14th Annual OSC Readiness Training Program

2011 OSC Readiness Training

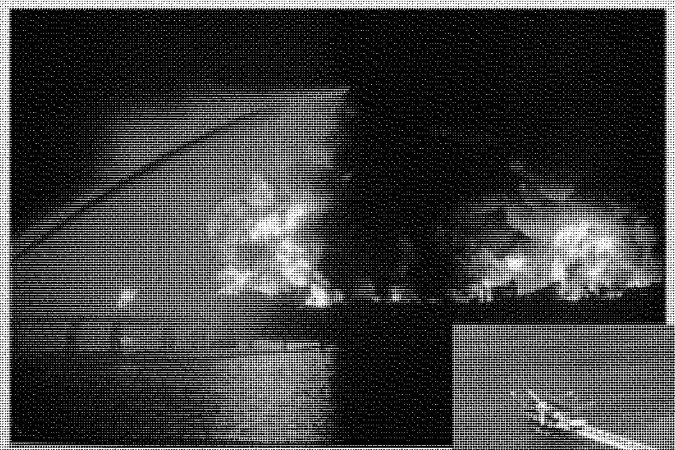
NCP Product Schedule / Selection Guide for Oil Spill Response Technologies / Alternative Response Tool Evaluation System for Oil Spill Response (ARTES)

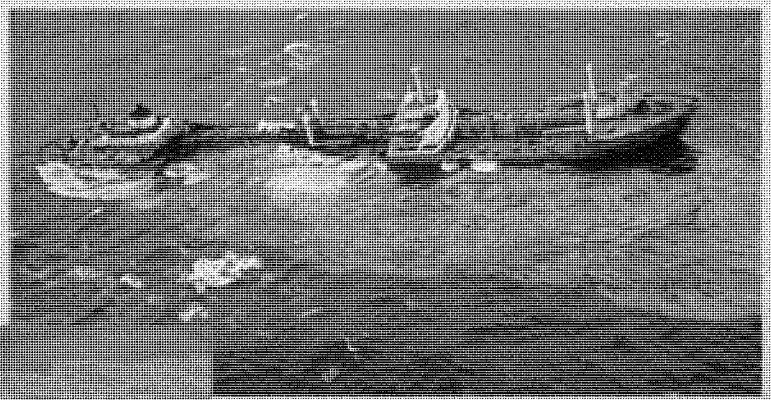
Training by OSCs for OSCs

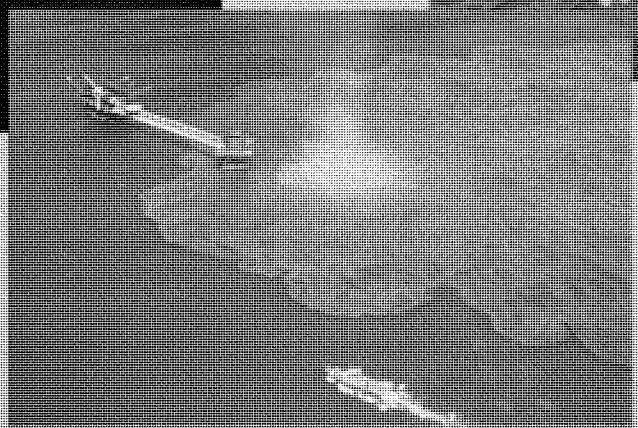
January 31 – February 4, 2011
Orlando, Florida
www.oscreadiness.org

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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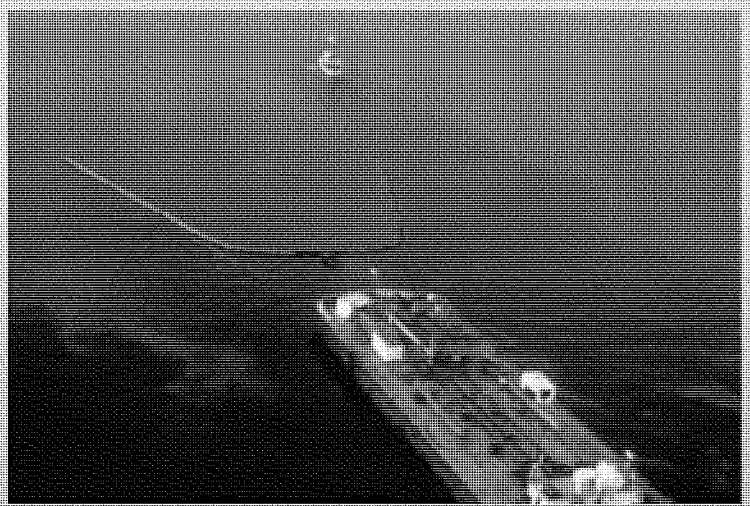
High Comfort Level

- 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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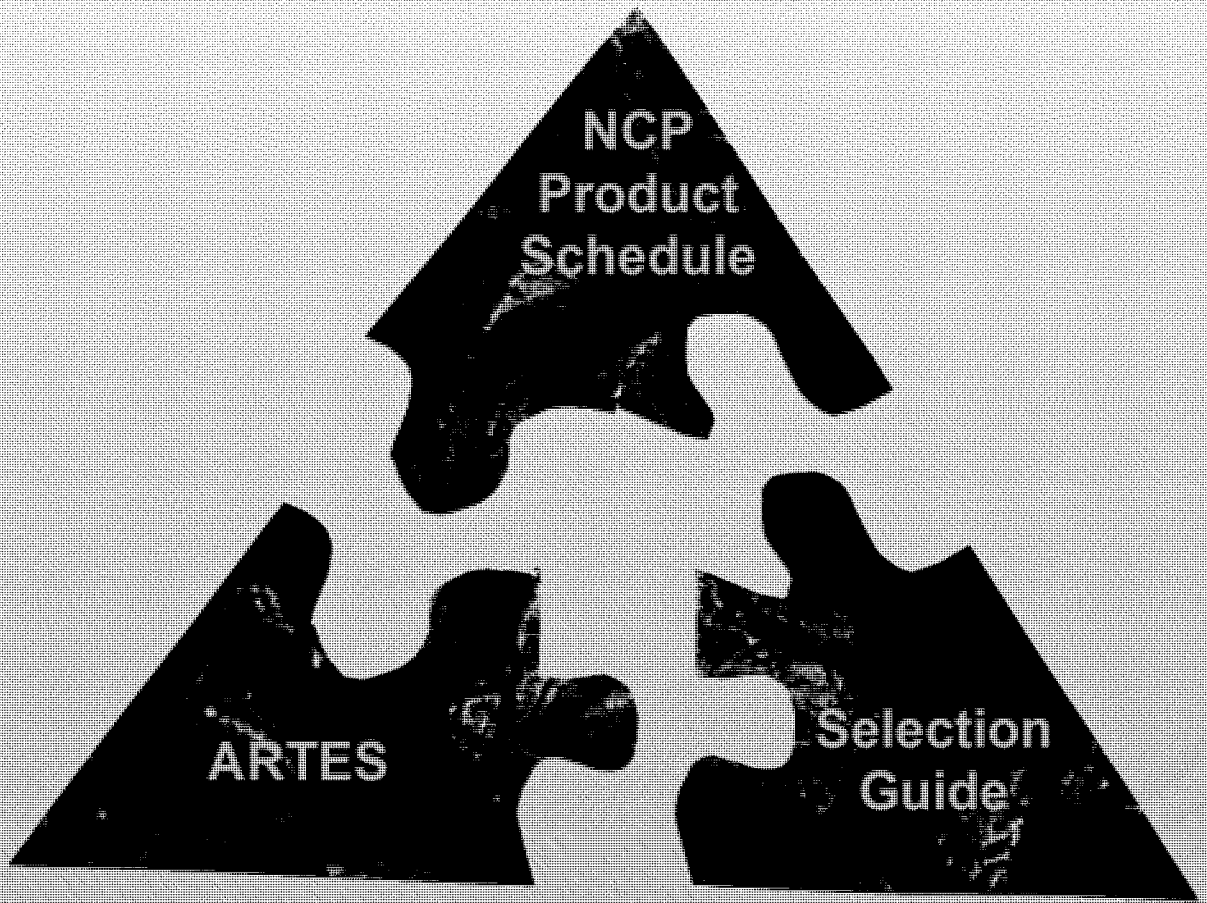
Putting the Pieces Together for Response Decision-making



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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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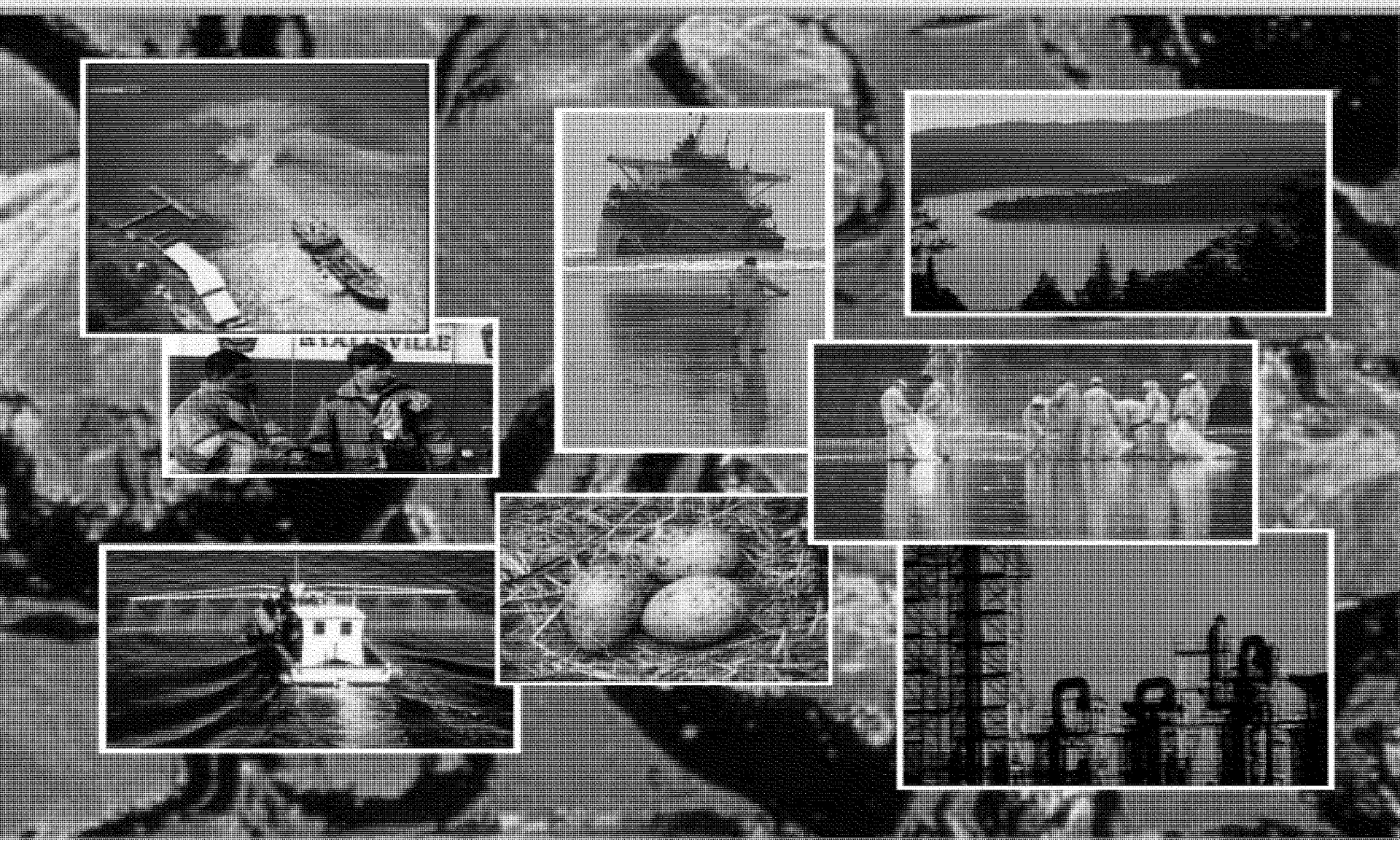
Selection Guide for Oil Spill Response Countermeasures



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!

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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

14th Annual OSC Readiness Training Program

OSC Training-Orlando, FL-2010
Alternative Countermeasures

Presenter: Albert D. Venosa, Ph.D.
U.S. EPA-ORD
Director, Land Remediation & Pollution Control Div.
National Risk Management Research Laboratory
Cincinnati, OH 45268
Date: February 3, 2010

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Outline of Presentation

- Two technologies to be discussed
  - Bioremediation
    - Definitions
    - Overview
    - The Process
  - Dispersants
    - Factors needed for effectiveness
    - Wave tank studies
  - Spill scenarios

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BIOREMEDIATION

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What is bioremediation?

- The exploitation of living microorganisms to convert organic contaminants into biomass and innocuous end products
  - Innocuous end products include CO_2, water, and incompletely oxidized organics

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How Biological Clean-up Is Achieved

- Naturally, without human intervention
  - Called "Natural Attenuation (NA)" or "Monitored Natural Attenuation (MNA)"
- Accelerated (requires human intervention)
  - Bioaugmentation
  - Biostimulation

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Natural Attenuation

- The disappearance of oil via natural means, including:
  - Volatilization
  - Washout
  - Biodegradation
  - Photolysis

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Basics of Biological Treatment

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Composition of Living Matter

- Among other trace substances, the primary components are:
  - Carbon: basic structural component of protoplasm and biomolecules
  - Nitrogen: used in formation of amino acids for protein synthesis
  - Phosphorus: used in formation of genetic material, high energy bonds, and membranes

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What are hydrocarbons?

- Organic compounds containing carbon and hydrogen
  - May contain fully saturated bonds (no double bonds) (alkanes)
  - May contain some unsaturated bonds (double bonds) (alkenes)
  - May be linear or cyclic and saturated (cyclohexane, hopane)
  - May be aromatic with single or fused rings (benzene, phenanthrene)
- When oil is spilled into the environment, it becomes food for living microorganisms able to utilize it for growth

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What is the goal of a microorganism?

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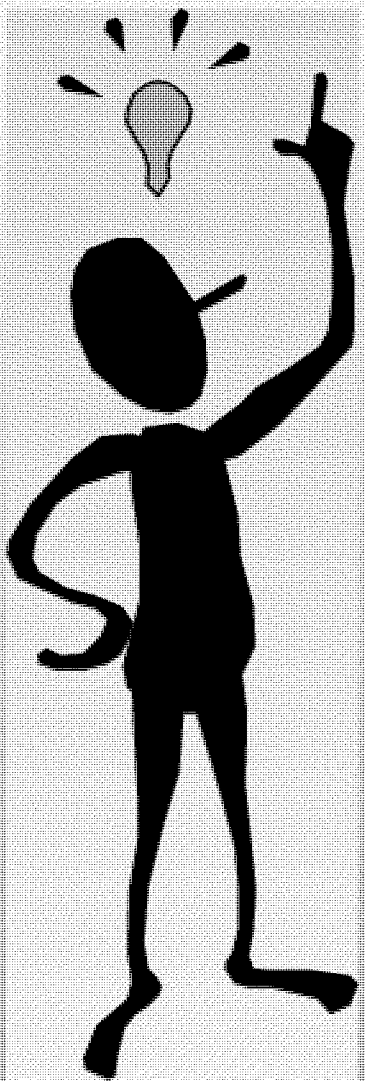
To make another microorganism!



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Process of Biodegradation

- Converting food into biomass requires several steps
  - 1st step is addition of OH-group to alkane or PAH ring forming an **alcohol** (R-OH)
  - Progressive **oxidation** to aldehyde (R-CHO), then to acid (R-COOH) leading to chain length reduction
  - As oxygen added to hydrocarbons, compounds become more polar, more water soluble
  - Polar compounds less toxic, more biodegradable
  - In case of PAH, **ring fission** occurs followed by chain length reduction as above
- Eventually to water, CO_2, biomass, and innocuous end products

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Biodegradable Components of Petroleum Oils

- Alkanes (saturates): easy
- Polycyclic Aromatic Hydrocarbons (PAHs): moderate
  - Fused aromatic rings, must be split
  - Biodegradability depends on number of rings and alkyl substituted groups
- Heavy polar compounds (NSO): difficult
- Asphaltenes: very difficult, complex

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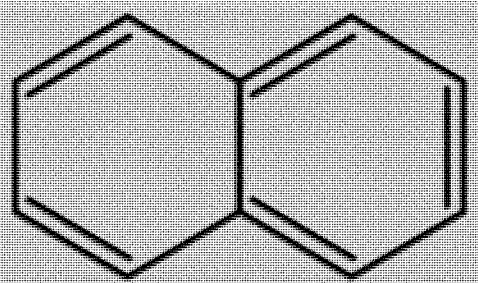
Examples

- Straight Chain Alkanes: easy to degrade. Example: HEPTADECANE (17 carbons)

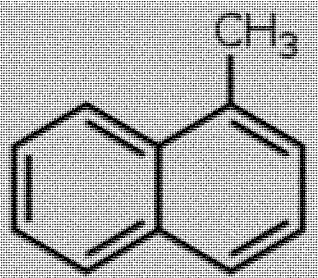
- Branched alkanes: harder to degrade. Example: PRISTANE (19 carbons)

- PAHs

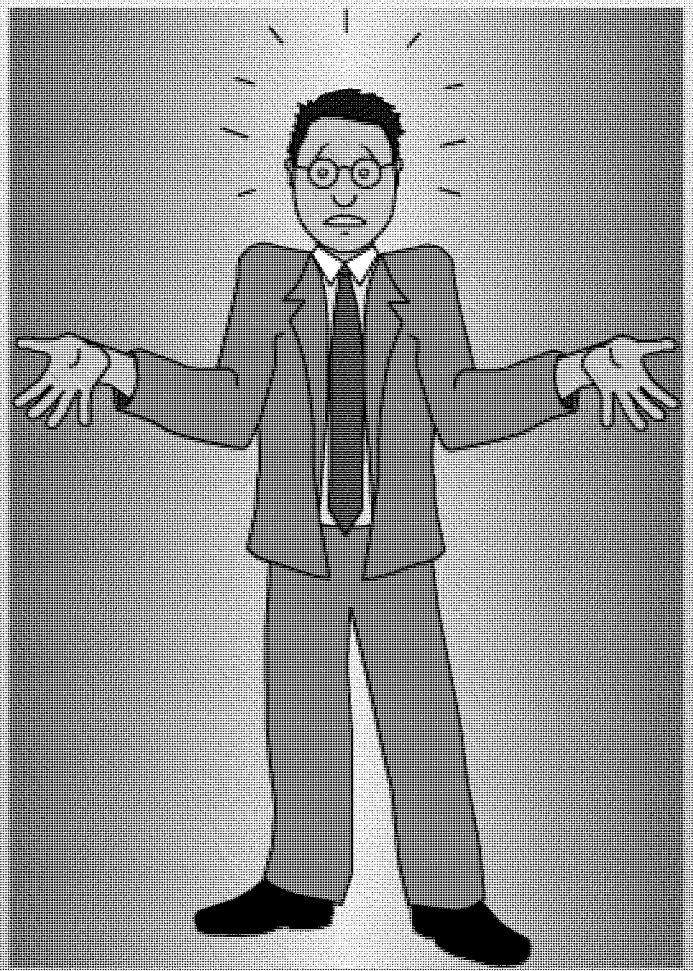
(parent, easier)



(alkyl-substituted, harder)



What are the requirements for successful bioremediation?



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Requirements for Success

- Bacteria with metabolic capabilities must be present
- Rates of growth can be maximized by ensuring that:
  - Adequate supplies of oxygen and nutrients must be present
  - pH between 6 and 9
  - No other adverse circumstances
    - High salt content
    - Low moisture
- Weight of oil affects success (lighter oils more biodegradable, asphaltenes tend to inhibit diffusion)
- Oil surface area important because biodegradation occurs at oil-water or oil-sediment interface

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Where are oil degraders found?

- Hydrocarbons are found everywhere
- Hydrocarbon degraders are found everywhere

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An oil spill causes huge influx of carbon (food). How does an organism cope?

- To convert carbon to biomass, bacteria must have nitrogen and phosphorus and oxygen
- Bacteria will grow slowly in presence of usual amounts of N and P in nature
- To maximize rate, give more N and P
- May need to provide oxygen

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Bioremediation Approaches

- Bioaugmentation
  - The addition of highly competent microbial cultures to an impacted site to accelerate or kick-start the biodegradation process.
- Biostimulation
  - The addition of factors (usually nutrients) that limit the ability of the degrading populations to grow at their maximum rate.

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Assumptions for Successful Bioaugmentation

- Culture must be able to grow rapidly on oil
  - Can be determined in lab (NCP product testing)
- Culture must be able to colonize the environment rapidly and out-compete the natural communities
  - Very difficult to accomplish

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Quiz Question:

Based on what you know so far, do you think adding a living culture to a spill site will accomplish the cleanup goal?

Why or why not?

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Answer

- No need to add cultures to an oil spill
- Bacteria need what is lacking: N and P, and if the environment is anaerobic, also need oxygen
- We have 2 guidance documents that describe how to calculate and add nutrients to an oil spill site
  - Available on EPA website:

http://www.epa.gov/emergencies/publications.htm#bio

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Wetland Environments

- Oil spills very likely to affect coastal marshes and wetlands
- Most research data available are ORD-funded studies in Quebec and Nova Scotia

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Properties of Wetland Environments

- Usually oxygen limited, very quiescent (little wave action)
  - Become anaerobic a few mm below ground surface
- Likely not nutrient-limited
  - However, plants easily out-compete bacteria for available nutrients

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How is bioremediation applied to wetlands?

- Depends on goal:
  - If oil removal is main goal, natural attenuation may be the favored strategy, especially if penetration took place
    - Biostimulation might still be appropriate if significant penetration has not occurred
  - If ecosystem recovery is main goal, nutrient addition may speed restoration substantially

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Plot Recovery in St. Lawrence River Study, Mid-Summer

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Plot Recovery, St. Lawrence River, end of summer

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Plot Recovery, St. Lawrence River, 2nd year

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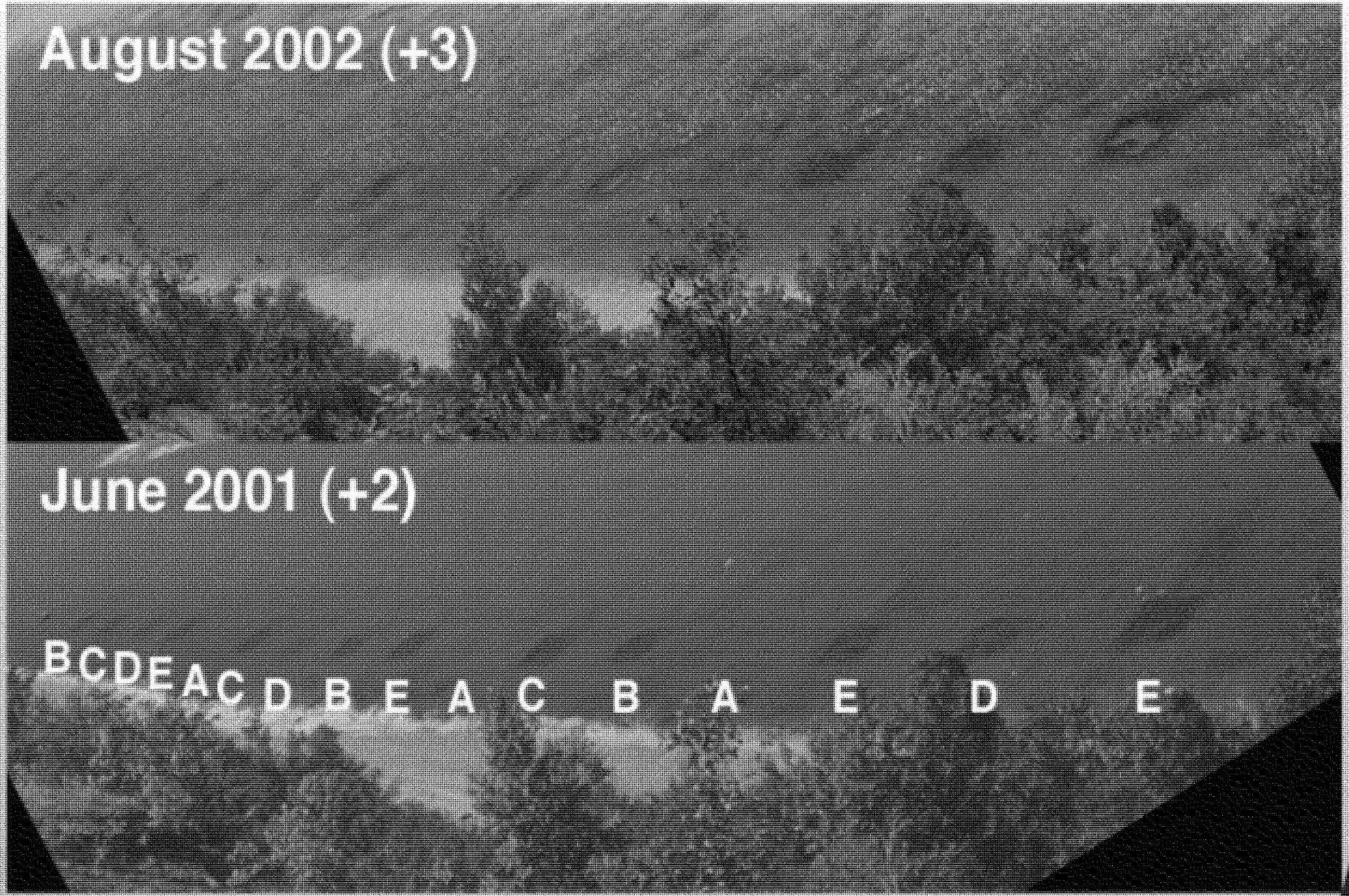

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Land Bioremediation

Properties of Terrestrial Environments

- Lateral spread of oil less widespread than in coastal wetlands or beaches
- Ecological damage typically localized and limited
- Problem: vertical movement to water table

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Land Farming

- Same principles apply:
  - Maintenance of supply of nutrients
  - Maintain aerobic conditions
    - At shallow depths, tilling
    - At deeper depths, bioventing or excavation followed by *ex-situ* techniques like biopiles or composting
  - Fertilizer needs for land treatment
    - Typically, ratio of 100C:10N:1P used (minimize use of nitrate)
    - Prefer adding in several increments, not all at once

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Factors Affecting Land Treatment

- pH control neutral to slightly alkaline (6.5 to 8.5)
- Moisture important
- Nutrients
  - Without spill, microbial activity usually limited by carbon
  - After spill, N and P usually limiting

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Vegetable Oil

- Properties similar to petroleum
  - Light nonaqueous-phase liquid (LNAPL)
- Coating of feathers, fur, and gills is harmful
  - Absence of odor and sheen results in reduced avoidance
  - Reduces thermal insulation and buoyancy
- May burn if ignited
- May clog water treatment plants (due to the polymerization property)
- Surface oil may prevent re-aeration of water column

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Composition of Vegetable Oils

- Triglycerides
  - Long chain fatty acids coupled to glycerol, a 3-carbon compound with 3 alcohol (-OH) groups
  - Fatty acids are long chain alkanes (saturated) or alkenes (unsaturated) with a carboxylic acid group at end (-COOH)
    - To make a triglyceride, the fatty acids replace the –OH groups
  - Examples
    - Stearic acid (18 carbons with no double bonds)
    - Oleic acid (18 carbons with one double bond)
    - Linoleic acid (18 carbons with two double bonds)
    - Linolenic acid (18 carbons with three double bonds)

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Chemical Effects of Vegetable Oil Spills

- High BOD may cause oxygen depletion
  - Greater effect on DO than petroleum oils
- Unsaturated oils (liquids at cold temperatures) are subject to chemical (abiotic) oxidation
  - Polymerization due to chemical oxidation and cross-linking
  - Rancid odors may develop rapidly
  - Unsaturated oils form gum balls and varnishes
- Saturated oils turn solid at cool temperatures
- May be toxic or form toxic products
  - Especially free fatty acids and chemical oxidation products

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Biodegradability of Vegetable Oils

- Degradable both aerobically and anaerobically
  - Because they're already oxygenated (fatty acids), anaerobic biodegradation can proceed rapidly
  - This distinguishes these oils from petroleum oils
- If polymerization occurs, biodegradation is inhibited
  - Gumball and varnish formation

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DISPERSANTS

What are dispersants?

