 484-9492
E-mail: dgannon@oilbarriers.com
(Ms. Donna Gannon)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Not classified as flammable, but will burn. Maintain a fire watch if OIL BOND® is heated above 450°F.
2. Ventilation: Normal ventilation is adequate. For confined space entry or lack of exhaust in a contained area, avoid generating dust. Dust in excessive concentration can result in an explosive mixture in air. Wear approved NIOSH respirator with particulate pre-filter for dust.
3. Skin and eye contact; protective covering; treatment in case of contact: Product dust may be mildly irritating to eyes and respiratory tract. Wear approved standard issue work clothes, gloves, dust mask, and dust tight goggles as needed. In case of contact with eyes, flush with water. If prolonged skin contact, wash with soap and water. For inhalation of dust, remove to fresh air.
4.a. Maximum storage temperature: 180°F

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4.b. Minimum storage temperature: None
4.c. Optimum storage temperature range: Ambient. Avoid elevated temperatures >200°F for extended periods of time.
4.d. Temperatures of phase separations and chemical changes: >450°F chance of auto-combustion. Avoid strong oxidizing agents.

V. SHELF LIFE
5 years. Store OIL BOND® in cool, dry area away from direct sunlight to prolong shelf life.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method: OIL BOND® will absorb and solidify hydrocarbon spills on freshwater and saltwater or land applications. For small spills, OIL BOND® may be broadcast by hand, and booms and pillows may be used to ring the spill. For large spills, OIL BOND® may be distributed by equipment with an air or water stream. Ground all dispensing equipment if deploying dry OIL BOND® at a high rate of speed to prevent static discharge. Introduce OIL BOND® with dispensing water spray just before final discharge to allow mixing of OIL BOND® with the water stream. Allow OIL BOND® contact time with the spilled fuel or hydrocarbon waste for 10 minutes to 1 hour before collection to allow absorption and solidification. Lighter fuels require less solidification time than heavier viscosity fuels such as No. 6 fuel oil or heavy crude. OIL BOND® is non-toxic and biologically inactive, and will remain floating on the surface of the water before and after solidification.

Collect solidified materials with a net or vacuum equipment from the surface of the water. For land spills shovel, sweep, or vacuum solidified material. Place the solidified debris in approved, labeled, and sealed containers as required by local, state, federal, international, or country-specific regulations.

Depending on the inherent nature of the spilled liquid that was solidified, disposal options include landfilling, incineration, waste to energy incineration, or use as a secondary fuel.
2. Concentration/Application Rate: OIL BOND® should be applied at a rate of 15% to 30% by weight to a spilled hydrocarbon liquid. Lighter viscosity hydrocarbon waste and oils require less OIL BOND® than heavier fuels. Conditions for use on spills may be highly variable, degraded product or extremely heavy viscosity fuels may require additional OIL BOND® to obtain complete solidification.
3. Conditions for Use: OIL BOND® may be used on any hydrocarbon waste, oil or fuel on freshwater, saltwater, or land applications. During rough weather with high winds or seas a conventional containment collection boom is recommended to corral the spill allowing easier retrieval and contact time with OIL BOND®. Cold water temperatures may require longer contact time to fully solidify a spill.

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VII. TOXICITY AND EFFECTIVENESSa. Toxicity

Material Tested	Species	LC50 (ppm)	
OIL BOND®	Menidia beryllina	>10000	96-hr
	Mysidopsis bahia	>10000	48-hr
No. 2 Fuel Oil	Menidia beryllina	3.0	96-hr
	Mysidopsis bahia	7.1	48-hr
OIL BOND® &	Menidia beryllina	3.8	96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	9.6	48-hr
Reference Toxicant (SDS)	Menidia beryllina	8.0	96-hr
	Mysidopsis bahia	11.3	48-hr

b. Effectiveness:
NA

VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point: >200ºF
2. Pour Point: NA, solid product
3. Viscosity: NA, solid product
4. Specific Gravity: 0.21
5. pH: 8.8
6. Surface Active Agents: CONFIDENTIAL
7. Solvents: None
8. Additives: Pigment/Antioxidant
9. Solubility in Water: Insoluble

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<0.6
Cadmium	<0.32
Chromium	<0.32
Copper	0.71
Lead	<0.32
Mercury	<0.07
Nickel	0.97
Zinc	0.32
Cyanide	<0.50
Chlorinated Hydrocarbons	ND

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BULLETIN UPDATES IN BOLD

TECHNICAL PRODUCT BULLETIN #M-28
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: AUGUST 17, 2010
"OPFLEX®"

I. NAME, BRAND, OR TRADEMARK
OPFLEX® (Open-Celled Elastomeric Sorbents)
Type of Product: Miscellaneous Oil Spill Control Agent

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT

Opflex Solutions
P.O. Box 355
West Hyannisport, MA 02672
Phone: (508) 345-6520
Fax: (508) 425-2990
E-mail: ssmith@opflexinventor.com
Website: www.opflex.com
(Mr. Scott Smith)