- Compounds that contain one or more surface active agents (surfactants) and possibly a solvent
  - Surfactants reduce the oil-water interfacial tension
  - Solvents reduce oil viscosity
- When applied to a slick, small droplets are formed that intermix in the water column, increasing the surface area of the oil

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What makes dispersants effective?

- Properties of the oil
  - Viscosity
  - Weight
- Slick thickness
- Dispersant:oil ratio (DOR), best at 1:25 to 1:50
- Surfactant loss at the water surface
- Surface tension of water
- Salinity
- Mixing energy due to wave action

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Importance of Mixing Energy

- Dispersion takes place at small scale (< 1 cm)
  - Simulation in lab possible since small eddies similar to eddies at sea
  - Energy dissipation rate per unit mass is the measure of mixing energy
    - Units are Watts/kg water
    - Dissipation of kinetic energy due to laminar and turbulent shears, which are directly proportional to velocity gradients
    - Measure velocity gradients to compute energy dissipation rate

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Wave Tank at Halifax, NS

- A collaboration between EPA and Fisheries & Oceans Canada (DFO)
- Wave tank fabricated at the Bedford Institute of Oceanography (BIO), Dartmouth, NS
- Objective: to study dispersant effectiveness at various mixing energies representative of sea states
  - Experiments have taken place to define energy of breaking and non-breaking waves
  - Batch and flow-through conditions

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Characteristics of Wave Tank

- Dimensions: 32 m x 2 m x 0.6 m
- Materials of construction: epoxy-coated steel
- Computer-controlled wave maker able to produce regular and breaking waves
- Wave absorbers to mitigate reflection
- Can be drained and filled in < 2 h
  - Allows for cleaning between runs to prevent residuals from confounding experiments
- Can be operated in batch and flow-through modes

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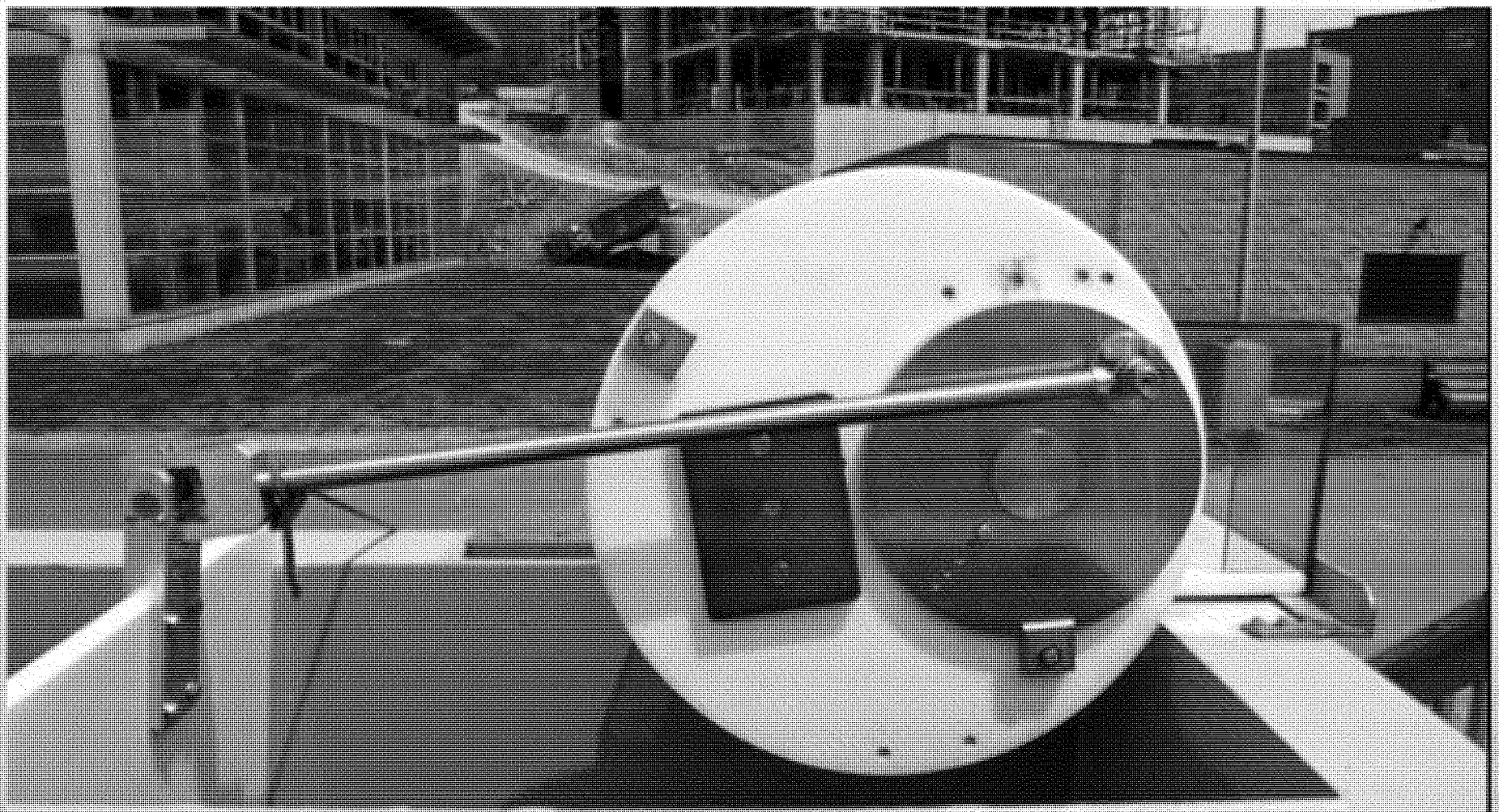

Wave Maker

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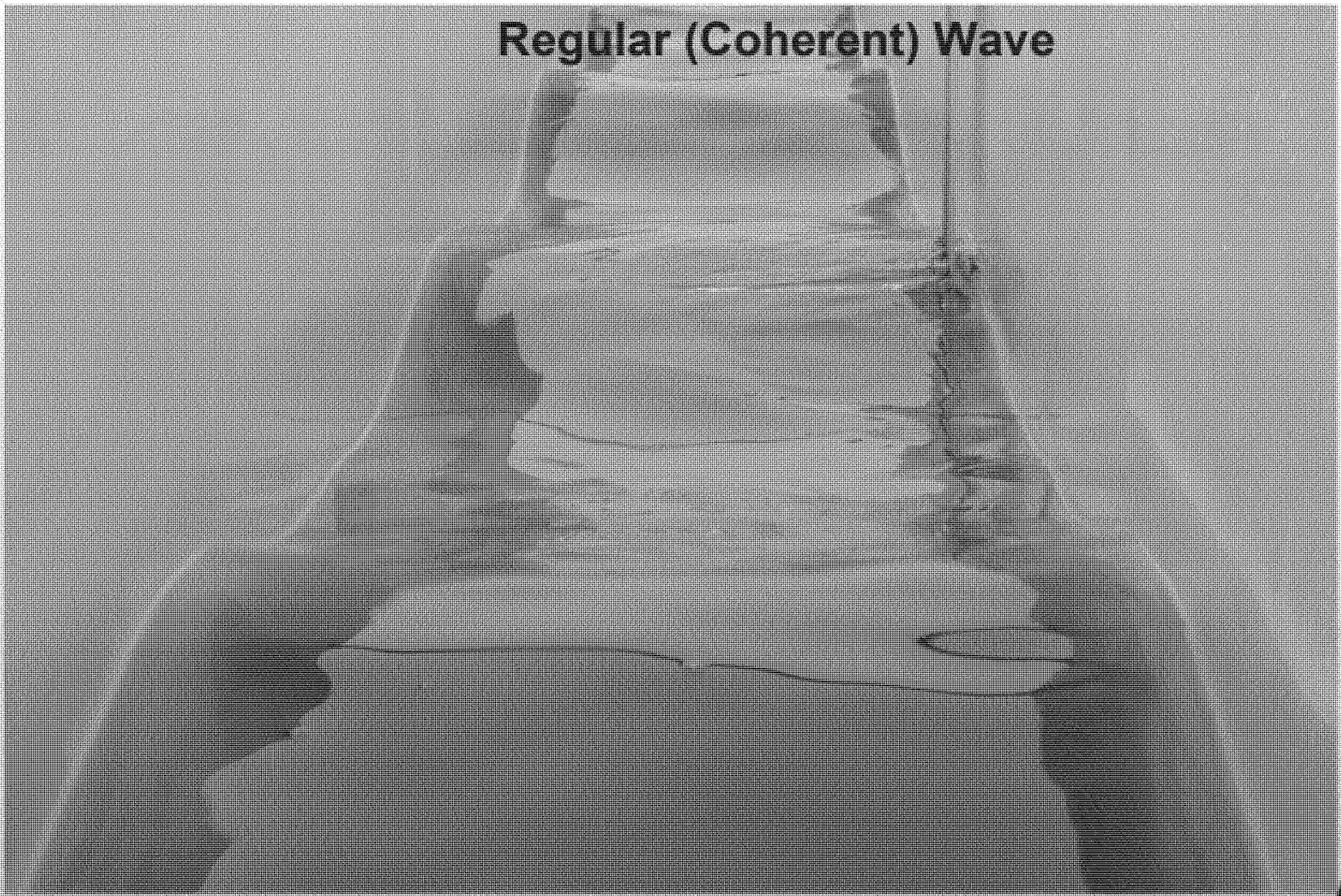
Regular (Coherent) Wave



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Mild, Spilling Breaker

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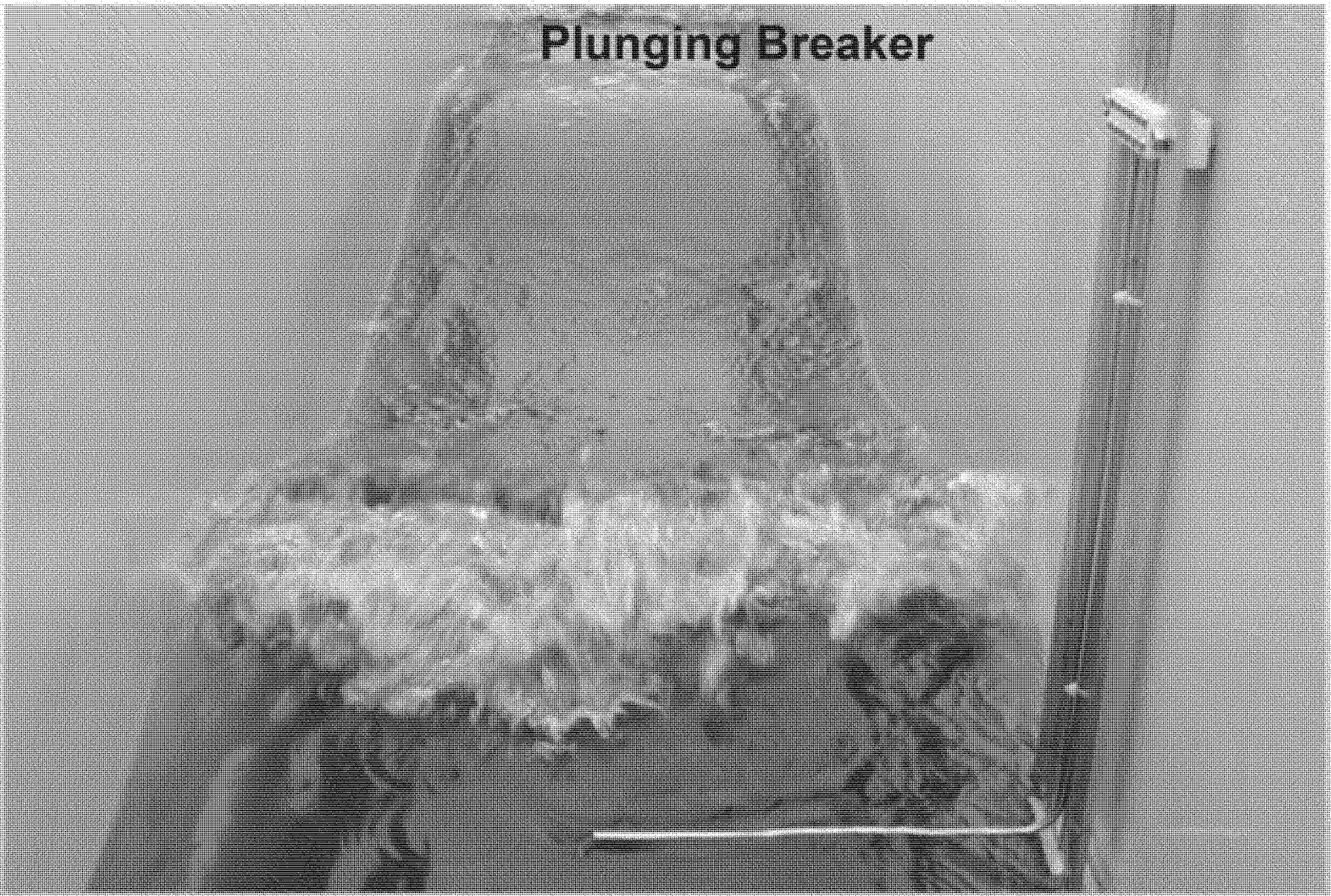
Plunging Breaker



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Dispersant Effectiveness

- Breaking waves are important for effective and lasting dispersion
  - Breaking waves shear oil slick into tiny droplets that don't easily recoalesce
  - Breakers push oil downwards into water column where currents may carry the dispersed oil away
- Regular waves disperse oil somewhat but do not impart sufficient energy to break up the oil into small droplets or push the droplets down deeply into the water column
  - They do maintain sufficient energy to maintain dispersed state
- Mineral fines enhance dispersion of oil into water column

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Summary of Dispersant Use in Gulf Spill

- EPA science team developed sampling and monitoring plan for deep sea injection and surface application
- Called for measurement of:
  - Dispersed oil by fluorometric techniques
    - CDOM (colored dissolved organic matter)
    - CTD (conductivity, temperature, depth)
    - More advanced but proven techniques (fixed wavelength)
  - Droplet size distribution (LISST)
  - Analytical chemistry (GC/MS and TPH) of batch samples
  - Dissolved oxygen
    - Hypoxic level was 2 mg/L (or 1.4 mL/L)
  - Toxicity by rotifer assay (Rototox)

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Subsurface Injection of Dispersant

- Volume based on DOR, high degree of uncertainty
  - Optimum volumetric DOR ~ 1:25 to 1:50
  - Flow rate of oil unknown for first 30 days
    - Originally thought to be 5,000 bbl/d (210,000 gpd)—gave a DOR of 1:14 (too much dispersant)
    - Later adjusted higher and higher to final flow of 62,000 bbl/d (2.6 million gpd or a DOR of 1:174 (too little dispersant)
    - Due to uncertainty of ecological effects, dispersant use was fixed at 15,000 gpd for spill duration
- Dispersed oil plume detected consistently at 1,100-1,300 m
  - Moving predominantly in SW and NE directions (isobath flow)
  - Active natural seeps mapped at 12 SW and 17 km NE of wellhead

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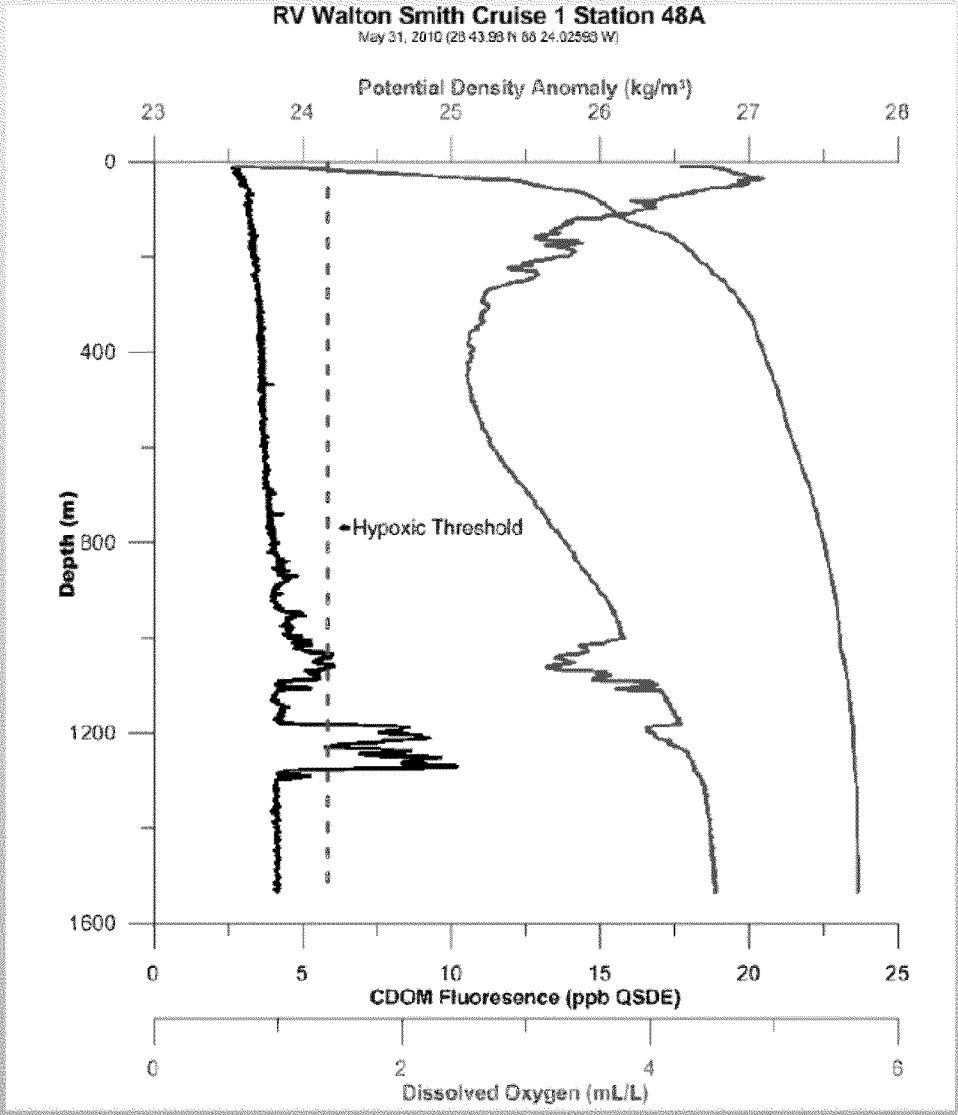
Vertical profile showing 2 DO depressions coincident with fluorescence peaks



Future Research Based on BP Spill

- Improvements in fluorometric monitoring of dispersed and non-dispersed oil plumes needed
  - Questions remain on optimum sensor configuration and NOM interference
  - 4-D mapping of dispersed oil plumes (leverage with NOAA)
  - Improved, innovative laser-based fluorometry (leverage with Canada DFO)
  - Better, faster analytical methods for measuring fate and transport of dispersed oil
- Develop green oil spill mitigation approaches for reduced toxicity and persistence in environment
- Better understanding of water-in-oil emulsions (mousse)
- Assessment of weathering effects on dispersion of oil
- Biodegradability of tar balls and other emulsions
- Exposure assessment scenarios for human and ecosystem effects
- Toxicity testing over many trophic levels
- Development of comparative risk assessments for sensitive species to inform risk management options

ED_001324_00006017-00053

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

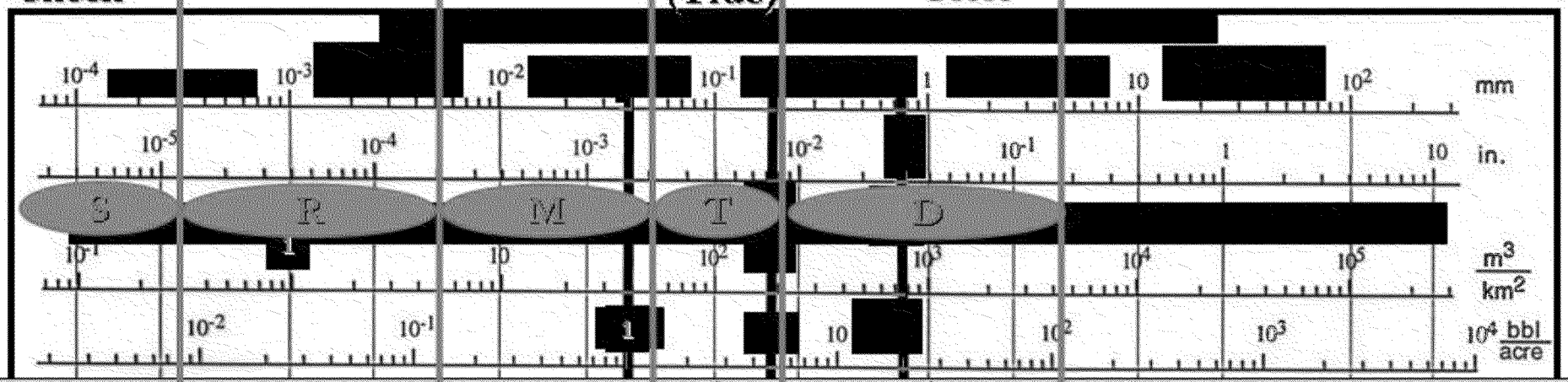
- It is an important first step to estimate the amount of oil on the surface in order to determine the required dispersant loading or to predict the feasibility of *in situ* burning.
- Al Allen of Spiltec has created an elegant oil thickness estimation system. Using this and an estimate of the area of 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

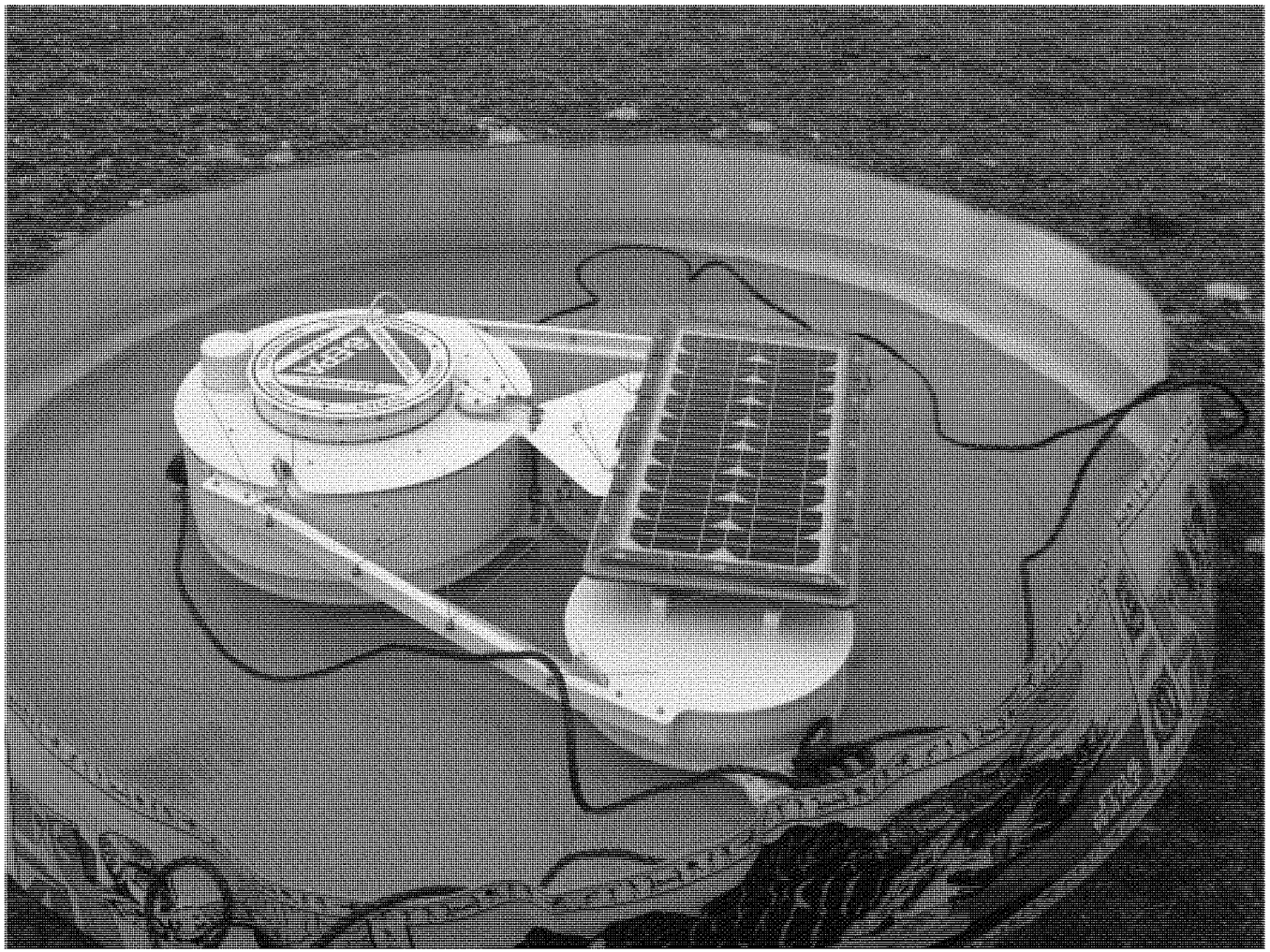
Emulsions

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.