Manufacturing Plant:
12 New Street
St. Johnsville, NY 13452
Phone: (518) 568-7036
Fax: (518) 568-2614
E-mail: ssmith@opflexinventor.com
Website: www.opflex.com
(Mr. Scott Smith)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Opflex Solutions
P.O. Box 355
West Hyannisport, MA 02672
Phone: (508) 345-6520
Fax: (508) 425-2990
E-mail: ssmith@opflexinventor.com
Website: www.opflex.com
(Mr. Scott Smith)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-flammable (DOT: Non-hazardous)
2. Ventilation: No special requirements. No special handling is required.
3. Skin and eye contact; protective covering; treatment in case of contact: No special equipment or clothing required. If eye or skin irritation occurs, flush with plenty of fresh water.
4.a. Maximum storage temperature: 120°F continuous
4.b. Minimum storage temperature: No minimum
4.c. Optimum storage temperature range: 40°F to 120°F
4.d. Temperatures of phase separations and chemical changes: Stable

V. SHELF LIFE
Shelf life is unlimited when stored in plastic bags.

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VI. RECOMMENDED APPLICATION PROCEDURE

1. Example – Opflex foam is fabricated into 40 6-foot strips that are in mesh netting. These booms can be connected end-to-end and positioned behind containment booms to absorb oil that has breached the containment.
2. Example – Opflex foam is fabricated into 1/4" x 16" x 18" pads that can be deployed by placing on an oil patch to absorb the oil from the water surface.
3. Example – Opflex foam can be cut into small cubes such as 1 cubes and contained in a net or mesh tube to create a very high surface area absorbent boom.
4. Example – Opflex foam can be fabricated into mega pads of 1/4" x 1 foot x 6 foot sections to be connected on the back of a containment boom system to absorb oil which flows over the boom, especially in marsh areas.
5. Example – Opflex foam can be fabricated into multiple mops that are strung between support posts at the shoreline to remove oil from the surf.

VII. TOXICITY AND EFFECTIVENESS

a. Toxicity

Material Tested	Species	LC50 (ppm)	
OPFLEX®	Menidia beryllina	>35640	96-hr
	Mysidopsis bahia	8630	48-hr
No. 2 Fuel Oil	Menidia beryllina	3.35	96-hr
	Mysidopsis bahia	2.24	48-hr
OPFLEX® &	Menidia beryllina	5.49	96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	1.67	48-hr
Reference Toxicant (SLS)	Menidia beryllina	12.19	96-hr
	Mysidopsis bahia	10.53	48-hr

b. Effectiveness:

NA

VIII. MICROBIOLOGICAL ANALYSIS

NA

IX. PHYSICAL PROPERTIES

1. Flash Point: NA
2. Pour Point: NA, solid product
3. Viscosity: NA, solid product
4. Specific Gravity: 0.0415 g/mL
5. pH: NA
6. Surface Active Agents: NA
7. Solvents: CONFIDENTIAL
8. Additives: CONFIDENTIAL
9. Solubility in Water: Insoluble

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X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<0.179 (brl)
Cadmium	<0.089 (brl)
Chromium	<0.268 (brl)
Copper	1.74
Lead	0.286
Mercury	<0.0031 (brl)
Nickel	<0.446 (brl)
Zinc	139
Cyanide	0.498
Chlorinated Hydrocarbons	<2.43 (brl)

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BULLETIN UPDATES IN BOLD

TECHNICAL PRODUCT BULLETIN #M-29
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: AUGUST 17, 2010
"GELCO 200"

I. NAME, BRAND, OR TRADEMARK
GELCO 200
Type of Product: Miscellaneous Oil Spill Control Agent - Solidifier

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
UESS, Ltd.
Box 6088
Drayton Valley, AB, Canada
T7A 1R6
Phone: (780) 621-6870
E-mail: hugh.morrison@telus.net
(Mr. Hugh Morrison)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
UESS, Ltd.
Box 6088
Drayton Valley, AB, Canada
T7A 1R6
Phone: (780) 621-6870
E-mail: hugh.morrison@telus.net
(Mr. Hugh Morrison)
*Currently only one distributor, which serves as a point of contact.

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: >150°F
2. Ventilation: Store in well-ventilated location. Where local exhaust ventilation is not practical and odors are detected, use a negative pressure half face respirator with a cartridge designed to protect against organic vapors and dust if also present, a particulate pre-filter should be used. For high airborne dust concentrations, use a cartridge to be used against nuisance dust.
3. Skin and eye contact; protective covering; treatment in case of contact: Use cloth gloves if desired. Dust-tight mono-glasses and standard issue work-wear. In case of contact with eyes or skin, flush with water.
4.a. Maximum storage temperature: 200°F
4.b. Minimum storage temperature: None
4.c. Optimum storage temperature range: 40-90°F
4.d. Temperatures of phase separations and chemical changes: Begins to oxidize exothermically at high temperatures (230°F).

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4.e. Store in a cool, dry location. Away from direct sunlight or sources of intense heat.
4.f. Maintain fire watch if material temperature reaches 536°F (280°C).
4.g. Product may accumulate static charge during processing, handling, and transport. Earth/ground all equipment used in handling and applying this product.
4.h. Avoid contact with strong oxidizing agents.
4.i. Do not stack Flexible Intermediate Bulk Containers or palletized bags.

V. SHELF LIFE
>10 years when stored in dry, cool area out of sunlight.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method: For small scale spills on water (fresh or salt), GELCO 200 can be broadcast directly onto the spill by hand or small hand held spreader from the outer edge back into the middle of the spill. Agitation is not necessary for GELCO 200 to be effective. The product can also be used and is available in booms, socks, and pillows.

For large spills on water (fresh or salt), GELCO 200 may be deployed with an air or water stream directed at the leading edge of the spill. Dispensing equipment should be properly grounded to prevent static electricity build-up if pumping GELCO 200 in dry form at high rates of delivery. If used with a water carrying media, product will require agitation to keep product suspended if there is a delay or travel time associated between batching and delivering product upon spill.

GELCO 200 will remove oils and other hazardous hydrocarbon based materials from both salt and fresh water. GELCO 200 encapsulates and solidifies the oil, and remains buoyant even after total saturation. The solidified products can be removed from the water with hand vacs, vacuum barges, commercial fishing nets, and conveyors. Solidified materials should be placed into appropriate containers and disposed of in accordance with all applicable federal, state, and local regulations.

Land Application
For spills on land, the product would be applied in the same manner. The product can also be applied by sand-blasting equipment/hopper or pneumatic air seeders. Agitation is not necessary in most scenarios. Some fine agitation may be necessary to remove contaminated materials from native grasses and marsh areas.

Many factors are taken into consideration before determining the best method(s) of application. They include weather, geography, access, land use, and habitat of affected spill area.

When removing contaminants from land, it should be a priority to minimize the volume of land taken to preserve the integrity of the land and to minimize the volume of waste requiring disposal.

To recover solidified oil or hazardous materials from spills on land, the solidified product can be

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collected and removed efficiently and effectively using a variety of manual and mechanical means.
Manual methods include picking up by hand, using brooms, rakes, shovels, and squeegees to remove and pick up solidified petroleum waste product.

Mechanical means include using hand held vacuums, portable vac units, vac-trucks, or commercial shop vacs. Once the spilled product is solidified by GELCO 200, it will not leach. GELCO 200 is extremely hydrophobic and will not take on water, which may help to keep the volume of waste produced down, depending on the characterization of any non-solidified oil and water remaining in the area treated. Pressure flushing the solidified product or raw into a containment area where it can be solidified – a boomed area, containment dike, bell hole, etc. for removal by vacuum – is also a very practical method for removal.

Land spill cleanup of solidified oil/product
Collection and disposal of materials generated from application to oil spilled on land involve greater variation in waste composition, and appropriate disposal techniques have to be selected for the particular circumstances. Proper precautions, including testing as necessary to identify the characteristics of wastes generated from the application of GELCO 200, should be taken to determine the safe and legally required means of recovering, handling, storing, transporting, treating, recycling, or disposing of materials produced from the application of GELCO 200 to oil spilled on land.

All materials should be placed into appropriate containers, characterized by knowledge or testing as to waste type, and handled, stored, transported, treated, or disposed of in accordance with all applicable federal, state, and local regulations. Professional advice should be obtained where needed.

2. Concentration/Application Rate: GELCO 200 is usually applied at a ratio of 5-20% of GELCO 200 to waste by weight to solidify light, medium, and heavy hydrocarbons. Solidification typically occurs 1-3 minutes for most oils. GELCO 200 has been used effectively on heavier crudes including Bunker C within the application rates noted above.

3. Conditions for Use: GECLO 200 is effective in all environments and under a broad range of weather conditions. The product is most effective on water temperatures between 32°F and 120°F. Depending upon the age and/or viscosity of the material, varying amounts of GELCO 200 may be required to obtain complete solidification. The recovered solidified product can be disposed of in landfills, incinerated, or disposed of in accordance with all applicable federal, state, and local regulations. Some products can be recovered from the solidified mass through a heat process that would allow the solidified product to release itself from the GELCO 200.

UESS, Ltd. has had TCLP tests completed on several occasions and have not had any field instances of product being released in our methods of recovery and disposal to date due to pressure related issues.

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VII. TOXICITY AND EFFECTIVENESS

a. Toxicity

Material Tested	Species	LC50 (ppm)	
GELCO 200	Menidia beryllina	>10000	96-hr
	Mysidopsis bahia	>1000	48-hr
No. 2 Fuel Oil	Menidia beryllina	9.26	96-hr
	Mysidopsis bahia	6.58	48-hr
GELCO 200 &	Menidia beryllina	3.15	96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	3.51	48-hr
Reference Toxicant (SDS)	Menidia beryllina	8.03	96-hr
	Mysidopsis bahia	14.5	48-hr

b. Effectiveness:

NA

VIII. MICROBIOLOGICAL ANALYSIS

NA

IX. PHYSICAL PROPERTIES

1. Flash Point: >150ºF
2. Pour Point: NA, solid product
3. Viscosity: NA, solid product
4. Specific Gravity: 0.25 g/cm^3 at 4ºC
5. pH: 4.75
6. Surface Active Agents: NA
7. Solvents: NA
8. Additives: CONFIDENTIAL
9. Solubility in Water: Insoluble

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<0.577
Cadmium	<0.289
Chromium	<0.577
Copper	<0.577
Lead	<0.577
Mercury	<0.100
Nickel	5.91
Zinc	0.788
Cyanide	ND
Chlorinated Hydrocarbons	ND

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BULLETIN UPDATES IN BOLD

TECHNICAL PRODUCT BULLETIN #M-30
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: APRIL 26, 2012
"NORSOREX® APX"