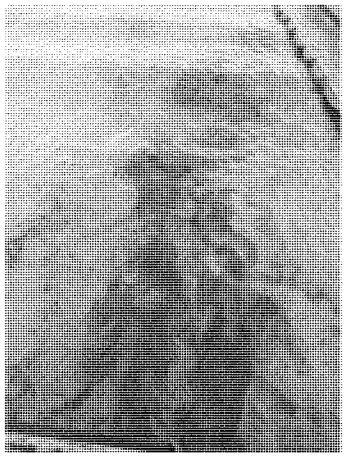
Standardizing SMART Tier 1

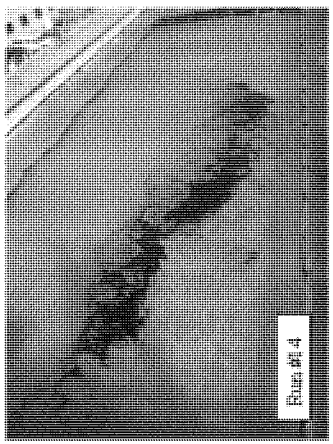
- Visual assessment of oil slick and oil in surface waters:
  - Trained observers may be hard to find.
  - Attempts to standardize observation and reporting of visual dispersion observations
  - Assesses ONLY initial break up of slick into dispersed oil droplets
  - Remember that dilution of the dispersant 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

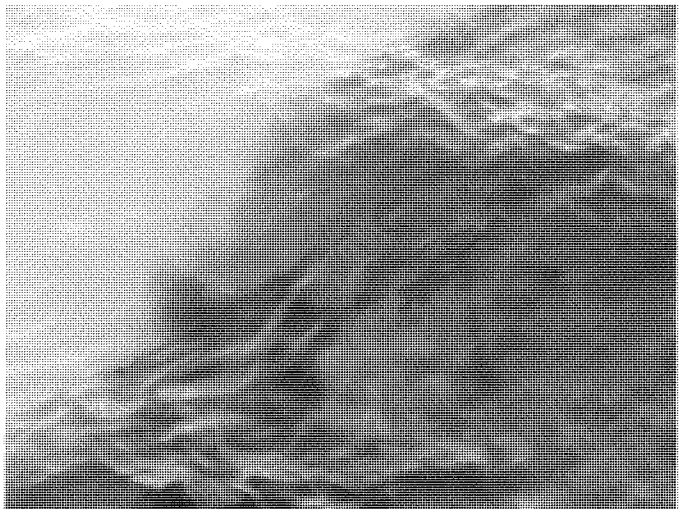
a. Based only on behavior of oil in first 15 minutes after dispersant added and agitated by waves.

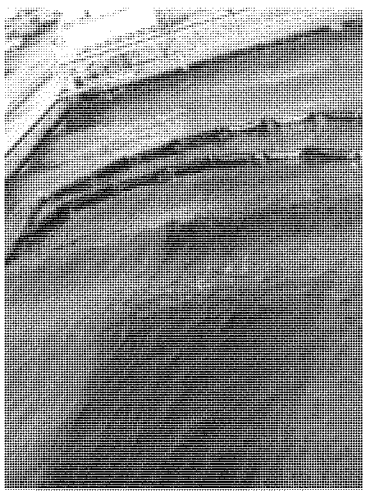
Visual Effectiveness = 1



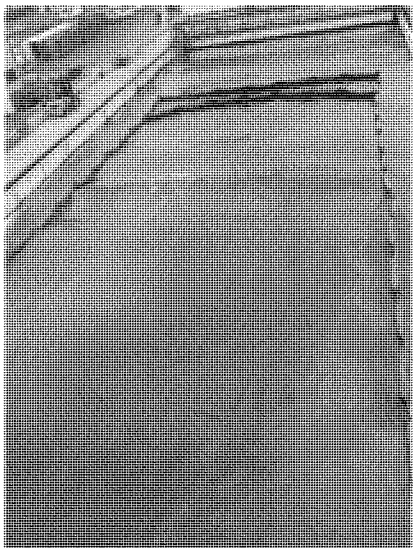


Visual Effectiveness = 3





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.

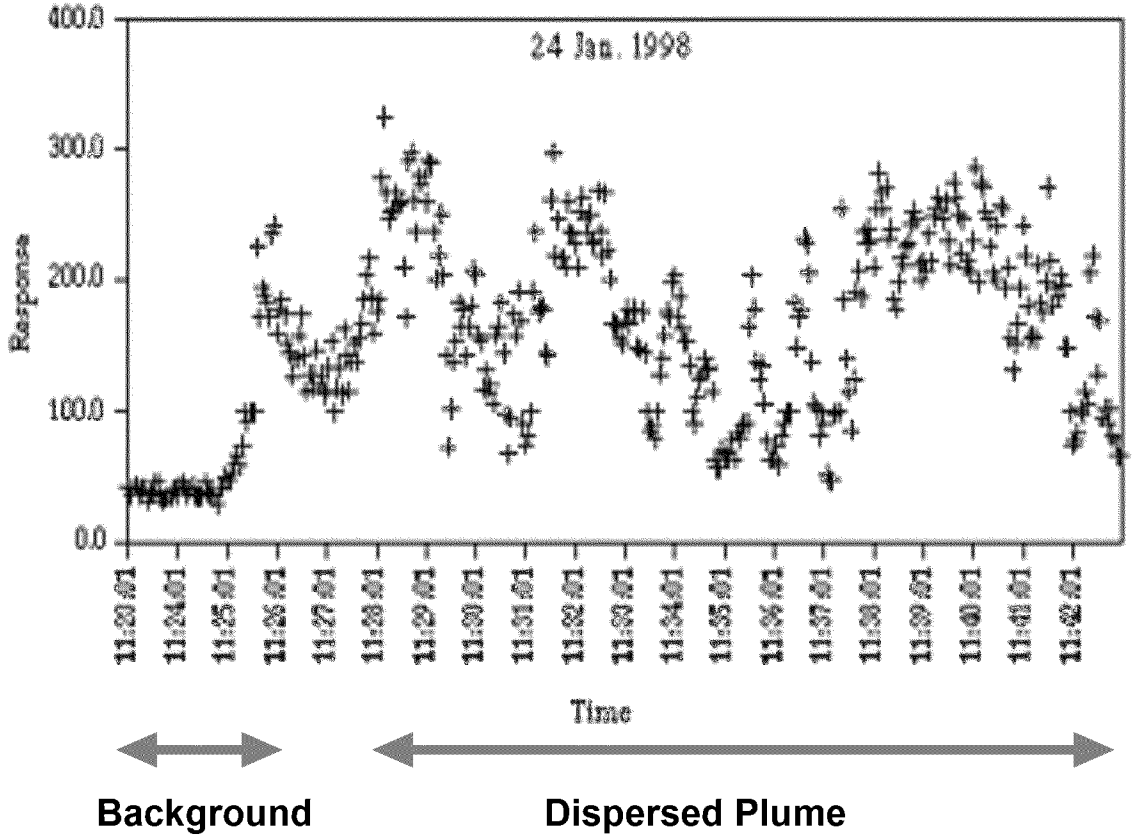
SMART Tier 2 – Fluorometry (cont'd.)

- 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.

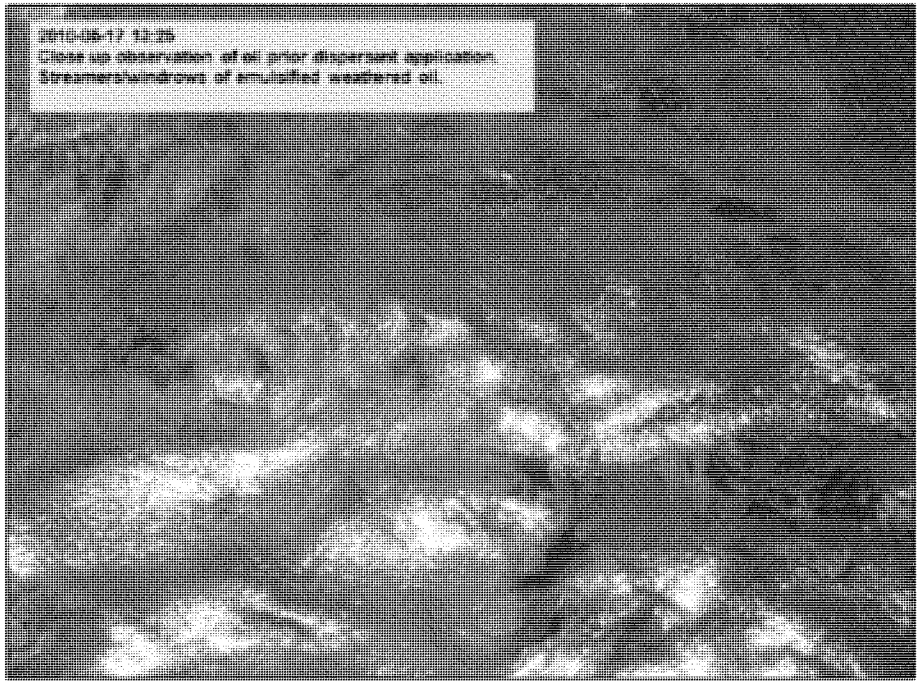
Steps for SMART Tier 2 - Fluorometry

- 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.

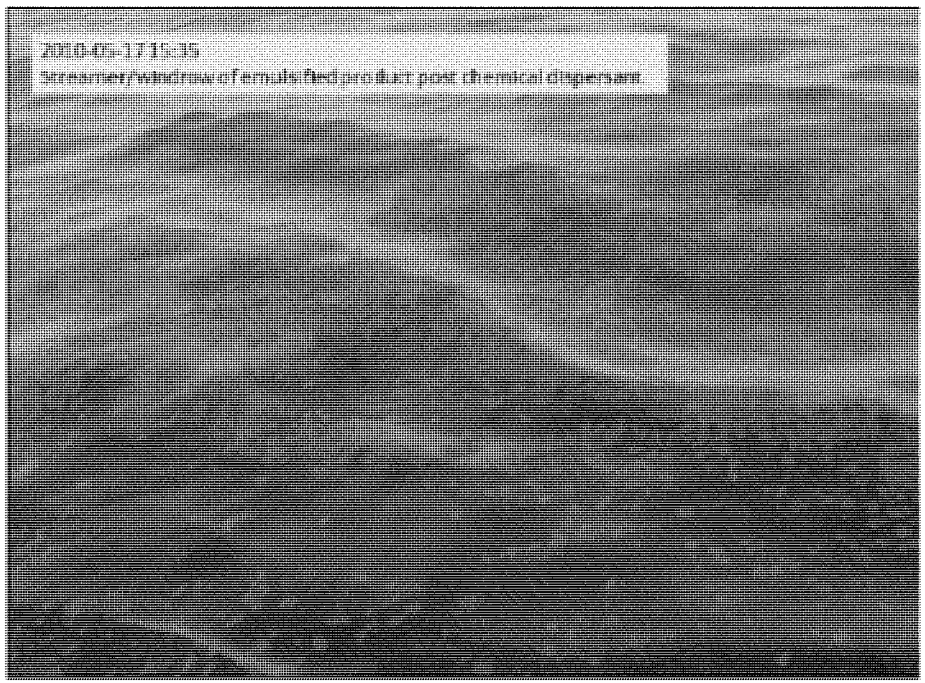
Ideal Surface Application of Dispersant



"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.

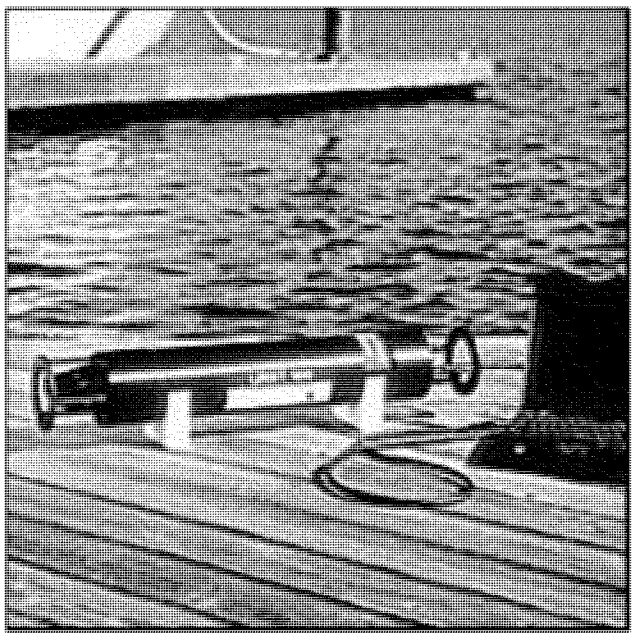
BUBA Buster / Wetstar x GPS

- 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

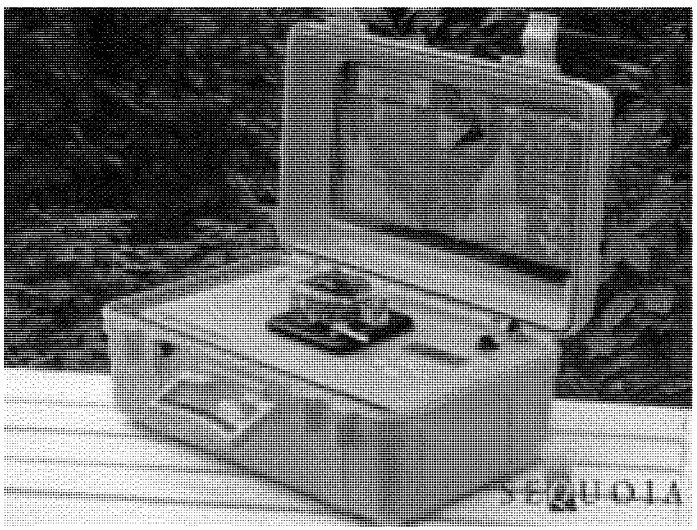
- Measures both oil droplet abundance and particle size in the range of 2.5 – 500 microns
- In-situ measurement
- Little set up needed
- Requires “blank”
- Needs clean water standard
- Continuous monitoring on transects
- Laser *In-Situ* Scattering and Transmissometry (LISST) instrument.



LISST–100X Type-C

Sequoia On-Board Analysis

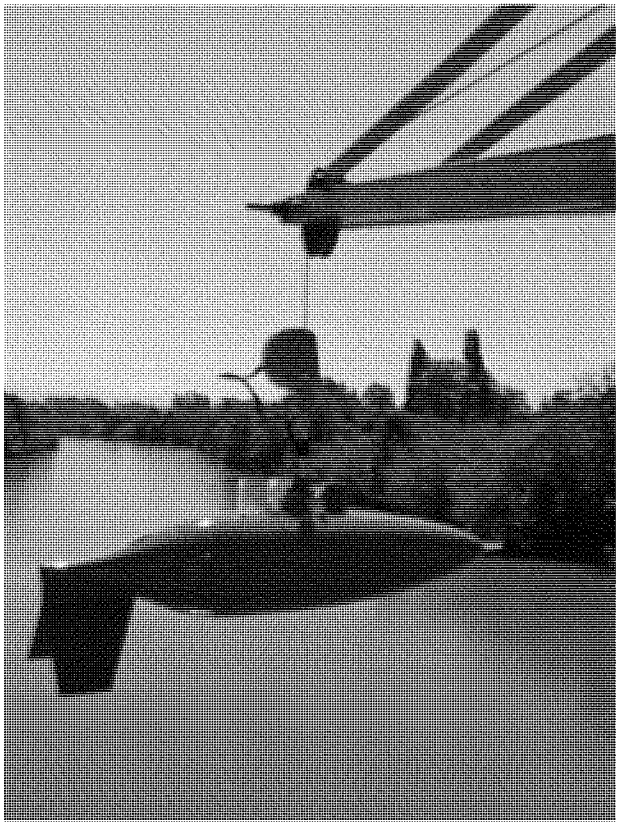
- Ex-situ particle-size analyser
- Analytical capability of LISST 100, but in ex-situ format
- Continuous monitoring
- Requires pump on effluent side
- Requires “blank”
- Amenable to post-calibration



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

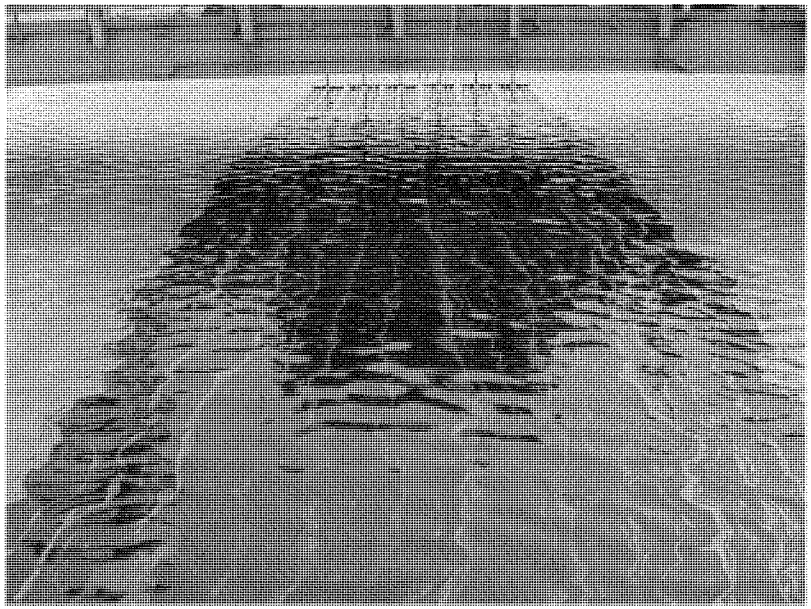


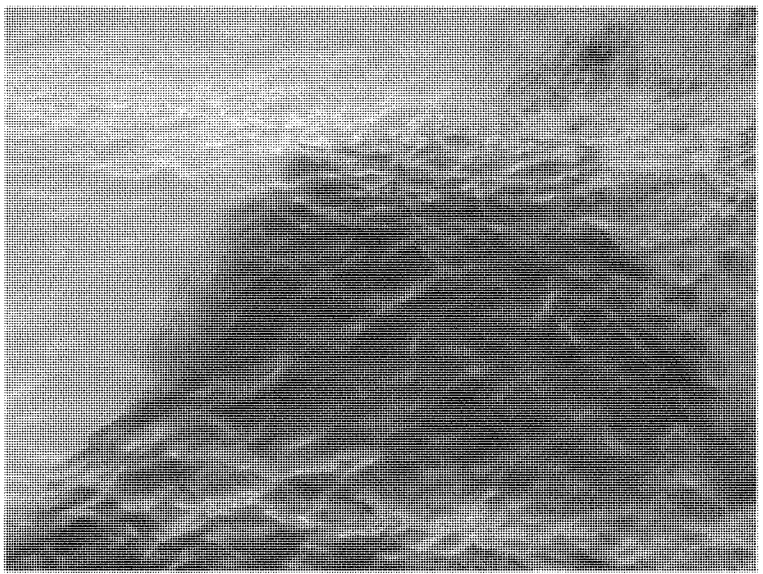
Sequoia SL

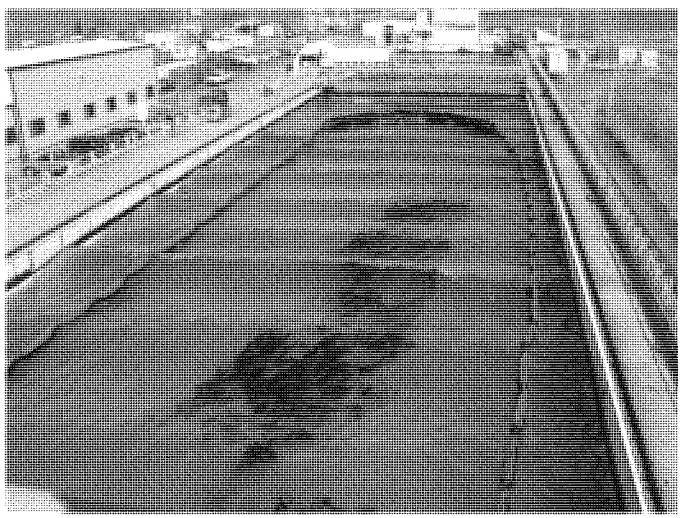
Summary of New Items
Based on a presentation by Ken Trudel

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



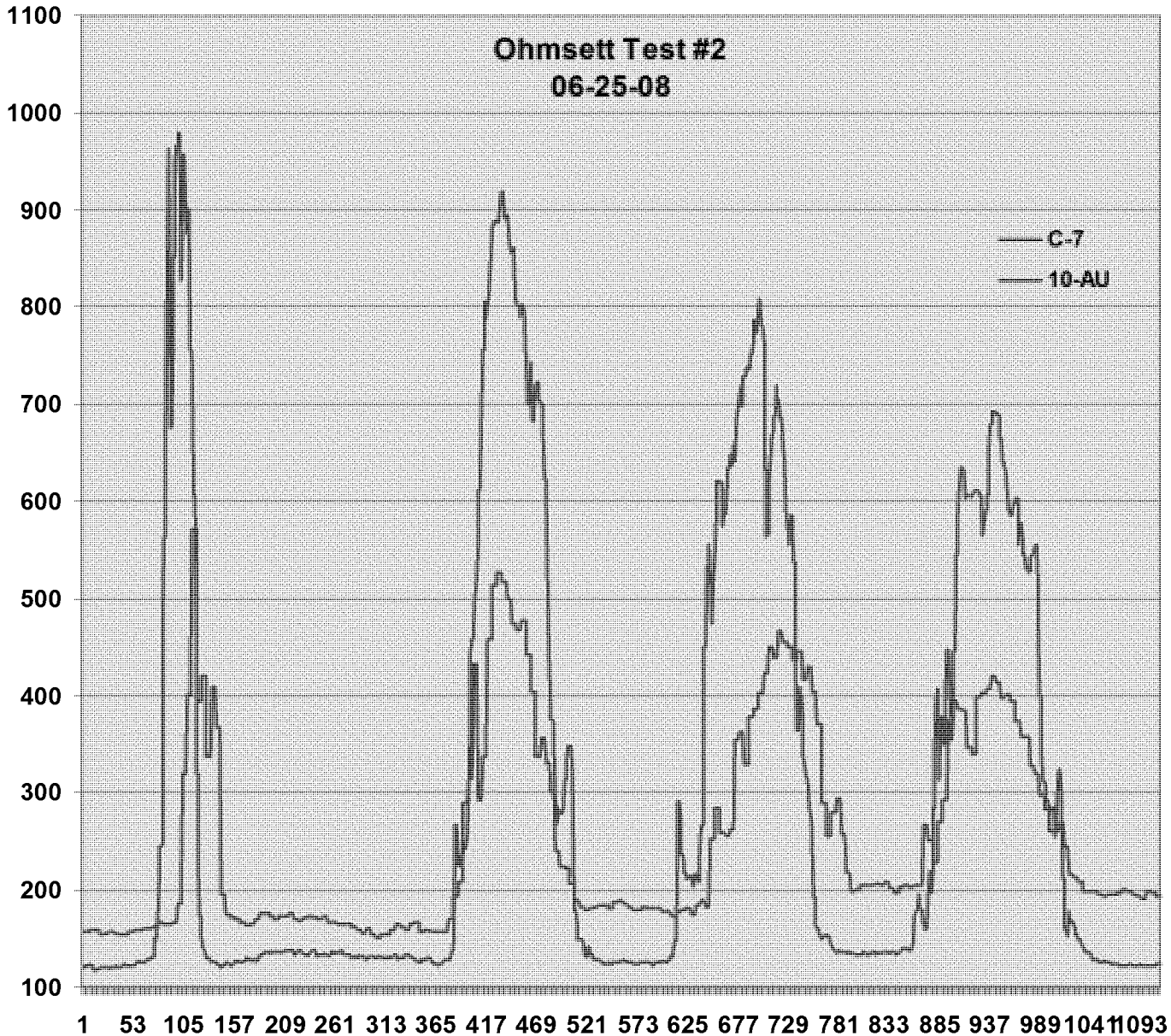




Results of AU-10/Cyclops Comparison at OHMSETT June 2008

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.