I. NAME, BRAND, OR TRADEMARK
NORSOREX® APX
Type of Product: Miscellaneous Oil Spill Control Agent – Solidifier

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
STARTECH Advanced Materials GmbH.
Perfektastrasse 86
A-1230 Vienna
Austria, Europe
Office: 43-1-869-07-60-0
Phone: 43-664-100-8567
Fax: 43-1-869-07-60-10
E-mail: office@astrotech.at
Website: www.norsorex.at or www.astrotech.at
(Mr. Gerhard Karall, COO)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
STARTECH Advanced Materials GmbH.
Perfektastrasse 86
A-1230 Vienna
Austria, Europe
Office: 43-1-869-07-60-0
Phone: 43-664-100-8567
Fax: 43-1-869-07-60-10
E-mail: office@astrotech.at
Website: www.norsorex.at or www.astrotech.at
(Mr. Gerhard Karall, CEO)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: >174°F
2. Ventilation: Dust explosions are possible while handling organic powders at high concentrations; therefore, provide proper air ventilation with fresh air or other methods to avoid dust formation. General dust limits (DE-TRGS 900): 3 mg/m^3 (respirable dust fraction), 10 mg/m^3 (inhalable dust fraction), short-term exposure value (TRGS 900, 2.3) – excess factor 4. For short-term exposure wear dust masks.
3. Skin and eye contact; protective covering; treatment in case of contact: Avoid contact to skin and eyes. Do not breathe dust. Wear protective goggles, gloves, and clothing. Following skin

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contact, wash with plenty of water and pH-neutral soap. Obtain medical attention if irradiation symptoms persist. Following eye contact, remove contact lenses immediately and rinse with plenty of water (also under the eyelids) for at least 15 minutes. Obtain medical attention. Following ingestion, remove all of product from the respiratory system and wash oral cavity. Drink 200-300 ml of water. Do not induce vomiting without medical advice. Obtain medical attention.
4.a. Maximum storage temperature: 45°C/113°F
4.b. Minimum storage temperature: -5°C/23°F
4.c. Optimum storage temperature range: -5°C to 30°C/23°F to 86°F
4.d. Temperatures of phase separations and chemical changes: The material composition does not change with the temperature (no phase separation). Chemical changes occur at temperatures >45°C/113°F with oxygen. The material changes from white to yellow and the absorption behavior decreases.

V. SHELF LIFE
Shelf life is 3 years from date of production. Keep material stored in original containers in a dark, dry area until use. The product should be used within 6 months after opening the original container.

VI. RECOMMENDED APPLICATION PROCEDURE
1. Application Method: NORSOREX® APX is a special polymer with very high affinity for hydrocarbons and, since it is hydrophobic, it is also insoluble in water. NORSOREX® APX can be used in free powder or pad form (sealed bags containing the powder). NORSOREX® APX powder can bond to a variety of liquid hydrocarbons in two stages. First, due to the fast absorption process further oil spreading is prevented (forming of a gel). Second, the oil solidifies to a non-leaching inert, firm cohesive "rubber-like" mass within a few hours, which can be easily collected and burned, disposed of or used for other purposes (e.g., rubber industry in a full green recycle process). It is a combination of an adsorption and absorption process.

Use NORSOREX® APX powder or pads by estimating the hydrocarbon quantity and checking with the application chart to individuate the necessary quantity. The suggestion to optimize the usage is to keep ratio values of NORSOREX® APX to hydrocarbon as close as possible to the application chart. If possible, use pretests to test the process. Deploy NORSOREX® APX in the environment where there is hydrocarbon to be removed or recovered. NORSOREX® APX can be applied by hand or through mechanical spreading. According to the desired performance, wait the necessary reaction time. Reaction takes place within minutes and it reaches 80 percent of its efficiency after only a few hours. Maximum efficiency (100 percent) can be reached in less than 24 hours. Once NORSOREX® APX has reacted, it is possible to recover the hydrocarbon in solid form.

2. Concentration/Application Rate:

Type of Hydrocarbon (HC)	**kg_{HC}/kg_{APX}**	**kg_{APX}/kg_{HC}**	**kg_{APX}/m^3_{HC}**	**L_{HC}/L_{APX}**	**L_{APX}/L_{HC}**

Benzene	23.0	0.043	38.1	9.189	0.109
Toluene	18.0	0.056	48.2	7.267	0.138
Hexane	4.2	0.238	155.9	2.245	0.445
Heptane	5.0	0.200	135.9	2.575	0.388
Cyclorhexane	6.8	0.147	114.6	3.055	0.327
Dichloromethane/Methylene chloride	18.0	0.056	73.9	4.737	0.211
Chloroform	26.0	0.038	57.0	6.136	0.163
Trichloroethane/Trichloroethylene	31.8	0.031	45.9	7.623	0.131
Tetrachloroethene/Trichloroethylene	31.0	0.032	52.3	6.689	0.149
1,2-Dichlorobenze	27.4	0.036	47.4	7.377	0.136
Pyralene 60 (60% PCB/40%TCB)	36.4	0.027	39.3	8.909	0.112
Pyralene 78 (78% PCB/22% TCB)	28.8	0.035	52.4	6.675	0.150
Diethyl glycol	2.7	0.370	3.11.1	1.125	0.889
Diocytlphthalate	2.8	0.357	353.9	0.990	1.010
Heavy Crude Oil A	12.0	0.083	75.0	4.667	0.214
Heavy Crude Oil B	9.0	0.111	88.9	3.938	0.254
Light Crude Oil	9.5	0.105	88.4	3.958	0.253
Kerosene	10.2	0.098	79.4	4.407	0.227
Diesel	10.0	0.100	82.3	4.253	0.235
Aromatic Process Oils	8.3	0.120	120.5	2.905	0.344
Naphthenic Process Oils	8.3	0.120	108.4	3.228	0.310
Paraffinic Process Oils	4.0	0.250	217.5	1.609	0.621
Refrigerator Oils	10.7	0.093	81.3	4.305	0.232
Turbine Oils	4.3	0.233	209.3	1.672	0.598
Machine Oils	4.5	0.222	200.0	1.750	0.571
Motor Oils	3.8	0.263	228.9	1.529	0.654
Vegetable Oils	2.7	0.370	337.0	1.038	0.963
HC – Hydrocarbon APX – NORSOREX® APX kg_{xx} – Kilogram of xx M^3_{xx} – Cubic meters of xx L_{xx} – Liter of xx kg_{APX}/m^3_{HC} – Kilograms of NORSOREX® APX per cubic meter of hydrocarbon			Bulk density of NORSOREX® APX powder: 0.35 g/cm^3 The results are tested at room temperature (23°C/73°F) and most substrates show an improvement of 10 until 15% at 40°C. The best performance is achieved at 60°C with an improvement of about 30%. At higher temperatures the effect of improvement falls and over 100°C significant.		

3. Conditions for Use:
To recover the solidified NORSOREX® APX from the environment, mechanically collect the material and transport it to the nearest designated disposal location. NORSOREX® APX has the capability of 3.5 bar of pressure before it will start leaking. Do not discharge into drains, surface waters, or ground waters. NORSOREX® APX is not biodegradable. The resulting "rubber-like" material could still be hazardous so extreme caution should be exercised when handling these materials. Very polar substances such as organic acids, alcohols or glycols show a reduced absorption efficiency of the product. The water temperature has an influence on the reaction time. Cold water slows down the solidification process. The ages of pollutants only have an influence on the absorption performance if their viscosity or polarity are increased to the typical values for the "fresh" pollutant.

Avoid damage to NORSOREX® APX pads if the application environment is characterized by rough water. This will ensure the easiest deployment and recovery procedure. If allowed by current regulations and if properly contained, the free powder form is recommended to optimize the contact interface between NORSOREX® APX and the liquid hydrocarbon.

VII. TOXICITY AND EFFECTIVENESS
a. Toxicity

Material Tested	Species	LC50 (ppm)
NORSOREX® APX	Menidia beryllina	>100,000.00 96-hr
	Mysidopsis bahia	>100,000.00 48-hr
No. 2 Fuel Oil	Menidia beryllina	15.10 96-hr
	Mysidopsis bahia	2.41 48-hr
NORSOREX® APX & No. 2	Menidia beryllina	39.80 96-hr
Fuel Oil (1:10)	Mysidopsis bahia	3.06 48-hr
Reference Toxicant (SDS)	Menidia beryllina	2.01 96-hr
	Mysidopsis bahia	6.63 48-hr

b. Effectiveness:
NA

VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point: 174°F
2. Pour Point: NA
3. Viscosity: NA
4. Specific Gravity: 0.91047 at 60°F
5. pH: 7.10
6. Surface Active Agents: Polynorbornene

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7. Solvents: NA
8. Additives: Phenolic antioxidant, flow agent
9. Solubility in Water: Insoluble in water

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	ND
Cadmium	ND
Chromium	0.40
Copper	0.14
Lead	ND
Mercury	0.011
Nickel	ND
Zinc	55.40
Cyanide	0.222
Chlorinated Hydrocarbons	ND

ED_001324_00006005-00402

BULLETIN UPDATES IN BOLD

TECHNICAL PRODUCT BULLETIN #M-31
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
LISTING DATE: NOVEMBER 9, 2015
"CAS 100©"

I. NAME, BRAND, OR TRADEMARK
CAS 100©
Type of Product: Miscellaneous Oil Spill Control Agent – Solidifier

II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Tradewinds Environmental Safety Services SA de CV
Calle 1 "E" No. 245 por 30 y 36
Col. Campestre
Merida, Mexico C.P 97120
Phone: 52-1-999-227-4238
E-mail: mharper@tessmexico.com
(Mr. Michael Harper)

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
EPC Evolved Products, Inc.
5889 Greenwood Plaza Boulevard, Suite 201
Greenwood Village, CO 80111
Phone: 720-496-0023
E-mail: dave.washington@epces.com
(Mr. Dave Washington)

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION
1. Flammability: Non-Flammable
2. Ventilation: Work in well ventilated area. Avoid excessive inhalation of fine particles.
3. Skin and eye contact; protective covering; treatment in case of contact: Avoid contact to eyes. Do not breathe. Wear protective goggles, gloves and clothing. Following skin contact, wash with plenty of soap and water. Remove exposed or contaminated clothing, taking care not to contaminate the eyes. Please seek medical attention if adverse effects continue after flushing. Following eye contact, remove contact lenses (if necessary) and rinse with gently running water for at least 15 minutes. Obtain medical attention. Following ingestion, call physician or poison control center for most current information. If professional advice is not available, do not induce vomiting. Drink large quantities of water. Following inhalation, move to fresh air location. Seek medical attention if adverse symptoms continue after removal to fresh air.
4.a. Maximum storage temperature: 140°F
4.b. Minimum storage temperature: -40°F
4.c. Optimum storage temperature range: -40°F to 140°F

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4.d. Temperatures of phase separations and chemical changes: None

V. SHELF LIFE

The shelf life of CAS 100© is 1 year from date of production if stored in a dry dark location. Keep material stored in original containers in a dark, dry area until use. If the product is exposed to UV rays consistently, it will degrade over time.