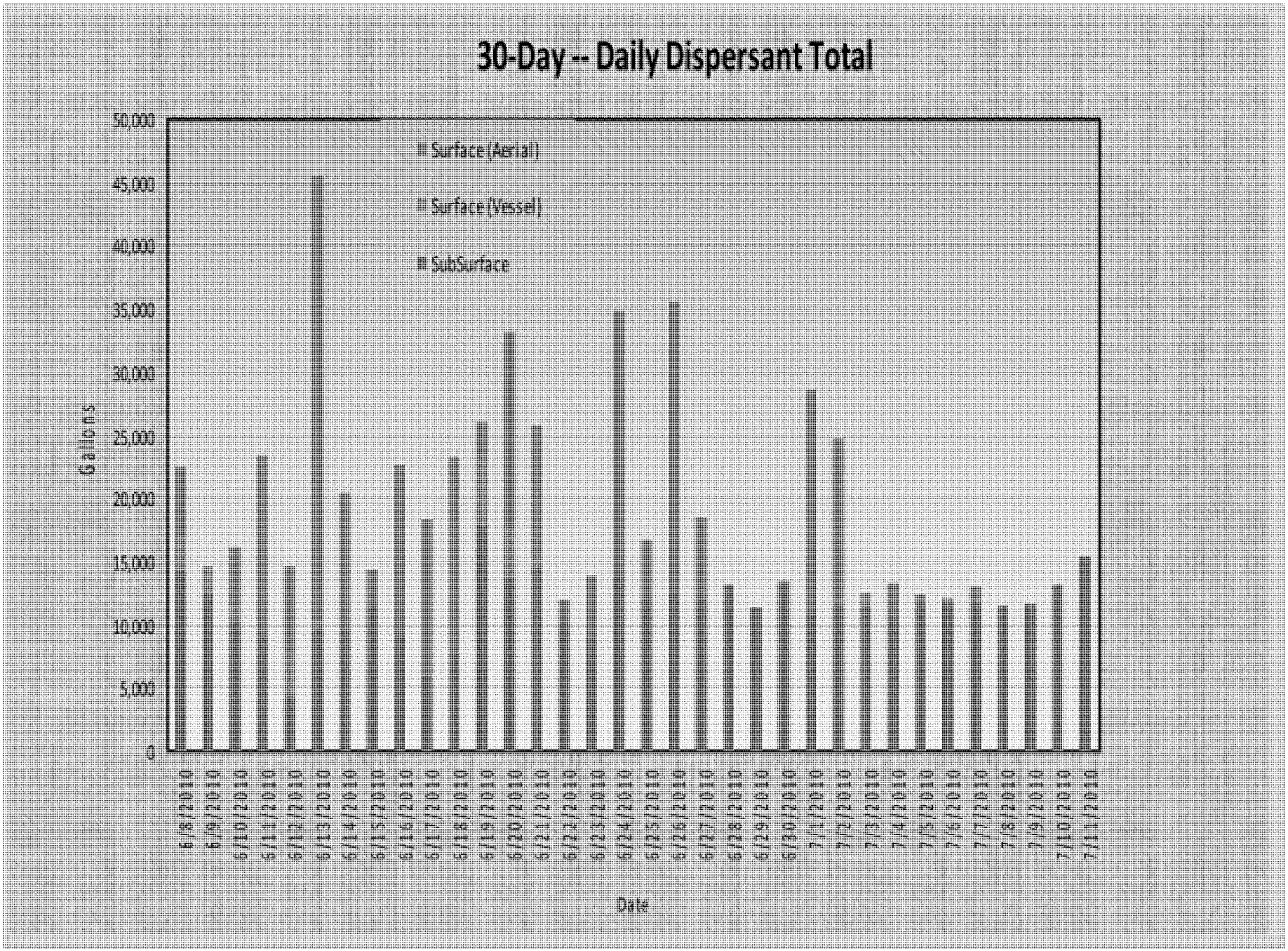

Ohmsett Test #2
06-25-08
C-7
10-AU
1100
1000
900
800
700
600
500
400
300
200
100
1 53 105 157 209 261 313 365 417 469 521 573 625 677 729 781 833 885 937 989 1041 1093

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

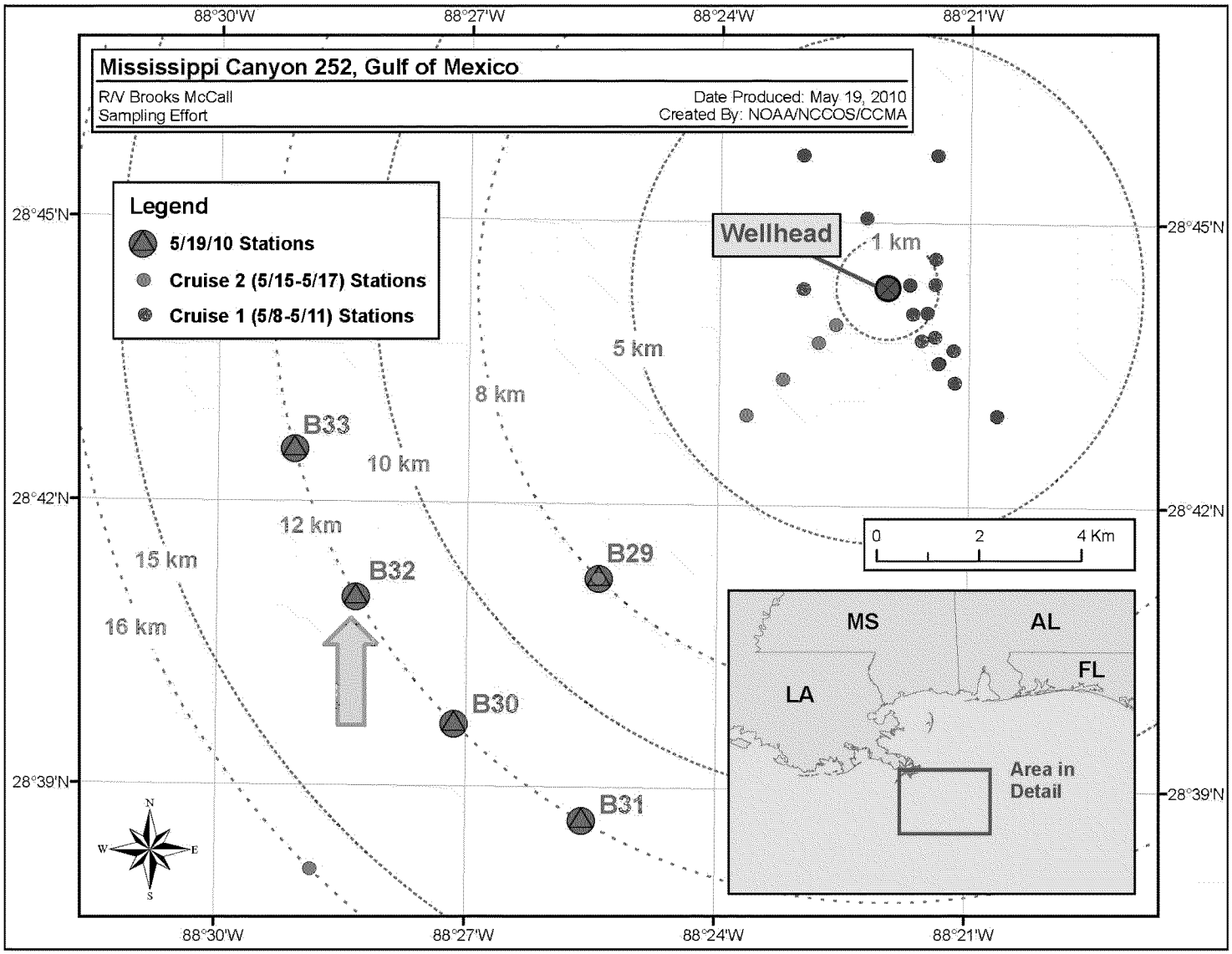
- Per RRT guidance application occurs >3 miles offshore and water depth of > 10 meters
- Applied primarily via aircraft
- As of 07/12/10
  - 404 sorties flown
  - 975,038 gallons sprayed
  - 305 sq miles covered (195,008 acres)


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

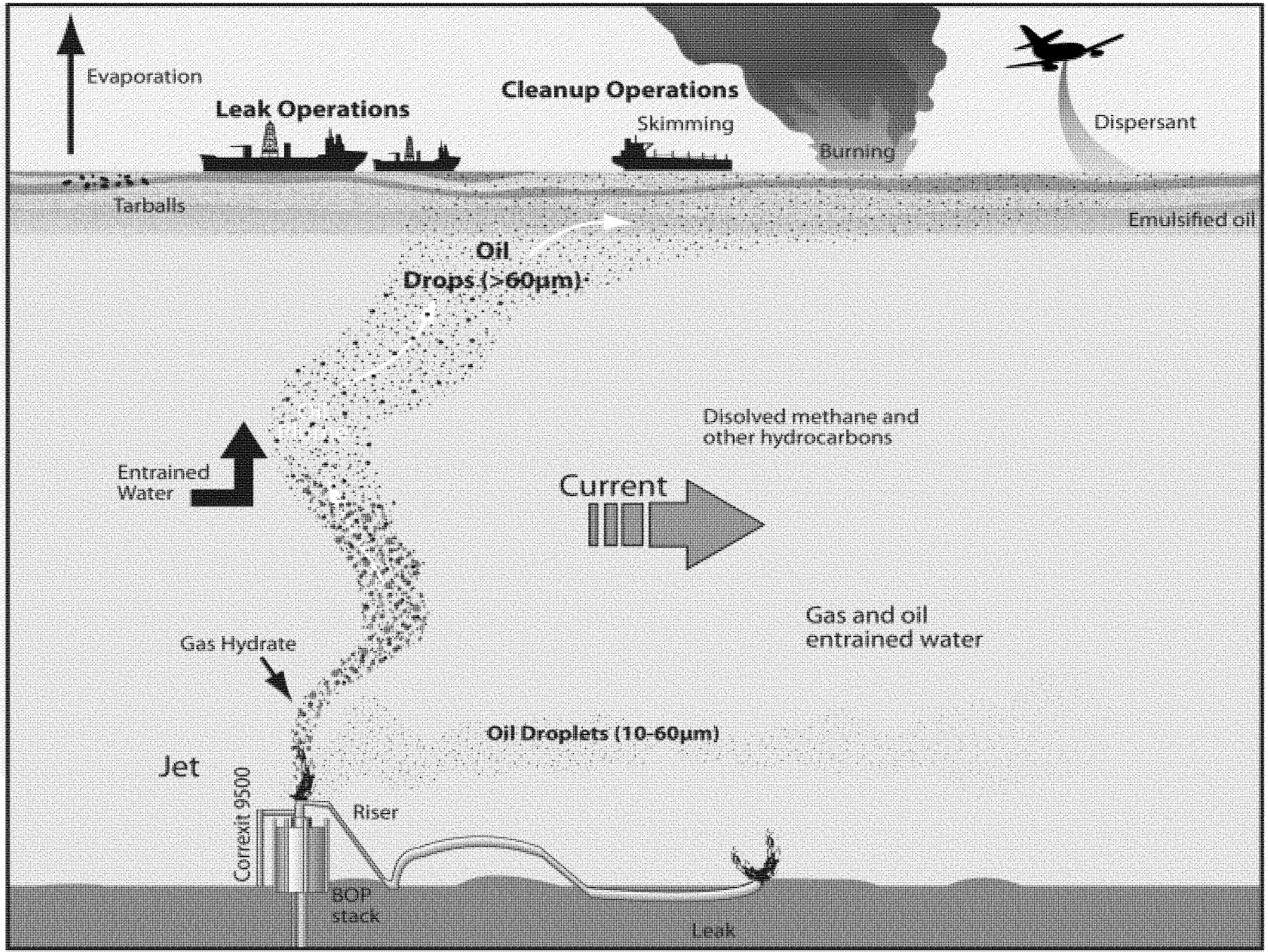
Conductivity, Temperature, Density (CDT) Data plus Fluorometry Traces

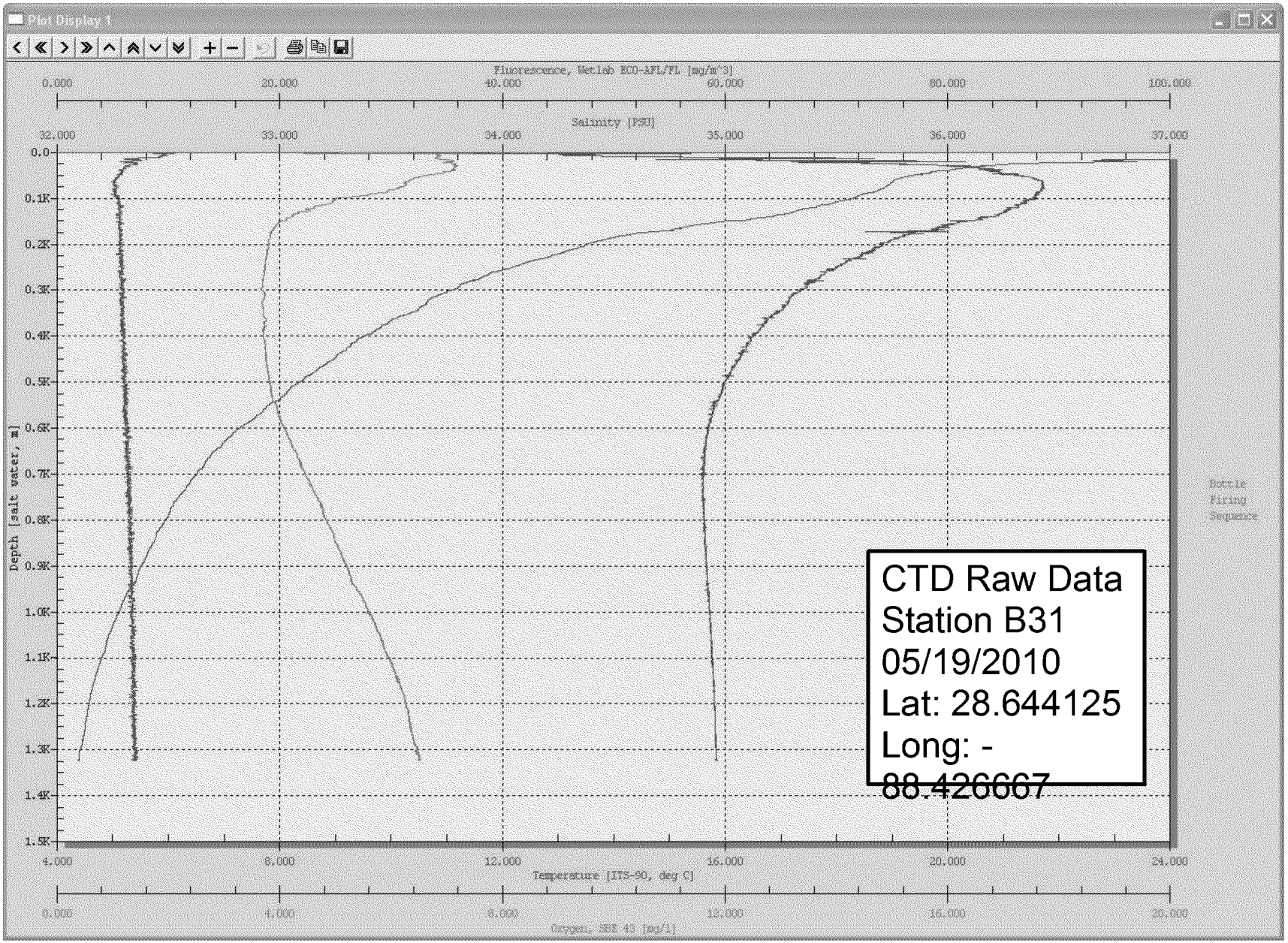
Sampling Locations

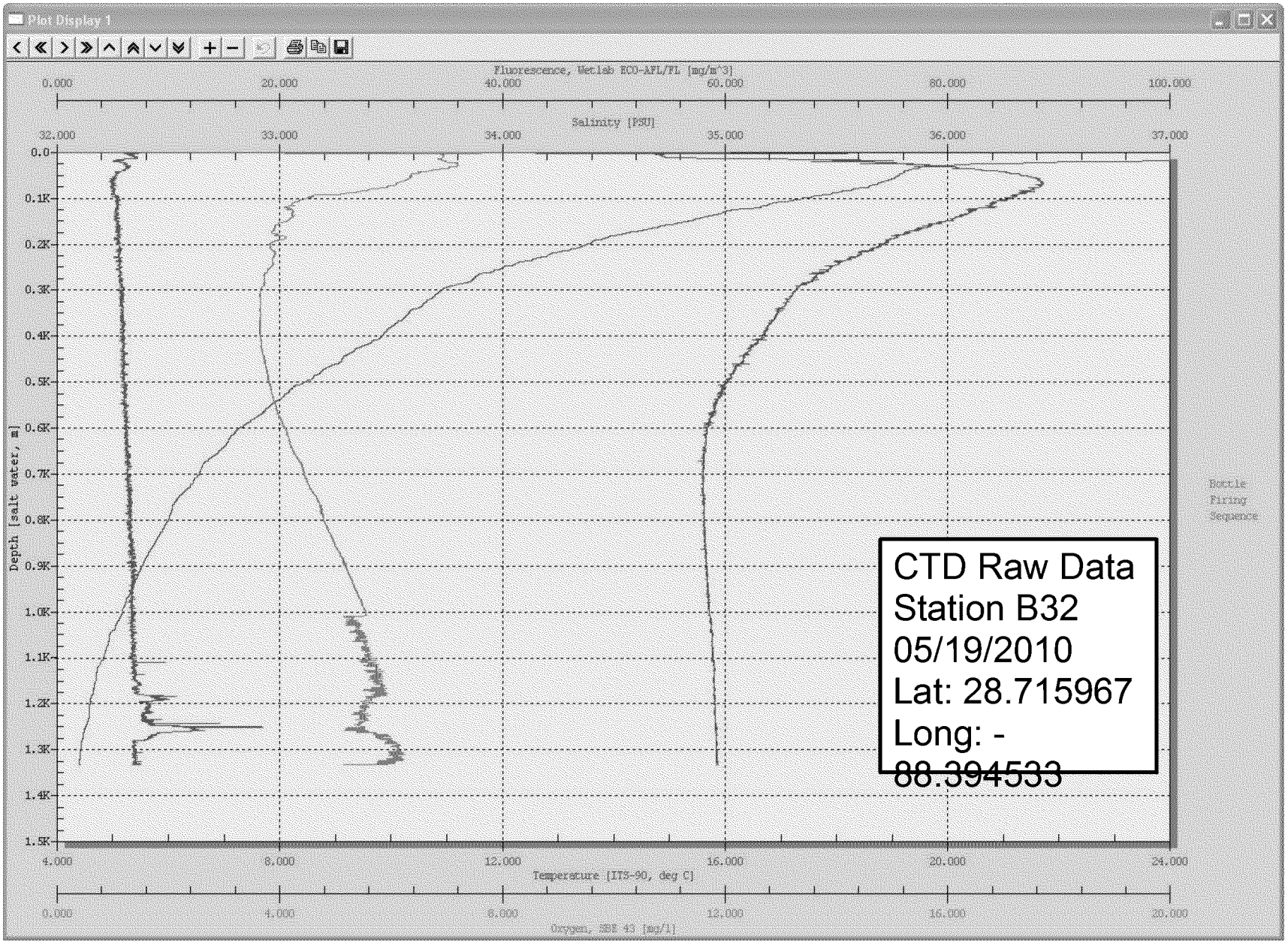


On-Board Fluorometry

- 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.

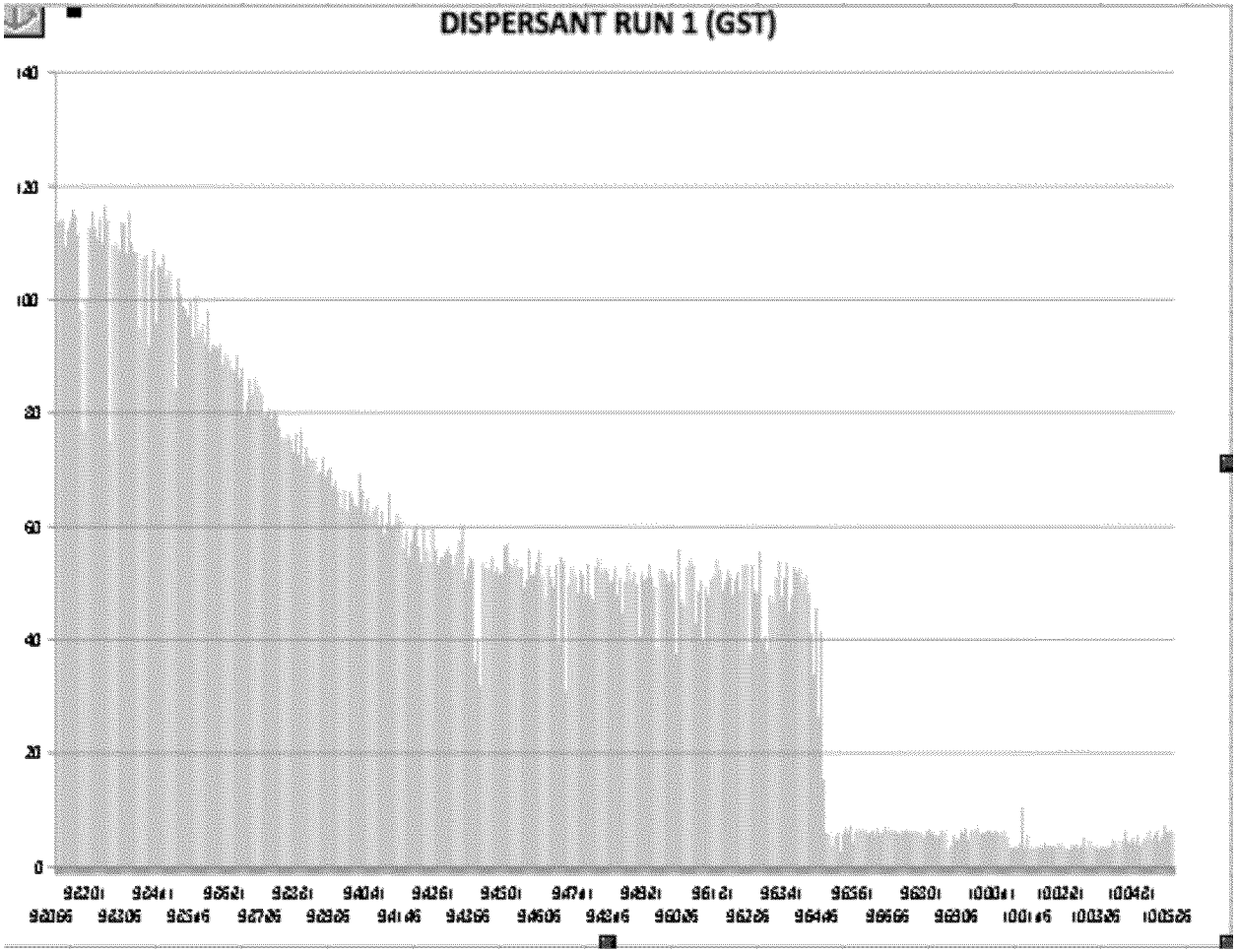

Evaporation
Leak Operations
Cleanup Operations
Skimming
Burning
Dispersant
Tarballs
Emulsified oil
Oil
Drops (>60µm)
Disolved methane and
other hydrocarbons
Entrained
Water
Current
Gas and oil
entrained water
Gas Hydrate
Oil Droplets (10-60µm)
Jet
Correxit 9500
Riser
BOP
stack
Leak


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]