VI. RECOMMENDED APPLICATION PROCEDURE

1. Application Method: In powder form, apply CAS 100© along the outer edges of spill area to prevent migration. Continue to apply CAS 100© inside spill area until the area is saturated with product. Depending on type of hydrocarbon, the resulting oil/CAS 100© mixture can be rolled up like a carpet or clumps of the solid can be removed with a net. In pad form, booms can be used to prevent migration of oil spill. Pads can be used to clean up the spill area by placing them on the oil spill itself. Once the pad is saturated, it can be easily removed by simply picking up the pad.

2. Concentration/Application Rate: CAS 100© is used by applying 1 pound of product to each 10 pounds of spilled hydrocarbon. The contact time varies from just a few seconds to several hours depending upon the quantity of the spill. Hydrocarbon viscosities decrease as temperatures increase causing an increase in the time required for the gelling process of hydrocarbon to CAS 100©.

3. Conditions for Use: CAS 100© can be used on any concentration of water salinity and water temperature. There is no restriction of the types of ages of the hydrocarbon being processed. Depending upon the types of the hydrocarbon, the CAS 100©/oil solid can be in the form of a carpet, rubber ball or crumb like material. CAS 100© has a fast gelling characteristic, which prevents the hydrocarbon from spreading further. Once the hydrocarbon comes in contact with CAS 100©, the result is a non-leaching solid within a few minutes (or hours) depending on the size of the spill. The resulting solid should be collected at the spill site and disposed of according to federal, state and local regulations. Collecting the solid at the spill site will prevent the CAS 100©/oil solid from reaching open water.

VII. TOXICITY AND EFFECTIVENESS

a. Toxicity

Material Tested	Species	LC50 (ppm)
CAS 100©	Menidia beryllina	>1000 96-hr
	Mysidopsis bahia	>1000 48-hr
No. 2 Fuel Oil	Menidia beryllina	4.81 96-hr
	Mysidopsis bahia	1.93 48-hr
CAS 100© & No. 2 Fuel Oil	Menidia beryllina	5.94 96-hr
(1:10)	Mysidopsis bahia	1.41 48-hr
Reference Toxicant (SDS)	Menidia beryllina	8.84 96-hr
	Mysidopsis bahia	23.00 48-hr

b. Effectiveness:

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NA

VIII. MICROBIOLOGICAL ANALYSIS
NA

IX. PHYSICAL PROPERTIES
1. Flash Point: >200ºF
2. Pour Point: NA (solid material)
3. Viscosity: NA (solid material)
4. Specific Gravity: 0.51
5. pH: 6.94
6. Surface Active Agents: NA
7. Solvents: NA
8. Additives: NA
9. Solubility in Water: Insoluble

X. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

Compound	Concentration (ppm)
Arsenic	<2.0
Cadmium	<0.5
Chromium	<1.0
Copper	<2.5
Lead	<2.0
Mercury	<0.029
Nickel	<4.0
Zinc	<5.0
Cyanide	<0.22
Chlorinated Hydrocarbons	ND

ED_001324_00006005-00405

Cc: Durbin, Luke[Luke.Durbin@csra.com]
To: Tirrell, Rebecca[Rebecca.Tirrell@csra.com]
From: DeHaven, Leigh
Sent: Tue 3/29/2016 2:18:54 PM
Subject: Re: TD#79 Item 1: PS Maintenance & POC Verification - Leigh Comments - Read and make changes before posting
TD79 Item 1_PS Maintenance POC Verification_3-23-2016_v2LED Comments.docx

Please remove the product entry information from the PS and TN draft website provided in the attached document. I added comments in red in the first column of the attached table. It was disappointing that some of the long existing protocols for changing product manufacturers/owners and companies were not followed. These are situations where EPA could be sued if information was not completely verified and signed off by the product manufacturer.

For the entries in attachment on the PS and TN, use heading stating "LISTING CHANGES PENDING FOLLOWING VERIFICATION BY MANUFACTURER AND EPA".

From: Tirrell, Rebecca <Rebecca.Tirrell@csra.com>
Sent: Monday, March 28, 2016 9:05 PM
To: DeHaven, Leigh
Cc: Durbin, Luke
Subject: RE: TD#79 Item 1: PS Maintenance & POC Verification - Version 2

Leigh,

Attached for your approval, please find the revised March 2016 Product Schedule, March 2016 Technical Notebook, and PS Maintenance POC Verification per your request below. The CSRA OEM Website Administrator will begin making the changes using the verification document to the associated OEM NCP Subpart J Product Schedule web pages upon your approval.

Please let us know if you have any questions.

Rebecca

Rebecca Tirrell

Program Director, Emergency Management

SRA International, Inc., A CSRA Company

3434 Washington Boulevard, Room 2020E, Arlington, VA 22201

o: 703-284-6643 | c: (703) 801-6783 | NEW EMAIL: Rebecca.Tirrell@csra.com | www.csra.com

Follow us on Facebook, Twitter, and LinkedIn

Out of office dates: Wednesday, March 30 – Friday, April 1

Please update your contact list with new email address: Rebecca.Tirrell@csra.com

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From: DeHaven, Leigh [mailto:DeHaven.Leigh@epa.gov]
Sent: Monday, March 28, 2016 11:04 AM
To: Tirrell, Rebecca
Cc: Durbin, Luke
Subject: RE: TD#79 Item 1: PS Maintenance & POC Verification

PS and TN revisions for Website.:

The only letter I have received to make any changes to the PS dealing with product no longer being manufactured is Supersperse WAO2500 (as of today). You can remove this product from the PS and TN as voluntary removal by Baker Hughes/Baker Petrolite.

No other changes stating a product is "no longer manufactured" should be posted until we hear from the manufacturer in writing to officially close out the file (Ex: Verusolve, JE105BS, Split Decision). Products should not have names changed until we here from manufacturers in writing also.

Please don't send the PDF of the Supporting Statement document I sent you on Wednesday to be PDF. I will take care of it.

Leigh E. DeHaven
U.S. Environmental Protection Agency
Office of Emergency Management

Office of Land and Emergency Management
1200 Pennsylvania Ave., NW

Room 6450 CC WJC North (Mail code 5104A)
Washington, DC 20460
Tel.: (202) 564-1974

From: Tirrell, Rebecca [mailto:Rebecca.Tirrell@csra.com]
Sent: Wednesday, March 23, 2016 11:58 PM
To: DeHaven, Leigh <DeHaven.Leigh@epa.gov>
Cc: Durbin, Luke <Luke.Durbin@csra.com>
Subject: TD#79 Item 1: PS Maintenance & POC Verification

Leigh,

Attached for your review, please find the findings of the Product Schedule POC Verification. Attached files include the following:

- TD79 Item 1_PS Maintenance POC Verification_3-23-2016 (Matrix of updates, pending actions, and manufacturer responses)
- March 2016 NCP Product Schedule
- March 2016 NCP Product Schedule Technical Notebook
- NCP Subpart J Alphabetical Listing Checklist (Website Administrator use with verification matrix)

Let Luke know if you have any questions.

Rebecca

Rebecca Tirrell

Program Director, Emergency Management

SRA International, Inc., A CSRA Company

3434 Washington Boulevard, Room 2020E, Arlington, VA 22201

o: 703-284-6643 | c: (703) 801-6783 | NEW EMAIL: Rebecca.Tirrell@csra.com | www.csra.com

Follow us on Facebook, Twitter, and LinkedIn

Effective Immediately, please update your contact list with new email address: Rebecca.Tirrell@csra.com

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To: Durbin, Luke[Luke.Durbin@csra.com]
Cc: Tirrell, Rebecca[Rebecca.Tirrell@csra.com]
From: DeHaven, Leigh
Sent: Thur 3/10/2016 9:00:44 PM
Subject: RE: POC verification question

Thank you!

Leigh E. DeHaven
U.S. Environmental Protection Agency
Office of Emergency Management

Office of Land and Emergency Management
1200 Pennsylvania Ave., NW

Room 6450 CC WJC North (Mail code 5104A)
Washington, DC 20460
Tel.: (202) 564-1974

From: Durbin, Luke [mailto:Luke.Durbin@csra.com]
Sent: Thursday, March 10, 2016 3:52 PM
To: DeHaven, Leigh <DeHaven.Leigh@epa.gov>
Cc: Tirrell, Rebecca <Rebecca.Tirrell@csra.com>
Subject: RE: POC verification question

Will do. Thanks!

From: DeHaven, Leigh [mailto:DeHaven.Leigh@epa.gov]
Sent: Thursday, March 10, 2016 3:50 PM
To: Durbin, Luke
Cc: Tirrell, Rebecca
Subject: RE: POC verification question

You can go ahead and contact all of them about verification of POC data. Just state you are a contractor working for EPA. Some haven't received warning letters yet. I have not asked any of them for verification of POC data.

Leigh E. DeHaven
U.S. Environmental Protection Agency
Office of Emergency Management

Office of Land and Emergency Management
1200 Pennsylvania Ave., NW

Room 6450 CC WJC North (Mail code 5104A)
Washington, DC 20460
Tel.: (202) 564-1974

From: Durbin, Luke [mailto:Luke.Durbin@csra.com]
Sent: Thursday, March 10, 2016 3:45 PM
To: DeHaven, Leigh <DeHaven.Leigh@epa.gov>
Cc: Tirrell, Rebecca <Rebecca.Tirrell@csra.com>
Subject: POC verification question

Hi Leigh,

Below are some products and their associated POCs which we wanted to check/confirm with you if they needed to be contacted or not:

- MARINE D-BLUE CLEAN (D-18), MARINE GREEN CLEAN (SW-42), MARINE GREEN CLEAN PLUS (SW-43); Linda Whitely

o you said you've been in contact with regarding their reformulation work—did you also state that we didn't need to contact her?

- BIOSOLVE® HYDROCARBON MITIGATION TECHNOLOGY™ (SW-20), Mr. Karl Loos or Mr. James Edgerly

o warning letter recently sent

- NATURE'S WAY (SW-18), Ms. Cathy Kaiser

o POC contacted the info line in Feb 2016 to update info; warning letter in progress

- S-200C (B-56), Mr. Jim Lynn

o recent warning letter; recent product submission

- ENVIROCLEAN (SW-31), Mr. Jonathan Behymer

o warning letter in progress but no recent direct contact—unsure if letter has been sent

Thanks!