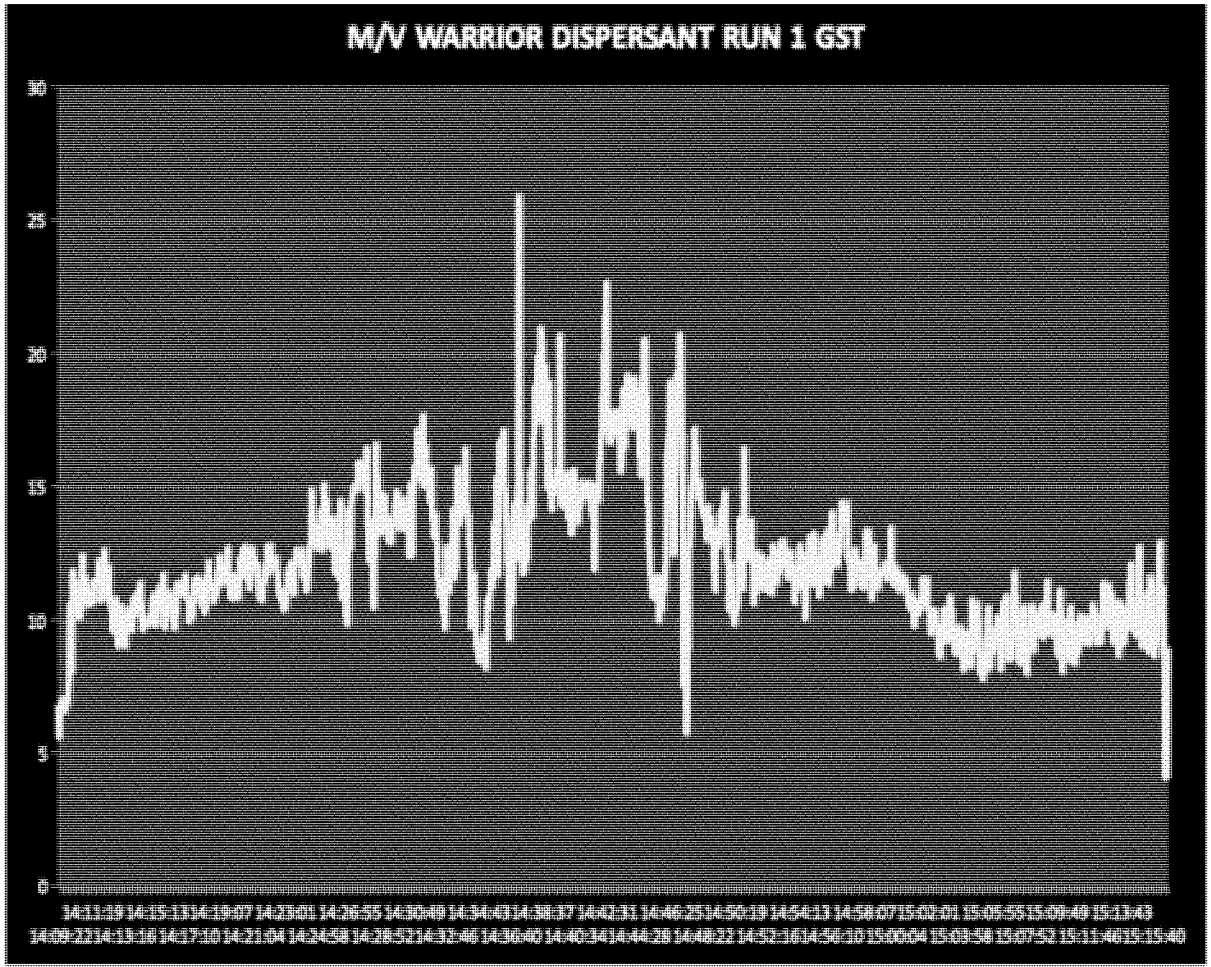

Plot Display 1
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
0.000
20.000
40.000
60.000
80.000
100.000
Salinity [PSU]
32.000
33.000
34.000
35.000
36.000
37.000
Depth [salt water, m]
0.0
0.1K
0.2K
0.3K
0.4K
0.5K
0.6K
0.7K
0.8K
0.9K
1.0K
1.1K
1.2K
1.3K
1.4K
1.5K
Bottle Firing Sequence
CTD Raw Data
Station B32
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

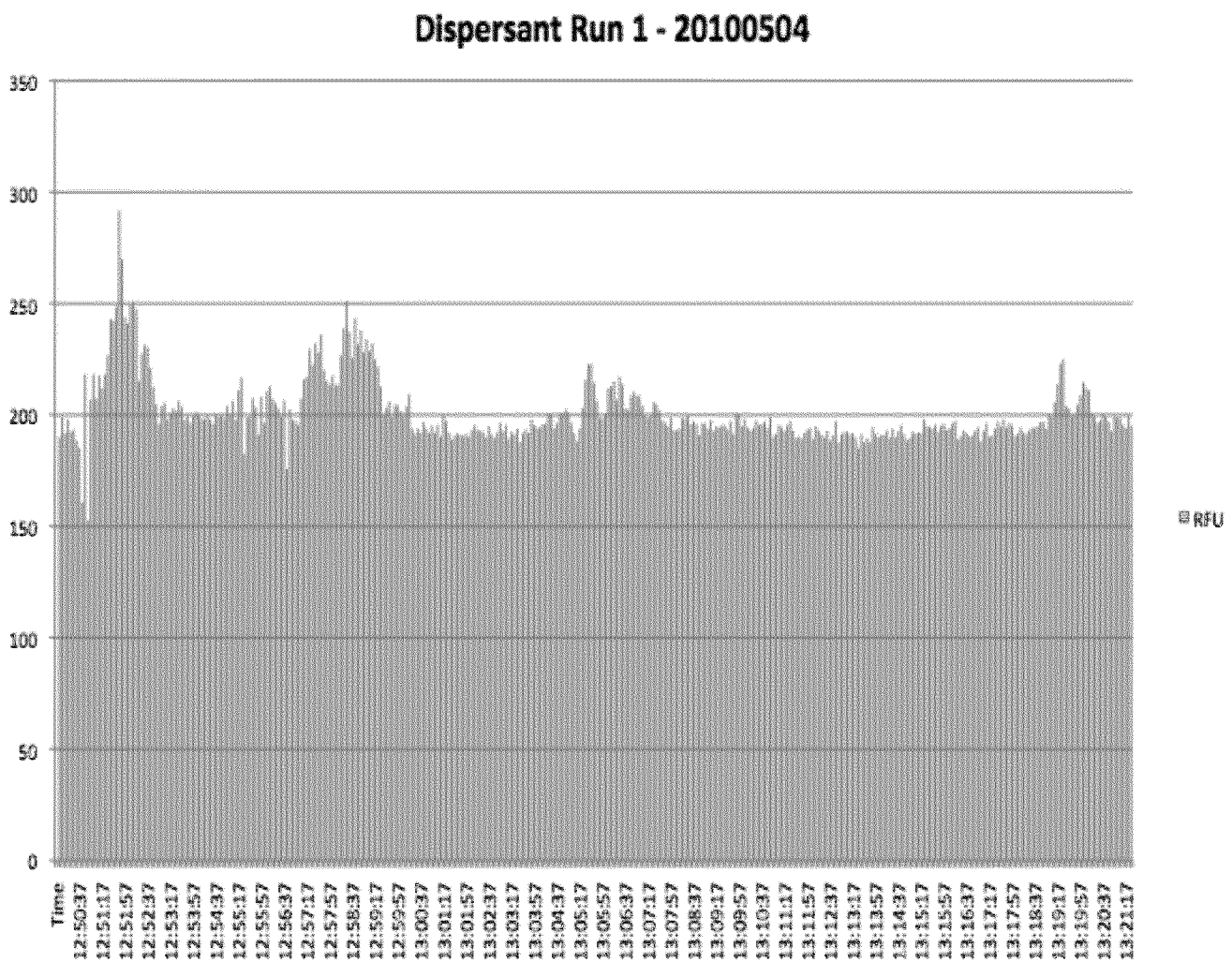
- A set of results was submitted to the HQ Science Group for assessment.
- The following 5 figures were used by EPA to determine that surface application of dispersant was not effective.
- The 6th figure is a good example of a fluorometry trace which compares mechanical and chemical dispersion near the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



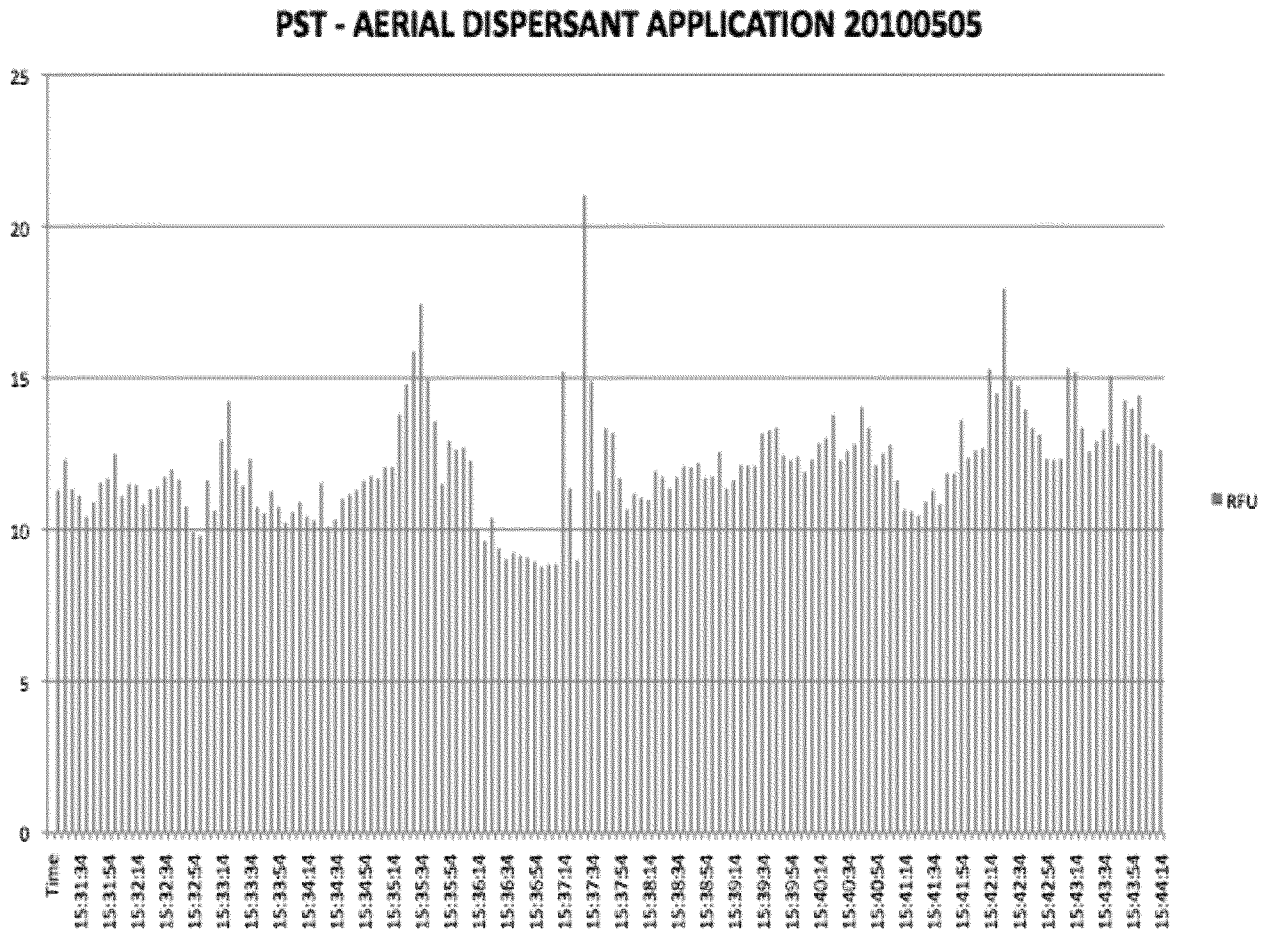
Increase of Fluorometry Reading >10x
(Almost 30x at Mid-plume)
Successful Application 4/28/2010



Unsuccessful Dispersant Application 4/28/2010

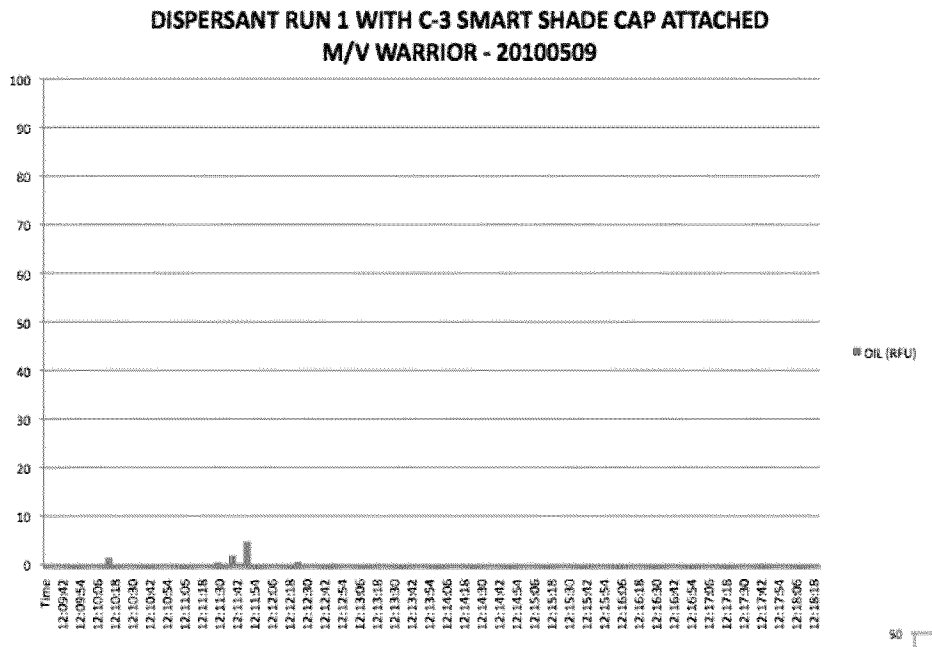


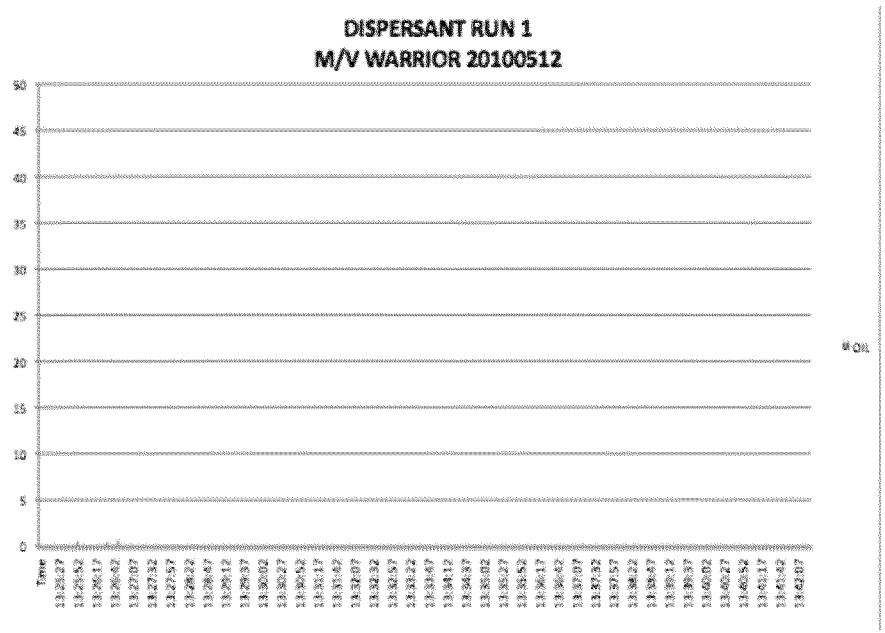
Unsuccessful Dispersant Application 5/4/2010

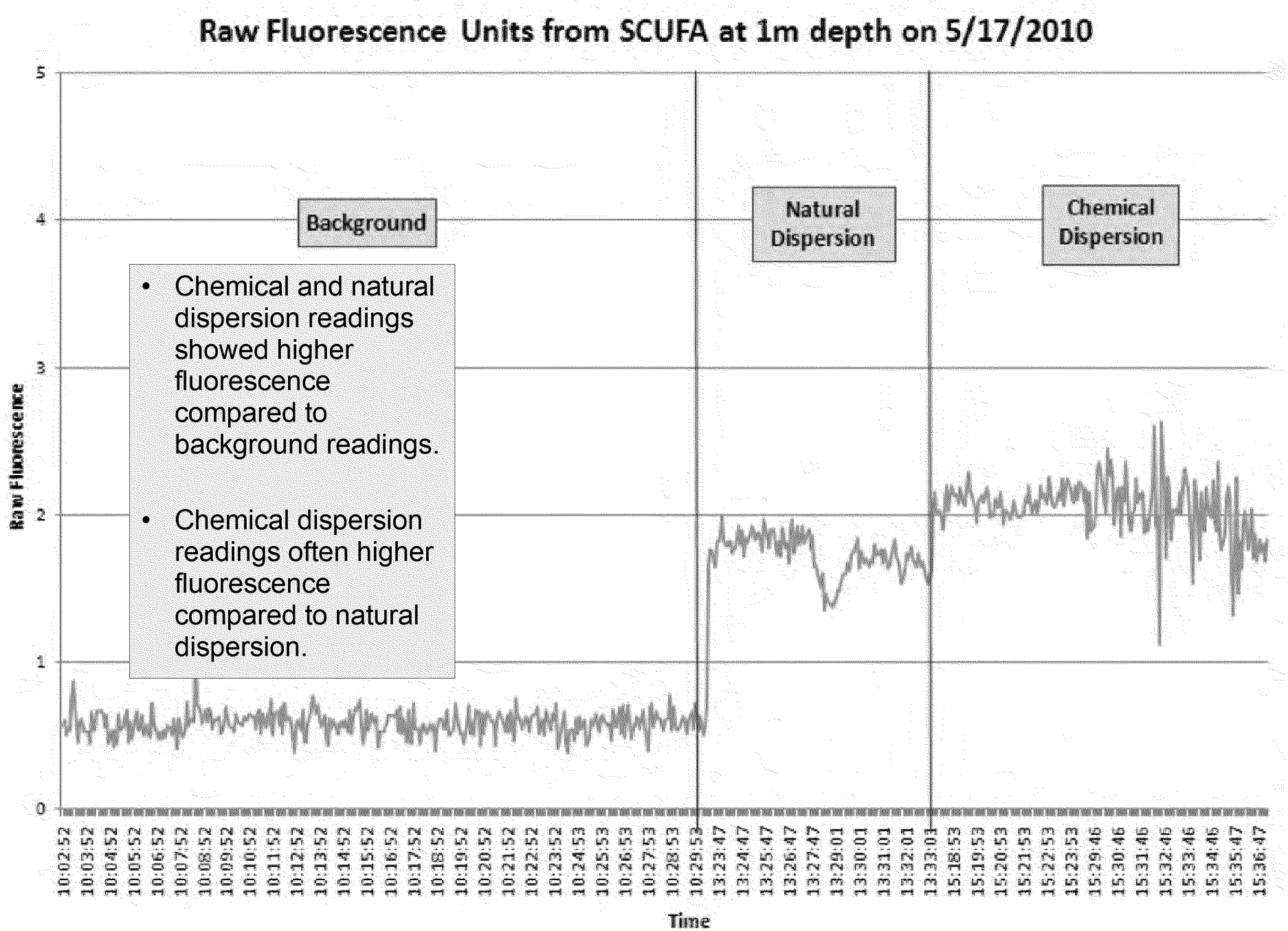


Unsuccessful Dispersant Application 5/5/2010

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
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?

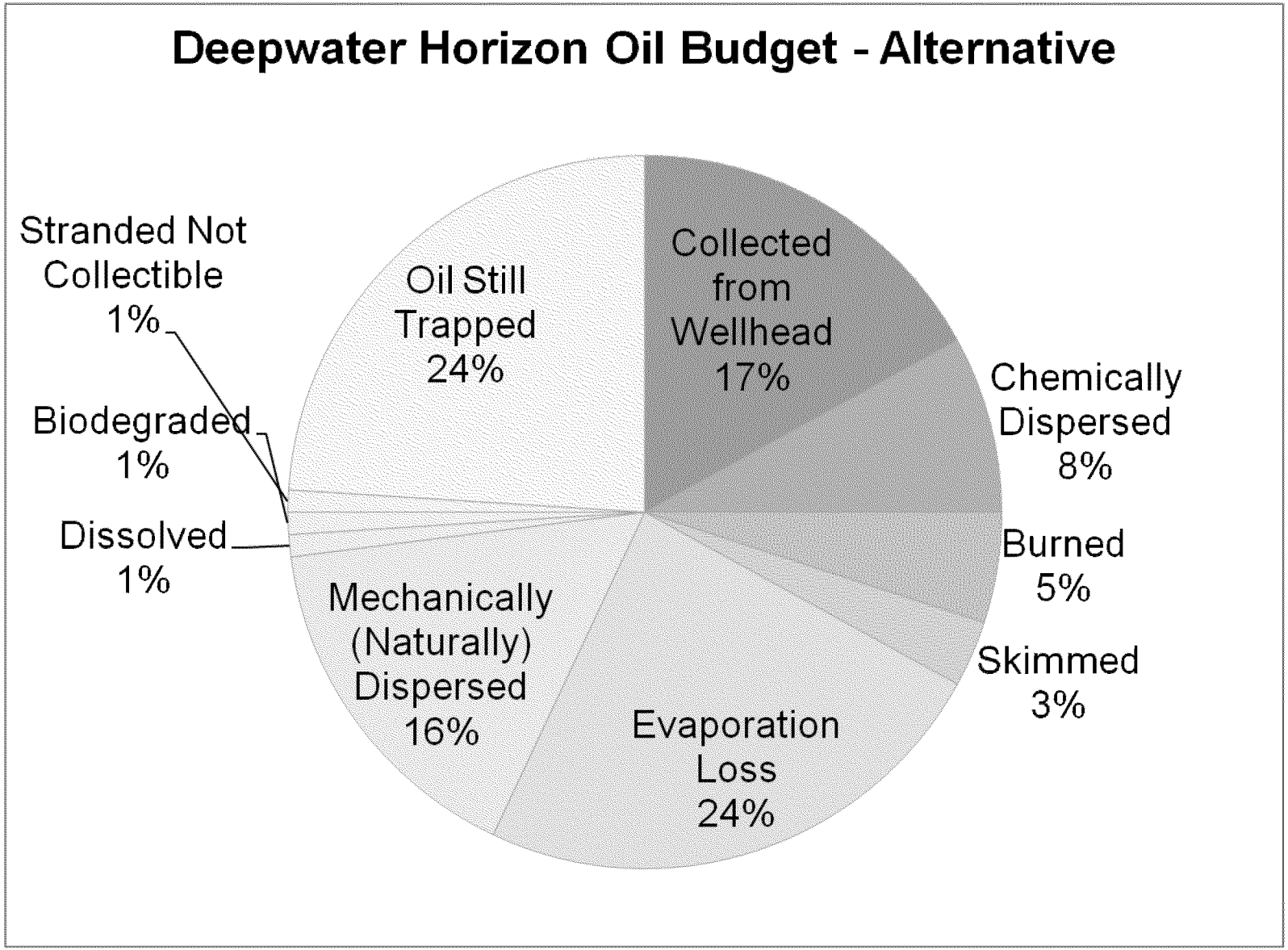
Deepwater Horizon Oil Budget Quantities

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.

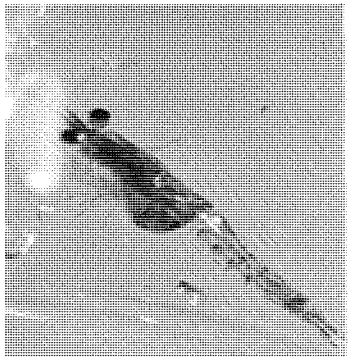
- National Academy of Sciences' 1972 Blue Book is still useful for water quality criteria relative to oil spills.

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*)

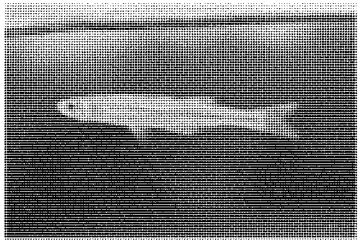


Dispersant	This Study LC50 (ppm) [95% CI]	Toxicity Category	NCP Product Schedule LC50 (ppm) [95% CI]
Dispersit SPC 1000	12 [10-14]	Slightly Toxic	16.6 [14.1-19.6]
Nokomis 3-AA	30 [27-34]	Slightly Toxic	20.2 [17.4-22.8]
Corexit 9500A	**42 [38-47]**	**Slightly Toxic**	**32.2 [26.5-39.2]**
Nokomis 3-F4	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)

Cc: Tirrell, Rebecca[Rebecca_Tirrell@sra.com]
To: Durbin, Luke[Luke_Durbin@sra.com]
From: DeHaven, Leigh
Sent: Tue 1/12/2016 12:54:57 PM
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

Luke Durbin
Environment, Agriculture, and Organizational Performance

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To: Tirrell, Rebecca[Rebecca_Tirrell@sra.com]
From: DeHaven, Leigh
Sent: Fri 4/17/2015 5:48:38 PM
Subject: RE: Selection Guide Product Review Updates for Technology Category: Dispersants (Email 4 of 4)
SG-Dispersant_COREXIT EC9500B_4-17-15 draft LED.docx
SG-Dispersant_ACCELL CLEAN DWD_4-17-15 draft LED.docx
SG-Dispersant_FFT-SOLUTION_4-17-15 draft LED.docx
SG-Dispersant_SuperSperse_4-17-15 draft LED.docx
SG-Dispersant_MARINE D-BLUE CLEAN_4-17-15 draft LED.docx

Dispersants

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

Office of Solid Waste and Emergency Response
1200 Pennsylvania Ave., NW

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

From: Tirrell, Rebecca [mailto:Rebecca_Tirrell@sra.com]
Sent: Thursday, April 02, 2015 12:51 PM
To: DeHaven, Leigh
Cc: Durbin, Luke
Subject: Selection Guide Product Review Updates for Technology Category: Dispersants

Leigh,

Please find attached the Selection Guide updates for the Technology Category: Dispersants. There is one additional data fields for the Dispersant product reviews: Other Information. This field has been highlighted in yellow to note new data that must be added to existing Dispersant product reviews at a later date; and what needs to be created in the HTML page during production. Products to be added to the Selection Guide include:

•□□□□□□□□ ACCELL CLEAN DWD

•□□□□□□□□ COREXIT EC9500B

•□□□□□□□□ FFT-SOLUTION

•□□□□□□□□ MARINE D-BLUE CLEAN

•□□□□□□□□ SUPERSPERSE WAO2500

Rebecca

Rebecca Tirrell

Senior Project Manager

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o: 703.284.6643 | c: 703.801.6783

e: Rebecca_Tirrell@sra.com

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Product Review
Product: ACCELL CLEAN® DWD (D-16)
Category: Dispersants

Description

Information not provided

Availability

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)

Link to Product Bulletin in NCP Product List

Product Bulletin-ACCELL CLEAN® DWD

Other Information

Flammability: Combustible as defined by DOT and USCG; pH: 5.8

Solubility in Water

Miscible

Worker Safety (Level of Protection)

Add #3 under Part IV in Technical Notebook

Use in Salt Water?