Luke

Luke Durbin
Environment, Agriculture, and Organizational Performance

SRA International Inc., A CSRA Company

309.275.2419 | **NEW EMAIL:** Luke.Durbin@csra.com | www.csra.com

Effective Immediately, please update your contact list with new email address: Luke.Durbin@csra.com

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To: Durbin, Luke[Luke.Durbin@csra.com]
Cc: Tirrell, Rebecca[Rebecca.Tirrell@csra.com]
From: DeHaven, Leigh
Sent: Thur 3/10/2016 8:49:46 PM
Subject: RE: POC verification question

You can go ahead and contact all of them about verification of POC data. Just state you are a contractor working for EPA. Some haven't received warning letters yet. I have not asked any of them for verification of POC data.

Leigh E. DeHaven
U.S. Environmental Protection Agency
Office of Emergency Management

Office of Land and Emergency Management
1200 Pennsylvania Ave., NW

Room 6450 CC WJC North (Mail code 5104A)
Washington, DC 20460
Tel.: (202) 564-1974

From: Durbin, Luke [mailto:Luke.Durbin@csra.com]
Sent: Thursday, March 10, 2016 3:45 PM
To: DeHaven, Leigh <DeHaven.Leigh@epa.gov>
Cc: Tirrell, Rebecca <Rebecca.Tirrell@csra.com>
Subject: POC verification question

Hi Leigh,

Below are some products and their associated POCs which we wanted to check/confirm with you if they needed to be contacted or not:

•□□□□□□□□ MARINE D-BLUE CLEAN (D-18), MARINE GREEN CLEAN (SW-42), MARINE GREEN CLEAN PLUS (SW-43); Linda Whitely

- you said you've been in contact with regarding their reformulation work—did you also state that we didn't need to contact her?

•□□□□□□□□ BIOSOLVE® HYDROCARBON MITIGATION TECHNOLOGY™ (SW-20), Mr. Karl Loos or Mr. James Edgerly

- warning letter recently sent

•□□□□□□□□ NATURE'S WAY (SW-18), Ms. Cathy Kaiser

- POC contacted the info line in Feb 2016 to update info; warning letter in progress

•□□□□□□□□ S-200C (B-56), Mr. Jim Lynn

- recent warning letter; recent product submission

•□□□□□□□□ ENVIROCLEAN (SW-31), Mr. Jonathan Behymer

- warning letter in progress but no recent direct contact—unsure if letter has been sent

Thanks!

Luke

Luke Durbin
Environment, Agriculture, and Organizational Performance

SRA International Inc., A CSRA Company

309.275.2419 | **NEW EMAIL:** Luke.Durbin@csra.com | www.csra.com

Effective Immediately, please update your contact list with new email address: Luke.Durbin@csra.com

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Cc: Tirrell, Rebecca[Rebecca.Tirrell@csra.com]
To: Durbin, Luke[Luke.Durbin@csra.com]
From: DeHaven, Leigh
Sent: Tue 1/12/2016 1:12:31 PM
Subject: Re: Info Line call--no action required

That is a higher value, especially when you compare it to the latest product review from TD #75. Who knows, maybe he will decide to follow through COMPLETELY on his listing someday!

From: Durbin, Luke <Luke.Durbin@csra.com>
Sent: Tuesday, January 12, 2016 8:08 AM
To: DeHaven, Leigh
Cc: Tirrell, Rebecca
Subject: RE: Info Line call--no action required

He did actually say the product-only LC50s: Mysid 400 ppm and Menidia 500 ppm, roughly.

Looking forward to our call!

Luke

From: DeHaven, Leigh [mailto:DeHaven.Leigh@epa.gov]
Sent: Tuesday, January 12, 2016 7:55 AM
To: Durbin, Luke
Cc: Tirrell, Rebecca
Subject: Re: Info Line call--no action required

Thanks for the report and heads-up, Luke. I remember the product during the BP Spill time frame. Did he give the actual tox values for his product or merely exclaim it was non-toxic? Just curious.

Talk to you later on today,

Leigh

From: Durbin, Luke <Luke_Durbin@sra.com>
Sent: Monday, January 11, 2016 4:50 PM
To: DeHaven, Leigh
Cc: Tirrell, Rebecca
Subject: FYI: Info Line call--no action required

Hi Leigh,

This is just FYI. I had an interesting chat with Paul Rosenbaum, CEO of SWR Corporation, who called the info line. Apparently back in 2010 he applied for listing his surface washing agent called "SWR-One" but was never listed because he wouldn't provide his product's formulation. He called the info line this time, after finding the tox and effectiveness tables, initially asking about how/why the LC50s for MARE CLEAN 200 (D-3) were so high relative to most other products, if it was an error or what. I just directed him to the TN, confirming the LC50 values matched, explaining that's all the info I could provide. He didn't dwell on my response long at all before he just started talking about how his product is so much more non-toxic than most of the other listed products too...

The conversation then turned to what seemed like an introduction to the different types of categories. For this, I referred him to the rule definitions, which he found very helpful. He then was asking about what his product would be considered, and he explained his product. I spoke generally about product categories, how usually they're based on mechanism of action and application in the field, etc.

I tried to understand the prompt of his initial question about MARE CLEAN 200 or why he was looking at the tox and effectiveness tables in the first place, but he said he was NOT interested in listing his product so I'm not sure. It seemed like he was just curious about the MARE CLEAN 200 outlier.

In case he ends up contacting you later (he gave no indication of this, however), I wanted you to have this background info.

Thanks!

Luke

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