Yes

EPA Dispersant Effectiveness Test (%) – Swirling Flask

Prudhoe Bay Crude: 58.70
S. Louisiana Crude: 96.03
Average of above: 77.37

Temperature Limitations

Application Temperature: Information not provided
Water Temperature: Information not provided
Maximum storage temperature: 130°F/55°C
Minimum storage temperature: 30°F/-1°C
Optimum storage temperature range: 40°F to 100°F/4°C to 38°C
Temperatures of phase separations and chemical changes: None

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. 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. 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.
Application Rate
For aerial and boat spraying, ACCELL CLEAN® DWD is applied undiluted. 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. ACCELL CLEAN® DWD can be used on weathered oils.
Application Assistance Information*
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)
Toxicity of Product Alone (ppm) – Inland silversides (Menidia) (96h)
5.66
Toxicity of Product Alone (ppm) – Mysid shrimp (Mysidopsis) (48h)
2.07
Toxicity of Product with oil (ppm) – Inland silversides (Menidia) (96h)
8.05
Toxicity of Product with oil (ppm) – Mysid shrimp (Mysidopsis) (48h)
1.32

Product Review
Product: COREXIT® EC9500B (D-19)
Category: Dispersants

Description

Information not provided

Availability

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)

Link to Product Bulletin in NCP Product List

Product Bulletin-COREXIT® EC9500B

Other Information

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)); pH:6.29

Solubility in Water

Miscible

Worker Safety (Level of Protection)

{Insert #3 from Part IV in Technical Notebook}

Use in Salt Water?

Yes

EPA Dispersant Effectiveness Test (%) – Swirling Flask

Prudhoe Bay Crude: 57.0
S. Louisiana Crude: 50.9
Average of above: 53.9

Temperature Limitations

Application Temperature: Information not provided
Water Temperature: Information not provided
Maximum storage temperature: 170°F
Minimum storage temperature: 40°F
Optimum storage temperature range: 40°F to 100°F
Temperatures of phase separations and chemical changes: No phase changes or chemical reactions are anticipated in the minimum to maximum storage range. Below 40ºF, surfactant may slowly precipitate out of the solution, but it will return back into solution when warmed.

Application Method

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. 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. 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.
Application Rate
For aerial spraying, apply COREXIT® EC9500B undiluted. Dispersant concentrations in the 5 to 10 percent range are recommended; lower concentrations may result in significant fall-off in effectiveness. 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. 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.
Application Assistance Information*
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)
Toxicity of Product Alone (ppm) – Inland silversides (Menidia) (96h)
29.13
Toxicity of Product Alone (ppm) – Mysid shrimp (Mysidopsis) (48h)
10.00
Toxicity of Product with oil (ppm) – Inland silversides (Menidia) (96h)
4.46
Toxicity of Product with oil (ppm) – Mysid shrimp (Mysidopsis) (48h)
2.13

Product Review
Product: FFT-SOLUTION® (D-17)
Category: Dispersants

Description

Information not provided

Availability

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)

Link to Product Bulletin in NCP Product List

Product Bulletin-FFT-SOLUTION®

Other Information

Flammability: IMO: Non-Flammable, DOT: Non-Hazardous; pH: 9.96

Solubility in Water

Soluble (100%)

Worker Safety (Level of Protection)

Insert #2 and #3 from Part IV in Technical Notebook

Use in Salt Water?

Yes

EPA Dispersant Effectiveness Test (%) – Swirling Flask

Prudhoe Bay Crude: 49.97
S. Louisiana Crude: 48.87
Average of above: 49.42

Temperature Limitations

Application Temperature: 33°F to 105°F
Water Temperature: Information not provided
Maximum storage temperature: 170°F
Minimum storage temperature: 30°F
Optimum storage temperature range: 40°F to 105°F
Temperatures of phase separations and chemical changes: None

Application Method

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. 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.
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. 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.
Application Assistance Information*
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)
Toxicity of Product Alone (ppm) – Inland silversides (Menidia) (96h)
5.34
Toxicity of Product Alone (ppm) – Mysid shrimp (Mysidopsis) (48h)
2.72
Toxicity of Product with oil (ppm) – Inland silversides (Menidia) (96h)
5.14
Toxicity of Product with oil (ppm) – Mysid shrimp (Mysidopsis) (48h)
2.75

Product Review
Product: MARINE D-BLUE CLEAN™ (D-18)
Category: Dispersants

Description

Information not provided

Availability

AGS Solutions, Inc.
5647 Nunn Street
Houston, TX 77087
Phone: (713) 645-4933
Fax: (713) 645-4903
(Mrs. Linda Whiteley)

Link to Product Bulletin in NCP Product List

Product Bulletin-MARINE D-BLUE CLEAN™

Other Information

Flammability: Non-flammable; pH: 11.89

Solubility in Water

Soluble

Worker Safety (Level of Protection)

Information not provided Insert TN Part IV #3 information here

Use in Salt Water?

Yes

EPA Dispersant Effectiveness Test (%) – Swirling Flask

Prudhoe Bay Crude: 45.00
S. Louisiana Crude: 55.59
Average of above: 50.30

Temperature Limitations

Application Temperature: Information not provided
Water Temperature: Information not provided
Maximum storage temperature: 170°F
Minimum storage temperature: 32°F
Optimum storage temperature range: 40°F to 110°F
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.

Application Method

Marine D-Blue Clean™ is to be used to disperse petroleum-based products in salt water. 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. It may be applied by any conventional methods such as aerial spraying or surface vessel spraying to accommodate weather conditions. 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. Product can be applied by sprayer, boat or aircraft.

Application Rate

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. The performance of Marine D-Blue Clean™ is not affected by water salinity. It is effective with crude and residual heavy oil spills.

Application Assistance Information*

AGS Solutions, Inc.

5647 Nunn Street Houston, TX 77087 Phone: (713) 645-4933 Fax: (713) 645-4903 (Mrs. Linda Whiteley)
Toxicity of Product Alone (ppm) – Inland silversides (Menidia) (96h)
18.00
Toxicity of Product Alone (ppm) – Mysid shrimp (Mysidopsis) (48h)
56.00
Toxicity of Product with oil (ppm) – Inland silversides (Menidia) (96h)
32.00
Toxicity of Product with oil (ppm) – Mysid shrimp (Mysidopsis) (48h)
18.00

Product Review **Product: SUPERSPERSE™ WAO2500 DISPERSANT (D-15)** **Category: Dispersants**
Description
Information not provided
Availability
Baker Petrolite Corporation 12645 West Airport Boulevard Sugar Land, TX 77478-6120 Customer Services: Phone: (800) 231-3606 E-mail: david.poelker@bakerhughes.com (Mr. David Poelker)
Link to Product Bulletin in NCP Product List
Product Bulletin- SUPERSPERSE™ WAO2500 DISPERSANT
Other Information
Flammability: IMO-Flammable (water based); DOT – Flammable; pH: 8.39
Solubility in Water
Insoluble
Worker Safety (Level of Protection)
[Insert #2 and #3 Part IV from Technical Notebook
Use in Salt Water?
Yes
EPA Dispersant Effectiveness Test (%) – Swirling Flask
Prudhoe Bay Crude: 77.84 S. Louisiana Crude: 87.56 Average of above: 82.70
Temperature Limitations
Water Temperature: 33°F to 96°F Maximum storage temperature: 150°F Minimum storage temperature: 10°F Optimum storage temperature range: 32°F to 96°F Temperatures of phase separations and chemical changes: None
Application Method
The application of WAO2500 is done most effectively by spray type applications. Agitation is necessary and the amount of agitation depends upon the nature of the oil and the thickness of the oil layer to be dispersed. In light oil sheens, only the normal agitation of the water may be necessary, violent agitation is not necessary for controlling crude oil spills. For hand held spraying equipment do not atomize the dispersant. For workboat fitted with spray booms the spray should be as far forward as possible from boats wake. For aerial spraying using airplane or helicopter, spray from a height of 40 -70 feet. Effective altitudes depend on weather, wind and other factors. Spray nozzles used in most agriculture application produce sprays that are too small. A simple quarter inch pipe would suffice in most applications. Regardless of the application method, the chemical should be applied in the form of small droplets never as a fog or mist. This minimizes windage losses and also ensures rapid penetration by the surface active agents to the oil/water interface. The dispersant should be used as early as possible to combat the spill. Wind and weather also dictate the proper effectiveness of the application. Care should be taken to limit overspray conditions. The dispersant would be more efficient if applied before the oil/water mixture forms and emulsion. Use equipment (pipe, hoses,

receptacles, etc.) that is resistant to hydrocarbons. Do not spray at high pressure. A course spray is recommended over fine spray. This product can be used across a wide variety of water temperatures.
Application Rate
WAO2500 can be used as supplied or diluted with water prior to application. The degree of dilution will depend upon the characteristic of the oil and the amount of oil to be controlled. Laboratory tests indicate that as little as 1-4 gallons of WAO2500 will control and disperse a barrel (42 gallons) of light oil. For hand held spraying equipment, use a 2 to 5 percent dilution. For a workboat fitted with spray booms, use a 2 to 5 percent dilution. If applied by air drop methods, usage rates will vary but tend to fall between 1 to 5 US gallons per acre. Dilution ranges from 1:30 to 1:50 could be used. The water temperature should be between 33°F and 96°F. With warmer temperatures less dispersant should be used. This product can be used on a number of hydrocarbon spills. The higher the API gravity of the hydrocarbon the less dispersant is necessary. The salinity of the water will have a slight impact on the performance of the product with a higher salinity needing more dispersant. Older hydrocarbon spills will require more product. The lighter ends of the hydrocarbon spill will evaporate lowering the API gravity of the hydrocarbon. This product should not be used on hydrocarbons that are soluble in water (e.g., alcohols, glycols, water soluble organics).
Application Assistance Information*
Baker Petrolite Corporation 12645 West Airport Boulevard Sugar Land, TX 77478-6120 Customer Services: Phone: (800) 231-3606 E-mail: david.poelker@bakerhughes.com (Mr. David Poelker)
Toxicity of Product Alone (ppm) – Inland silversides (Menidia) (96h)
37.10
Toxicity of Product Alone (ppm) – Mysid shrimp (Mysidopsis) (48h)
17.40
Toxicity of Product with oil (ppm) – Inland silversides (Menidia) (96h)
3.70
Toxicity of Product with oil (ppm) – Mysid shrimp (Mysidopsis) (48h)
2.53

Cc: Durbin, Luke[Luke.Durbin@csra.com]
To: Tirrell, Rebecca[Rebecca.Tirrell@csra.com]
From: DeHaven, Leigh
Sent: Wed 1/18/2017 4:12:08 PM
Subject: Re: TD110/111 PS, TN and Webpage Updates

Hi Rebecca and Luke,

This looks very good. The Product Schedule is cleaning up well! Nice Job! Ready to send to the presses...

I do have a comment about the "Formerly D-#". We know what they are, but one who is not familiar with the PS/TN may think that "D-#" is not the name of a product. For the next round of PS/TN changes and updates, let's talk about a way to share what the "Formerly D-#" means and state it in a concise manner. Not sure if this may be contentious to manufacturer or not. Let's discuss ideas.

I forgot to let you know that I am working from home today and tomorrow due to Inauguration prep in the Federal Triangle in case you need to reach me.

Thank you,

Leigh

From: Tirrell, Rebecca <Rebecca.Tirrell@csra.com>
Sent: Tuesday, January 17, 2017 5:13 PM
To: DeHaven, Leigh
Cc: Durbin, Luke
Subject: TD110/111 PS, TN and Webpage Updates

Hi Leigh,

Please find attached the PS, TN, and associate OEM NCP Subpart J webpage updates for TD110 and TD111. Product Schedule changes include contact and website edits for NORSOREX® APX (M-30); and removal of “formerly known as” product names. The formerly known as language has been maintained in the Technical Notebook bulletins; however, the

notation has been moved to the 4th line of the bulletin, for example:

TECHNICAL PRODUCT BULLETIN #D-1

USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION

ORIGINAL LISTING DATE: MARCH 10, 1978

REVISED LISTING DATE: DECEMBER 18, 1995

"COREXIT® EC9527A"

I. NAME, BRAND, OR TRADEMARK

COREXIT® EC9527A

Type of Product: Dispersant

(formerly COREXIT 9527)

Attached files include the following:

- Product Schedule
- Product Schedule Reference Document
- Technical Notebook
- Associated Webpage files:
  - o EPA Subpart J Page
  - o NCP Product Schedule Link
  - o NCP Product Schedule Technical Notebook Link
  - o EPA Alphabetical List Page
  - o EPA Toxicity-Effectiveness Summary Page
  - o NORSOREX® APX bulletin
- Formerly Known As Bulletin files:
  - o COREXIT® EC9527A bulletin

- MARE CLEAN 200 bulletin
- COREXIT® EC9500A bulletin
- BIODISPERS bulletin
- TOPSALL #30 (aka, SUPERALL #38) bulletin
- COREXIT® EC9580A bulletin
- DE-SOLV-IT INDUSTRIAL FORMULA bulletin
- PREMIER 99 bulletin
- SIMPLE GREEN® bulletin
- AQUACLEAN bulletin
- BIOSOLVE® PINKWATER® bulletin
- ENVIROCLEAN bulletin
- SYSTEM E.T. 20 bulletin
- BET BIOPETRO bulletin
- S-200C bulletin
- CIAGENT bulletin

Let us know if you have any changes!

Rebecca

Rebecca Tirrell

Senior 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 absences: January 20; February 17-21

Enduring Values. Inspired Performance.

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To: Alan Humphrey[Humphrey.Alan@epa.gov]
From: DeHaven, Leigh
Sent: Wed 7/22/2015 7:08:56 PM
Subject: FW: Milestone Update - Alternative Methods/SMART - 2015 OSC Academy
OSC2011Orlando-Countermeasures_Venosa.ppt
SMART_Protocol_OSC_2011.ppt

Hi Alan,

I just found out that I am coordinating the OSC Academy class for Alternative Countermeasures and I saw that you were listed as one of the presenters. I was wondering which one of the presentations listed above you were going to present. I would guess the SMART presentation, but I wanted to verify.

I would like to have a brief call on Monday 7/27 at 10:30 with the other presenters (Fred Stroud and Mark Sprenger). Would you be available then?

Thanks,

Leigh

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

Office of Solid Waste and Emergency Response
1200 Pennsylvania Ave., NW

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

From: Eskelsen, Joann
Sent: Tuesday, July 07, 2015 12:54 PM

To: Gawarzewski, Joseph; DeHaven, Leigh; Wilson, Gregory; Sprenger, Mark; Humphrey, Alan
Subject: RE: Milestone Update - Alternative Methods/SMART - 2015 OSC Academy

Hi all, I will serve as your point of contact with the track development team, and will help in whatever way I can. I have attached presentations on SMART and countermeasures from the 2011 OSC readiness conference. Feel free to use these as a starting point.

At the moment the plans are for all of you to work on developing the module and for Mark Sprenger to present the module at the Academy, since he will be presenting a few other modules also.

I would suggest having a conference call in the next week or so to develop the agenda and outline, either Joe or myself can set up a call if you like.

Based on notes I took, the track development team would like you to address the following topics:

Bioremediation/landfarming

Burning (SMART)

Surface Washing Agents

Herders

Solidifiers

Coastal zone use of dispersants (SMART)

Selection guide/legal considerations/Subpart

Any other issues you think are appropriate.

We have a template for slides, which Joe attached to his e-mail. You don't need to worry about that right now, you can work on a blank template and Joe can format it later; but please take a look at it and follow the tips on pages 2 and 3 of the template.

Thanks

JoAnn M. Eskelsen
US EPA/ERT
4220 S. Maryland Parkway, Bldg. D, Suite 800
Las Vegas, NV 89119
702-784-8006
702-784-8001 (fax)
eskelsen.joann@epa.gov

From: Gawarzewski, Joseph [mailto:Joseph.Gawwarzewski@tetratech.com]
Sent: Tuesday, July 07, 2015 9:11 AM
To: Eskelsen, Joann; DeHaven, Leigh; Wilson, Gregory; Sprenger, Mark; Humphrey, Alan
Subject: Milestone Update - Alternative Methods/SMART - 2015 OSC Academy

Hi Everyone,

Thank you again for your involvement in the ***Alternative Methods/SMART*** course to be held as part of the Advanced Oil Response - Emergency Response track of the September 2015 OSC Academy.

I am the contractor support assigned to this course and I wanted to touch base with all initial members of the development team. I realize I may not have the emails of all proposed team members; please feel free to forward to those that are not on this email.

•□□□□□□□□ The OSC Academy is planned for September 21 – 25, 2015.

•□□□□□□□□ The *Alternative Methods/SMART* module is scheduled to be 1.75 hours in duration.

Below are some milestones that are quickly approaching.

Milestones for *Alternative Methods/SMART* Presentation:

July 9, 2015 – Objectives and Outline due - *Please send to me any draft objectives and a rough outline*

for the course. We understand that it may change as the delivery approaches. This can be in paragraph or bulleted form. Also, if you have any additions or revisions to the proposed instructors, please let me know.

July 31, 2015 – Draft Course Materials due – *These can be emailed directly to me or if they are large, we can go through an ftp site. It is key that we at least get powerpoints or videos that are planned to be used by this date. A powerpoint template for the course materials is attached to this email. Please see some helpful hints on Slide 3 of the template. You do not have to use this template, but it is there if you would like to use as you develop material.*

August 30, 2015 - Final electronic presentations due – *We are asking for the presentations to be submitted by this date so that we can test all presentations and ensure consistency in slides.*

If you have any questions or require further assistance, please contact Joe Gawarzewski at (302) 283-2290 or by e-mail at joseph.gawarzewski@tetratech.com

Thank you in advance for your help and time. I know the Objectives and Outline milestone is right around the corner. We ask that you do your best to submit by the end of this week or early next week.

If the development team determines that a series of conference calls are necessary leading up to the delivery, I can help coordinate.

Thanks,

Joe

Joseph Gawarzewski

Tetra Tech Inc.
240 Continental Drive, Suite 200
Newark, DE 19713

302.283.2290 office / 302.530.3871 cell

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

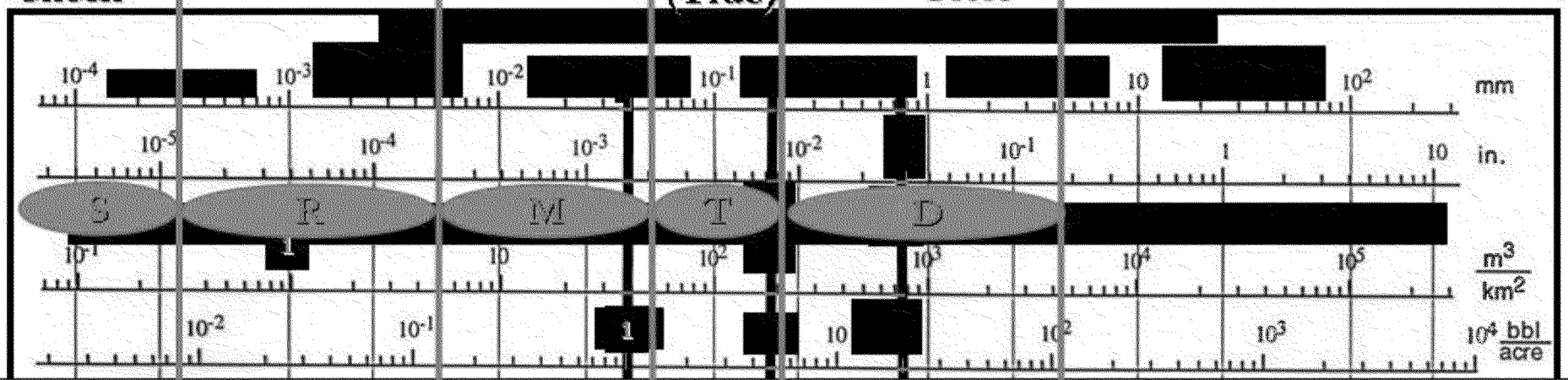
- It is an important first step to estimate the amount of oil on the surface in order to determine the required dispersant loading or to predict the feasibility of *in situ* burning.
- Al Allen of Spiltec has created an elegant oil thickness estimation system. Using this and an estimate of the area of 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

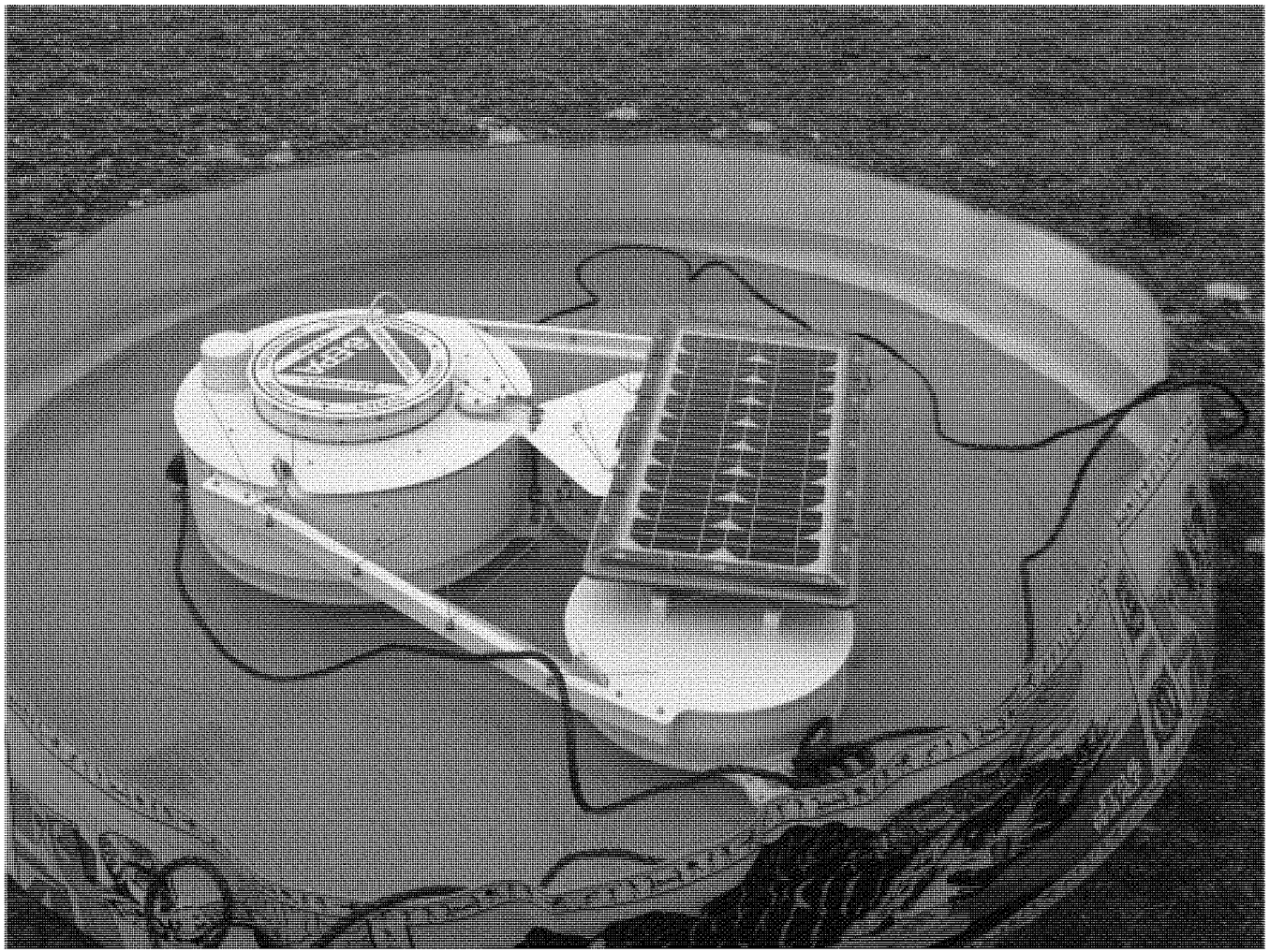
Emulsions

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.



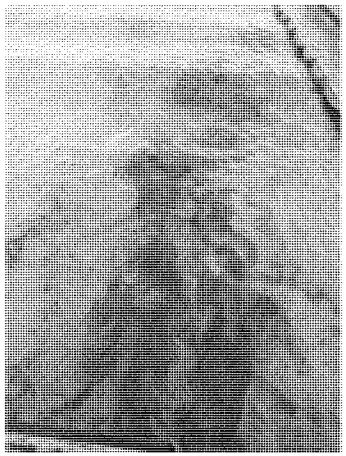
Standardizing SMART Tier 1

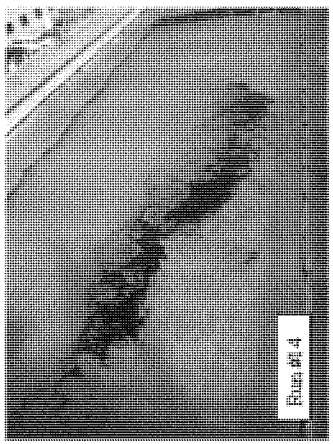
- Visual assessment of oil slick and oil in surface waters:
  - Trained observers may be hard to find.
  - Attempts to standardize observation and reporting of visual dispersion observations
  - Assesses ONLY initial break up of slick into dispersed oil droplets
  - Remember that dilution of the dispersant 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

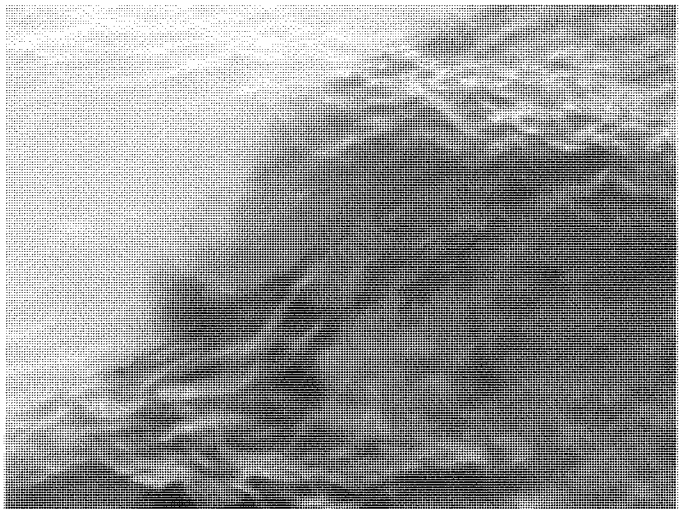
a. Based only on behavior of oil in first 15 minutes after dispersant added and agitated by waves.

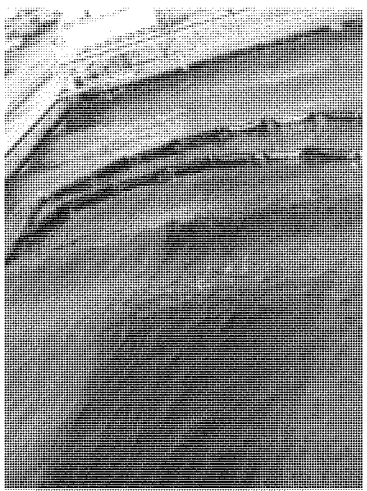
Visual Effectiveness = 1



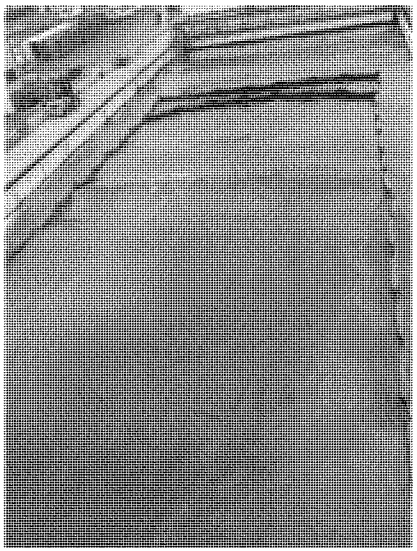


Visual Effectiveness = 3





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.

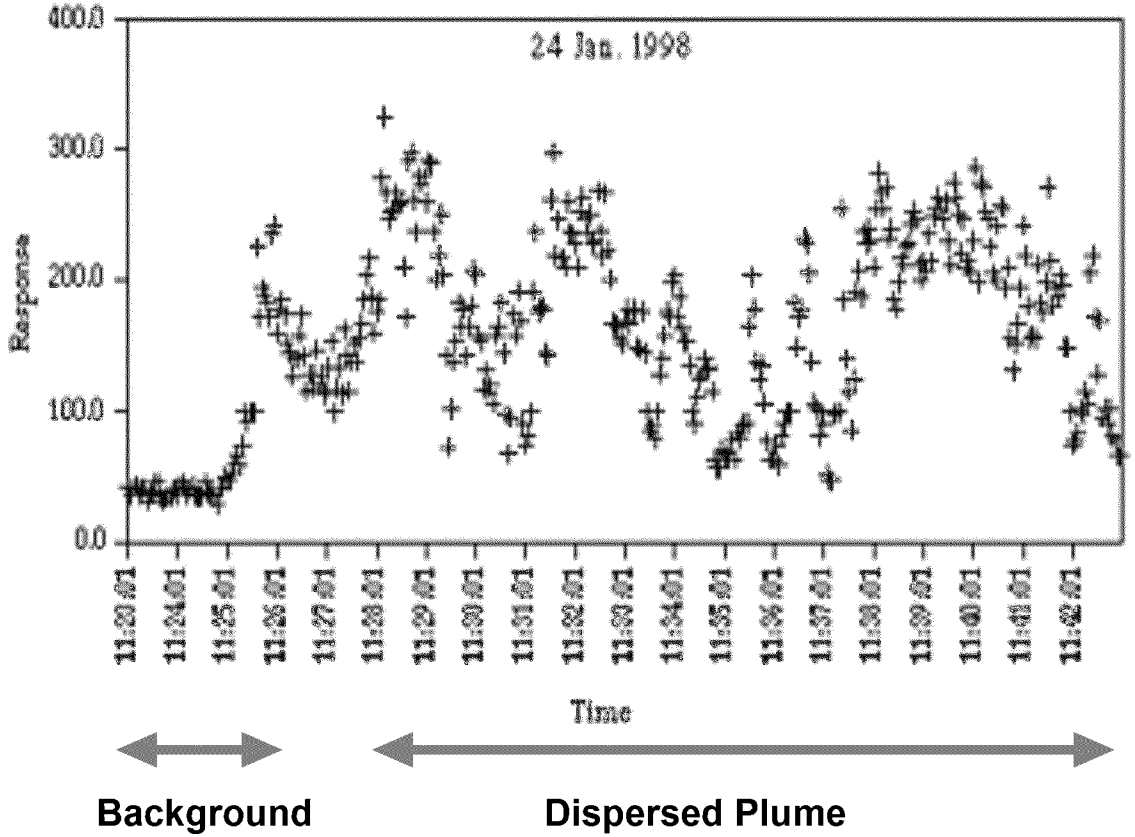
SMART Tier 2 – Fluorometry (cont'd.)

- 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.

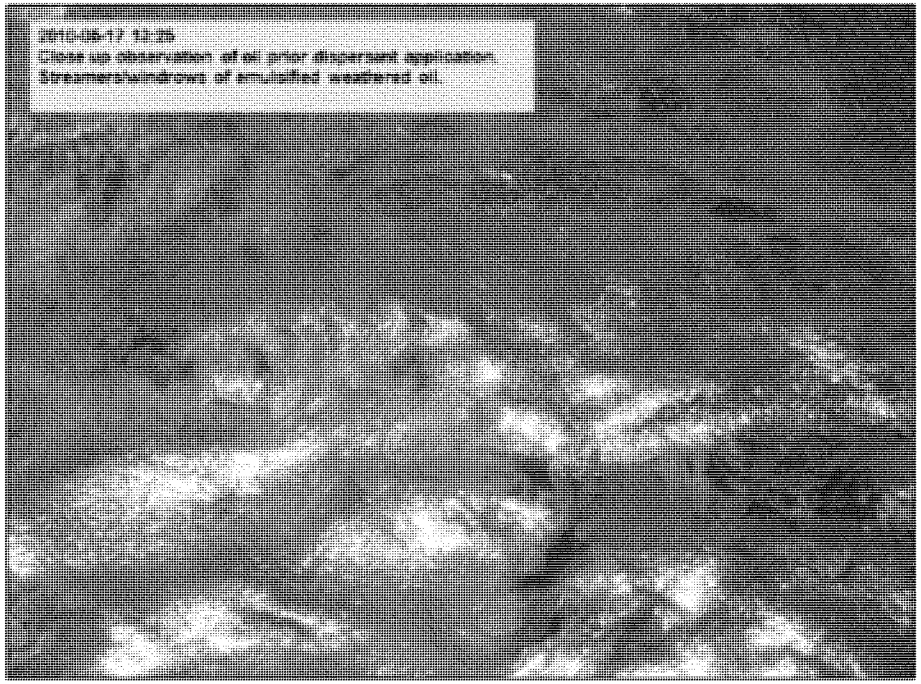
Steps for SMART Tier 2 - Fluorometry

- 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

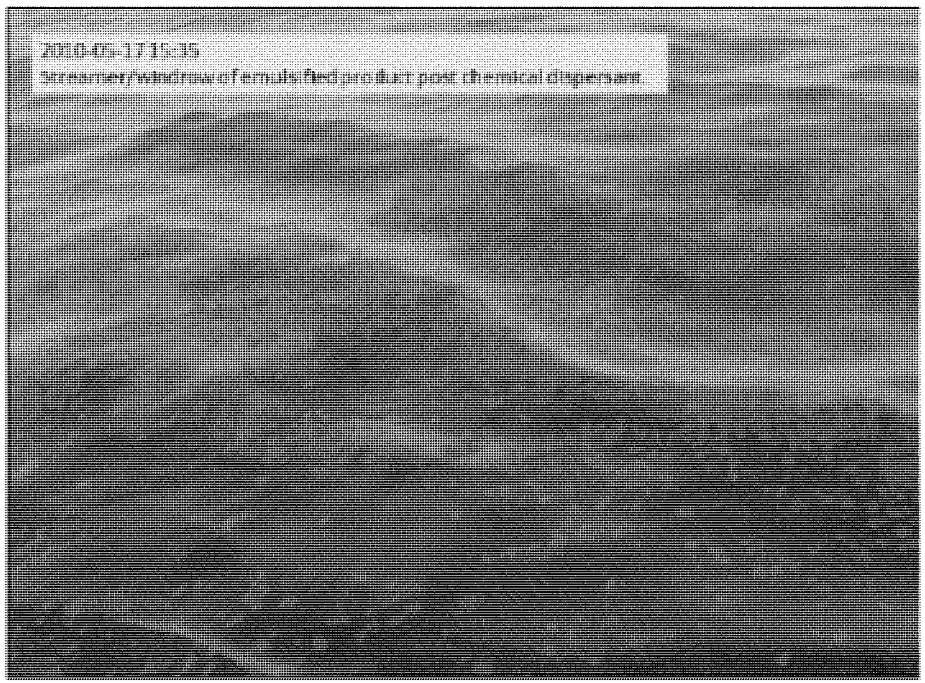


"Ideal" Fluorometry Trace from Historical Record



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.

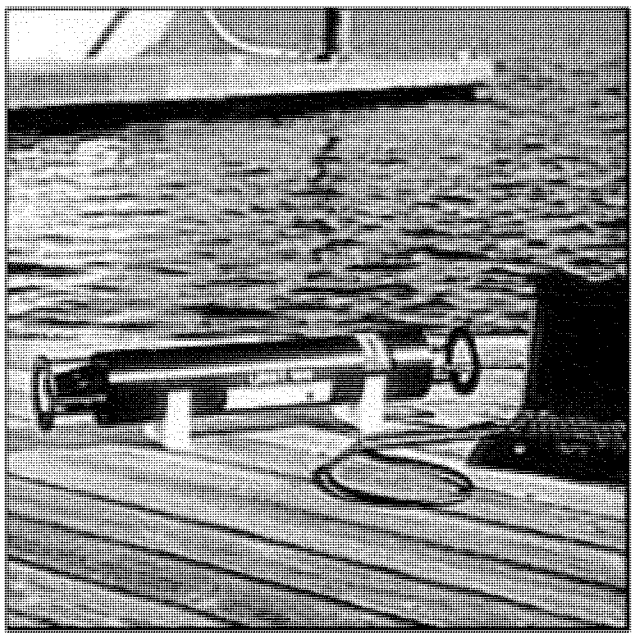
BUBA Buster / Wetstar x GPS

- 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

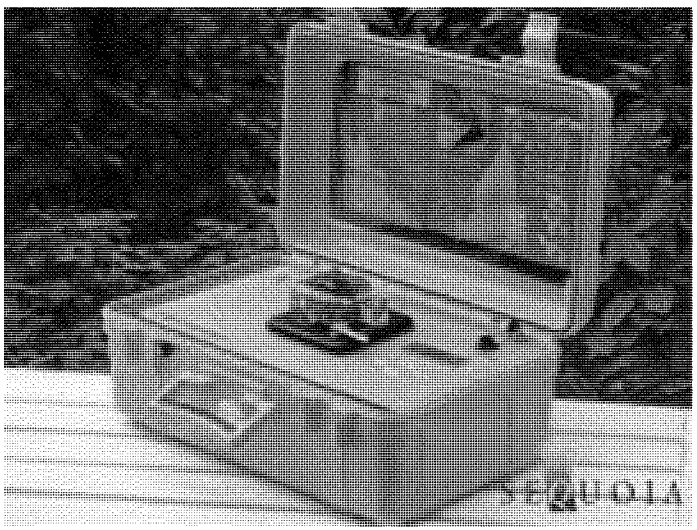
- Measures both oil droplet abundance and particle size in the range of 2.5 – 500 microns
- In-situ measurement
- Little set up needed
- Requires “blank”
- Needs clean water standard
- Continuous monitoring on transects
- Laser *In-Situ* Scattering and Transmissometry (LISST) instrument.



LISST–100X Type-C

Sequoia On-Board Analysis

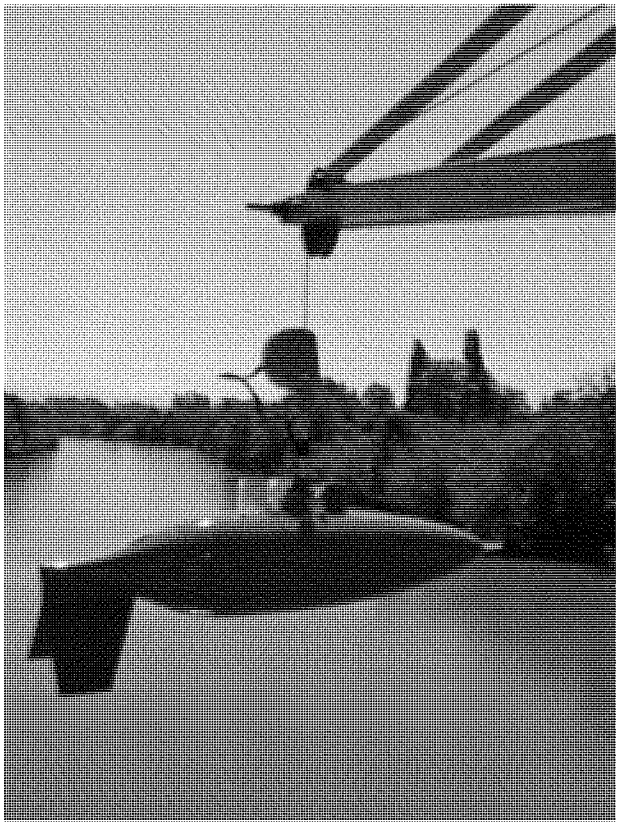
- Ex-situ particle-size analyser
- Analytical capability of LISST 100, but in ex-situ format
- Continuous monitoring
- Requires pump on effluent side
- Requires “blank”
- Amenable to post-calibration



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

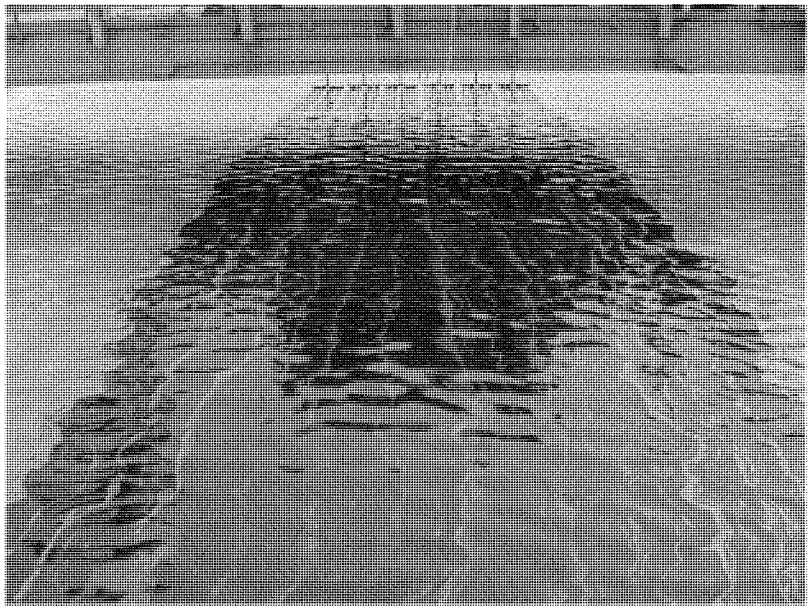


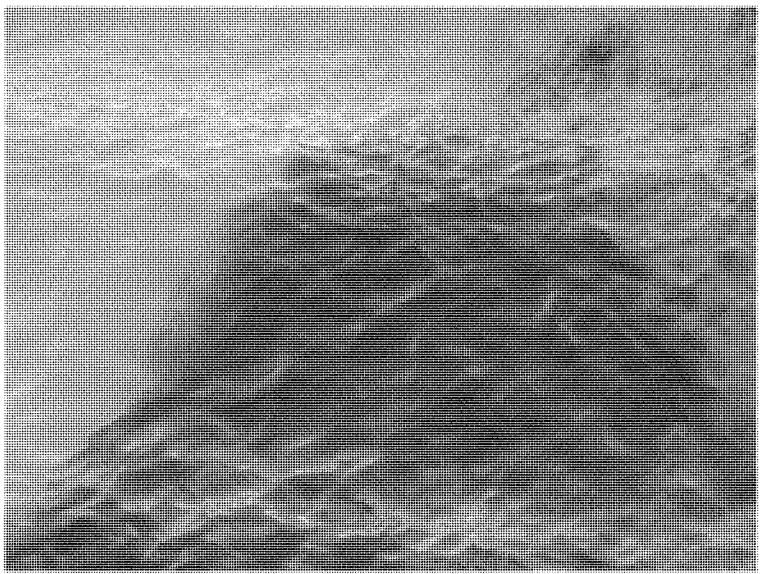
Sequoia SL

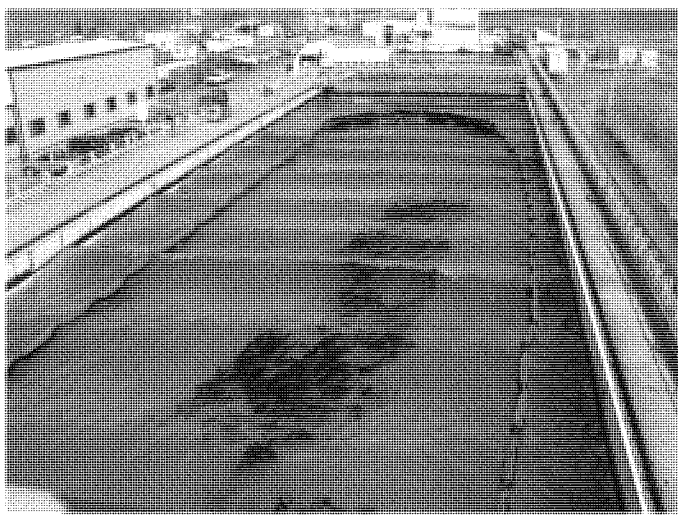
Summary of New Items
Based on a presentation by Ken Trudel

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



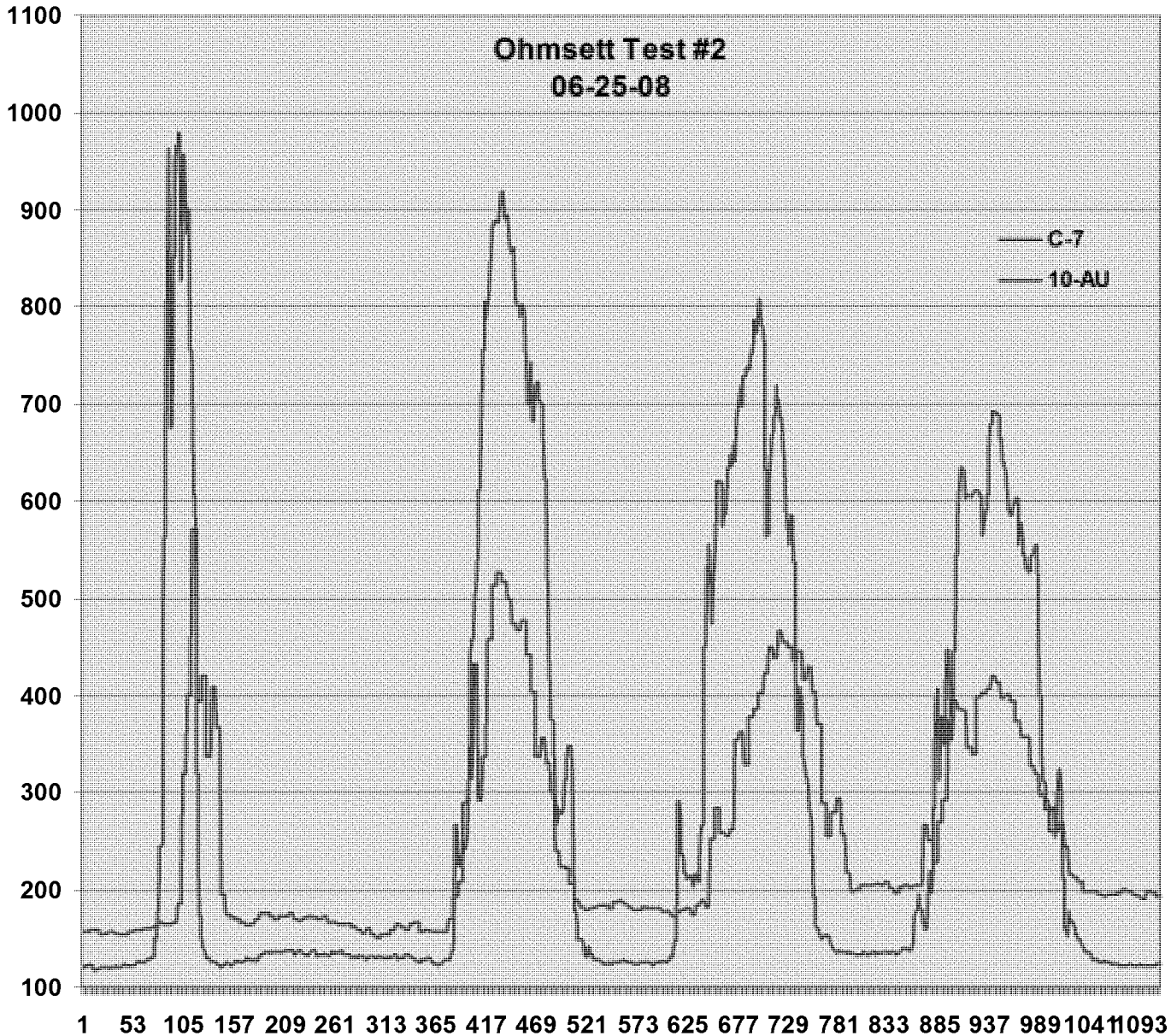




Results of AU-10/Cyclops Comparison at OHMSETT June 2008

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.

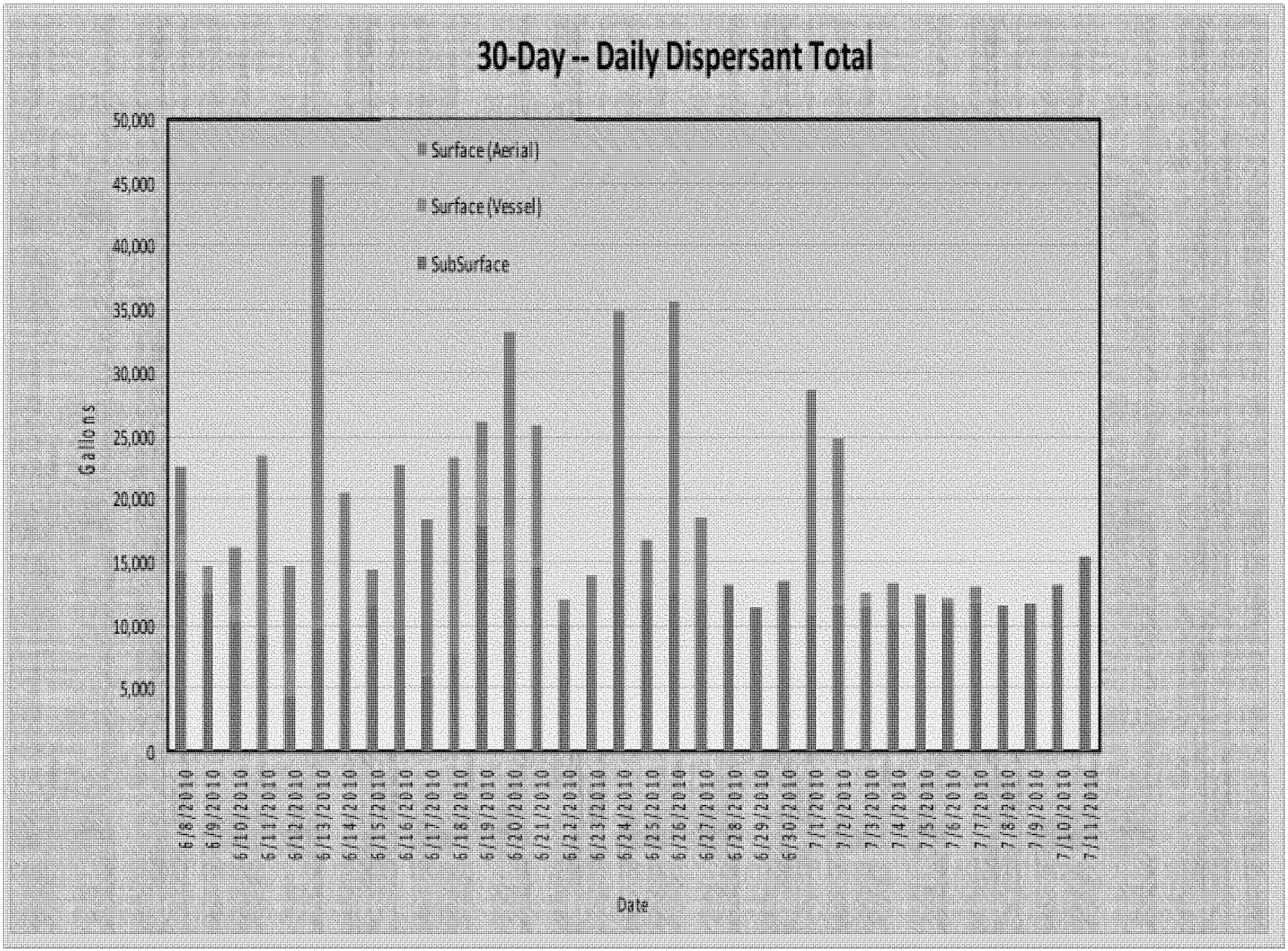

Ohmsett Test #2
06-25-08
C-7
10-AU
1100
1000
900
800
700
600
500
400
300
200
100
1 53 105 157 209 261 313 365 417 469 521 573 625 677 729 781 833 885 937 989 1041 1093

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

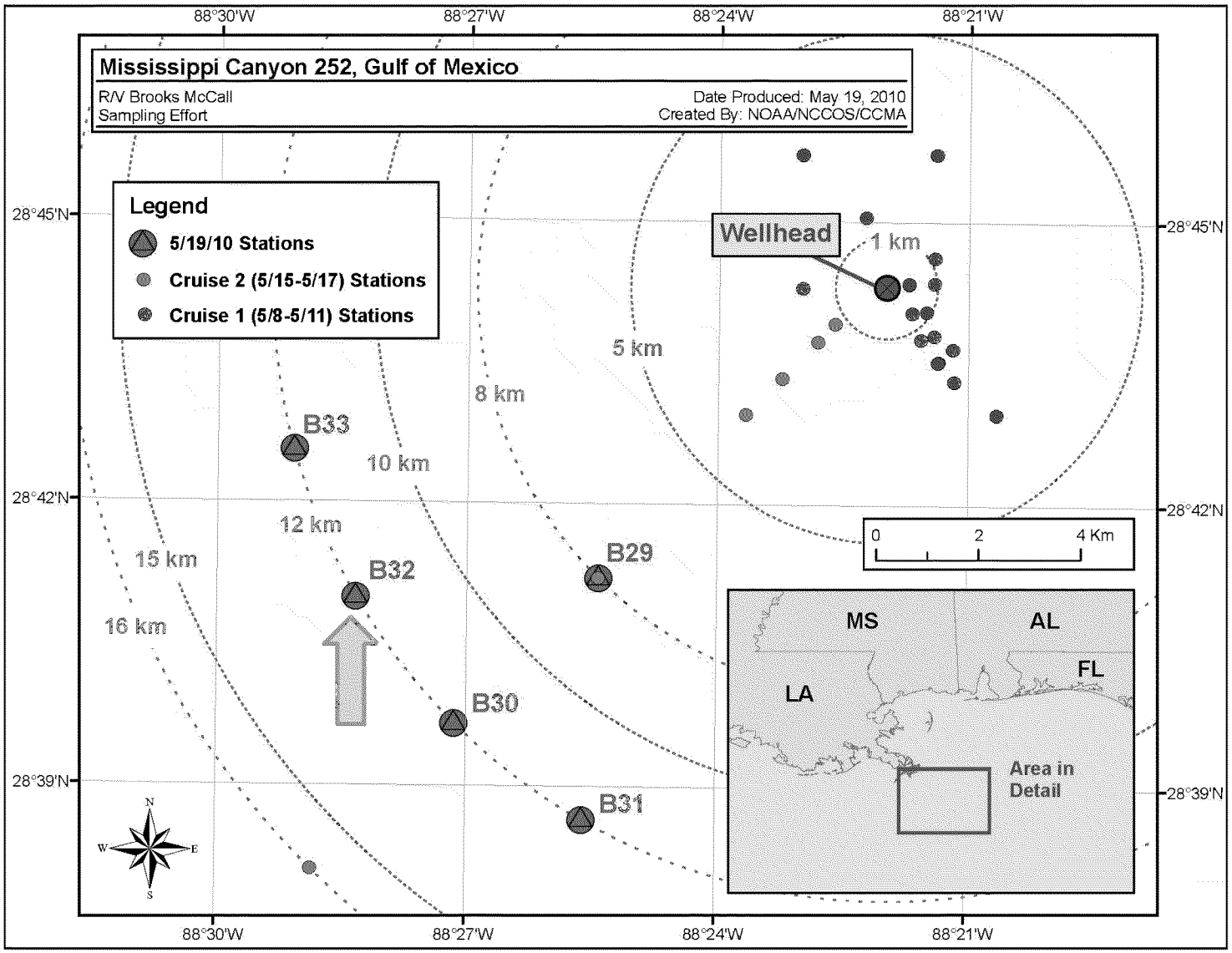
- Per RRT guidance application occurs >3 miles offshore and water depth of > 10 meters
- Applied primarily via aircraft
- As of 07/12/10
  - 404 sorties flown
  - 975,038 gallons sprayed
  - 305 sq miles covered (195,008 acres)


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

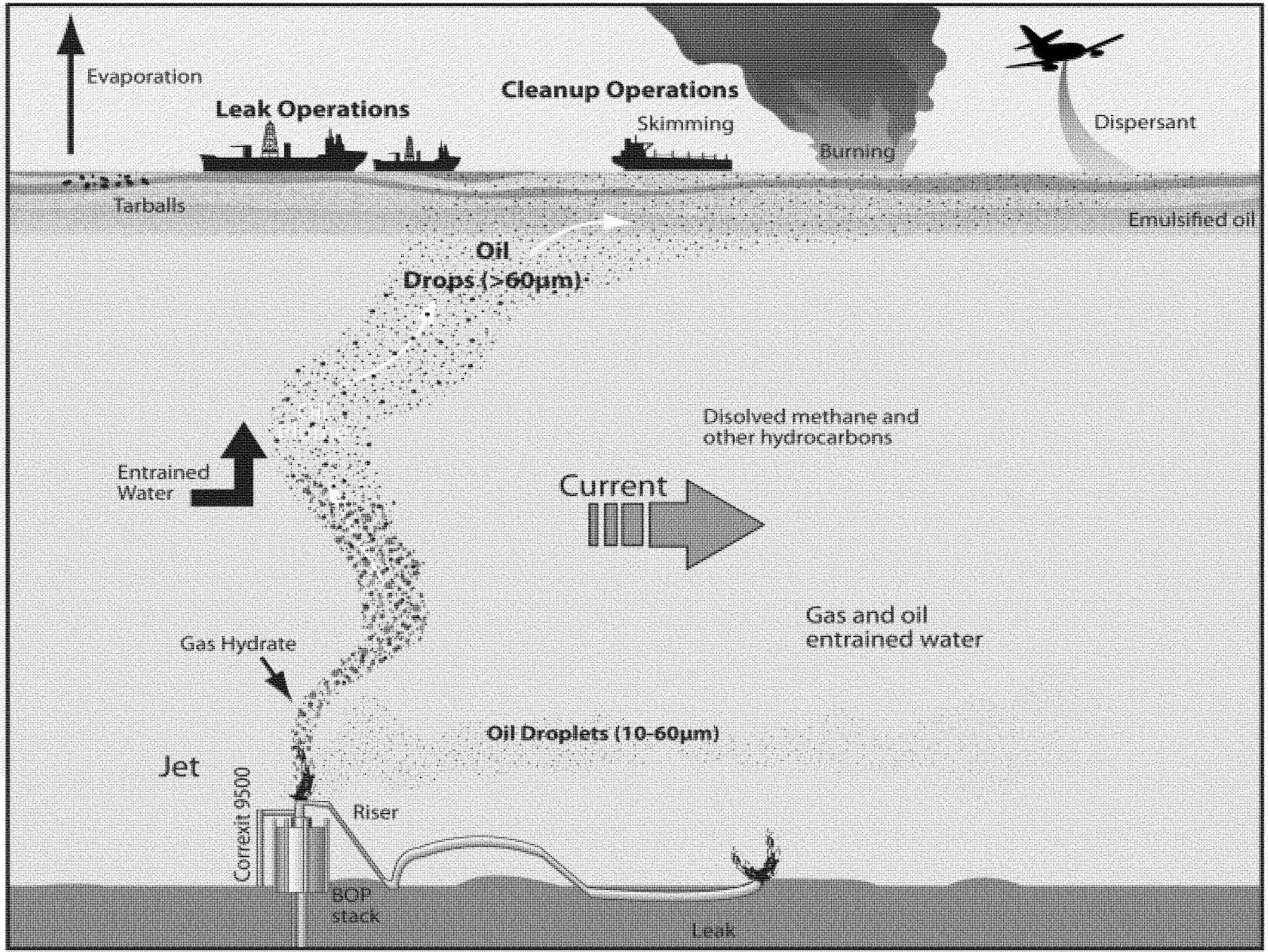
Conductivity, Temperature, Density (CDT) Data plus Fluorometry Traces

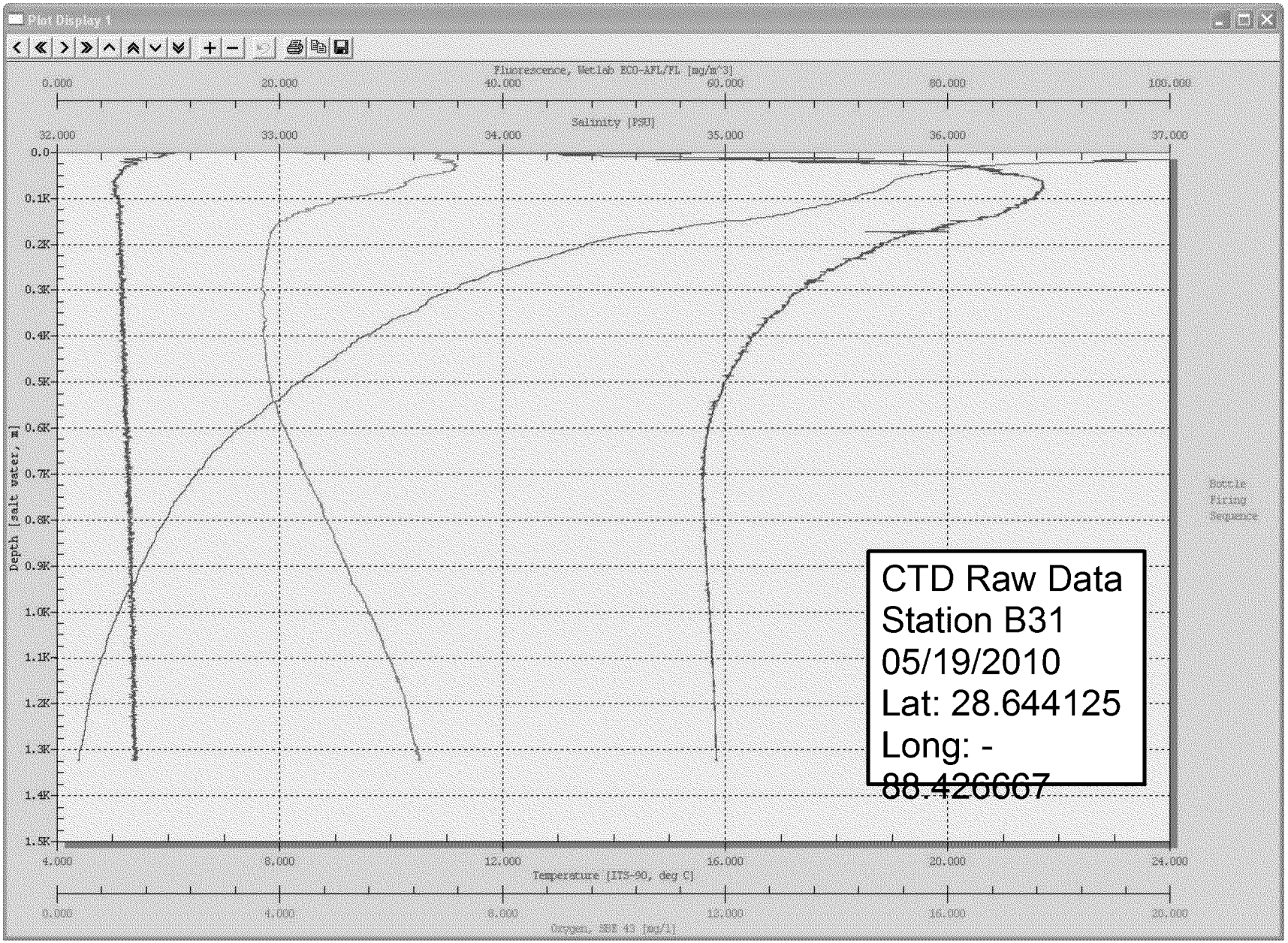
Sampling Locations

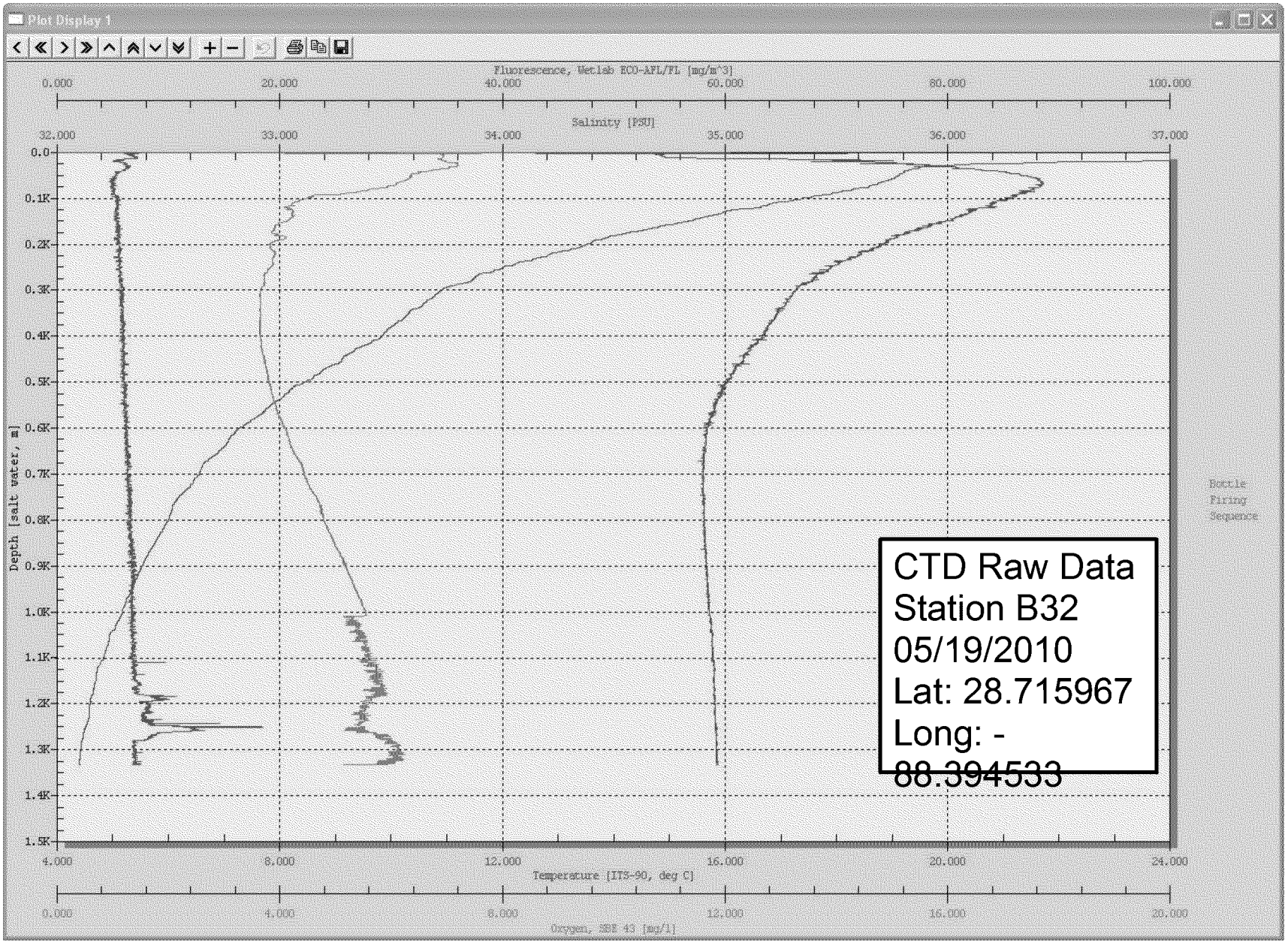


On-Board Fluorometry

- 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.

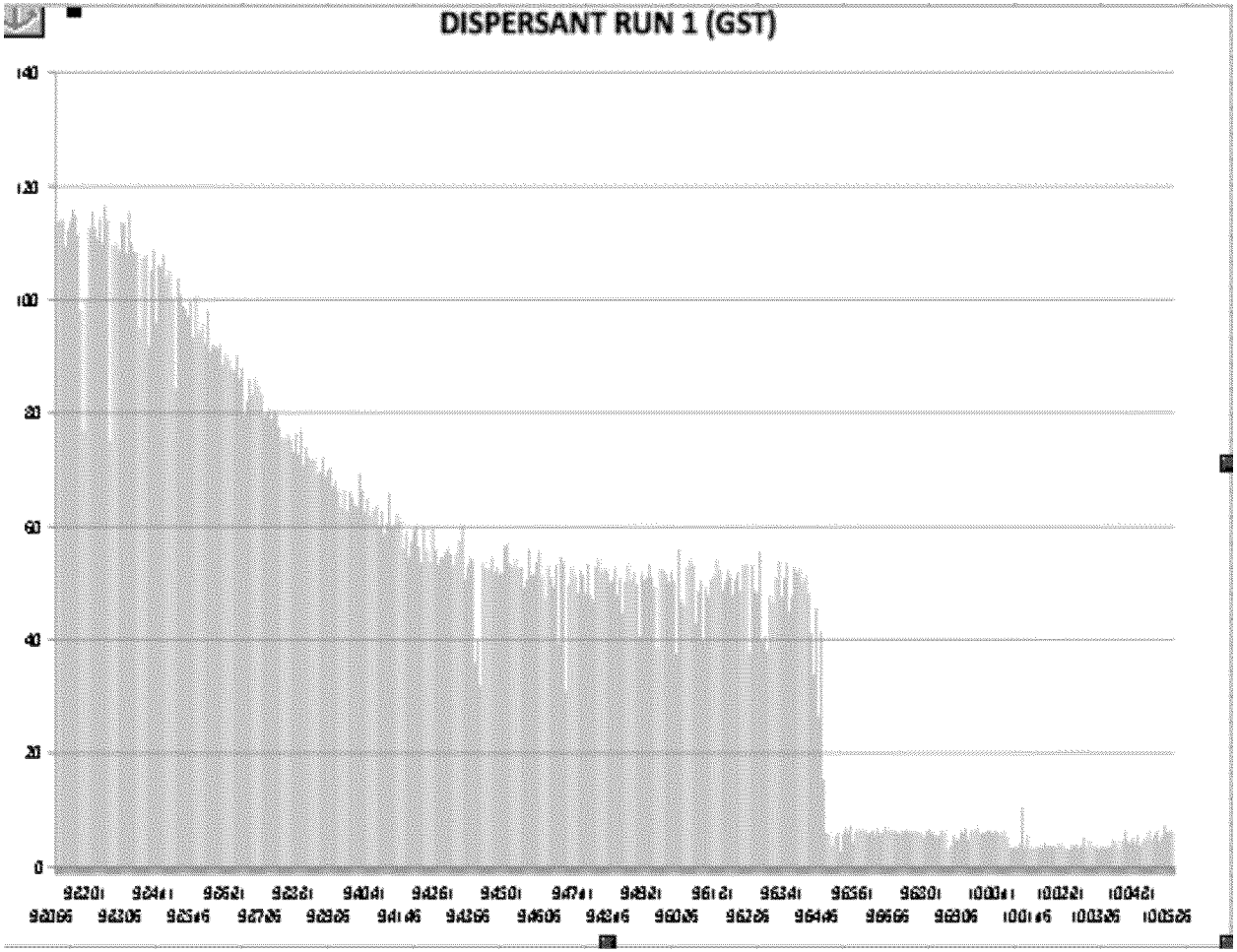

Evaporation
Leak Operations
Cleanup Operations
Skimming
Burning
Dispersant
Tarballs
Emulsified oil
Oil
Drops (>60µm)
Disolved methane and
other hydrocarbons
Entrained
Water
Current
Gas and oil
entrained water
Gas Hydrate
Oil Droplets (10-60µm)
Jet
Correxit 9500
Riser
BOP
stack
Leak


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]

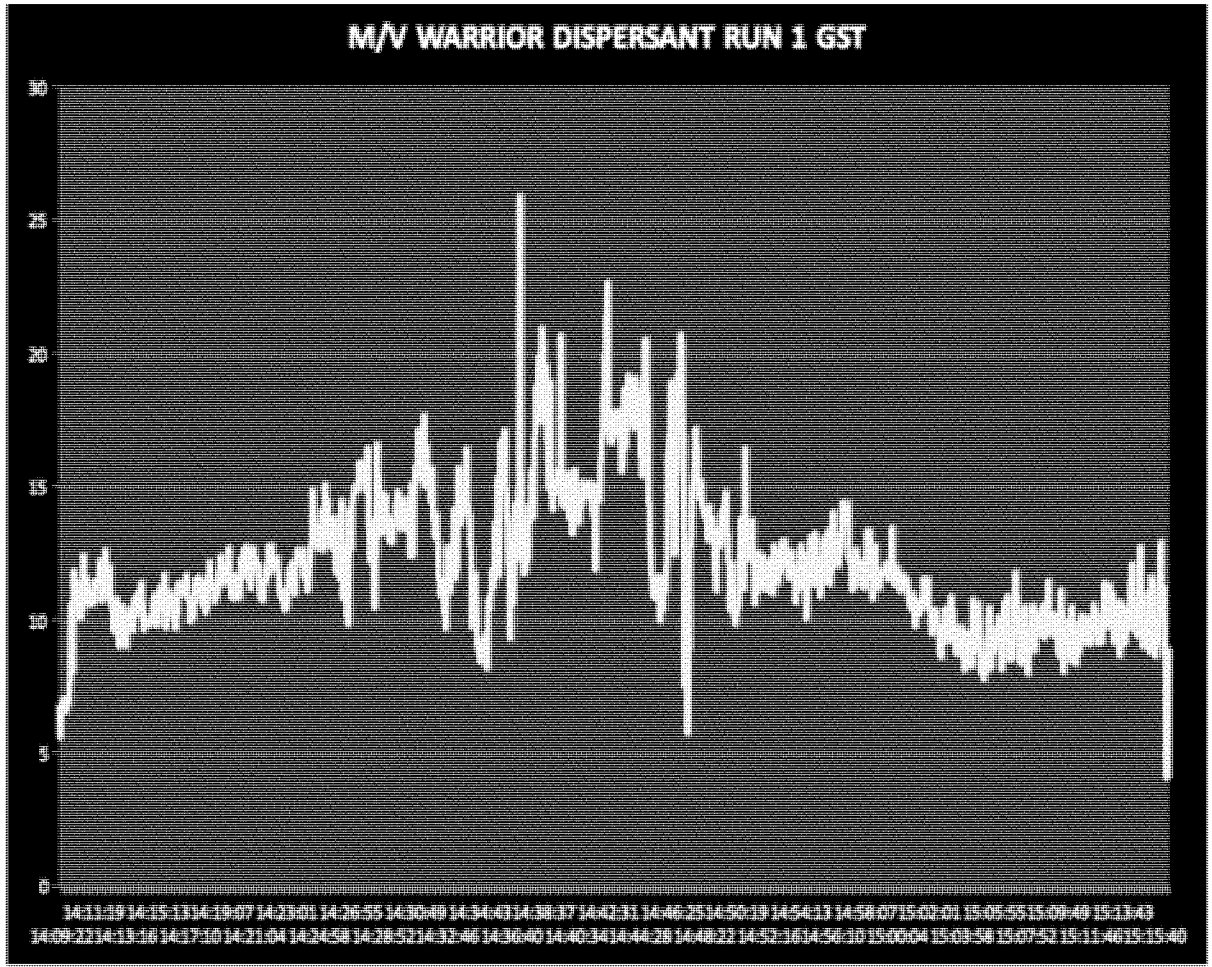

Plot Display 1
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
0.000
20.000
40.000
60.000
80.000
100.000
Salinity [PSU]
32.000
33.000
34.000
35.000
36.000
37.000
Depth [salt water, m]
0.0
0.1K
0.2K
0.3K
0.4K
0.5K
0.6K
0.7K
0.8K
0.9K
1.0K
1.1K
1.2K
1.3K
1.4K
1.5K
Bottle Firing Sequence
CTD Raw Data
Station B32
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

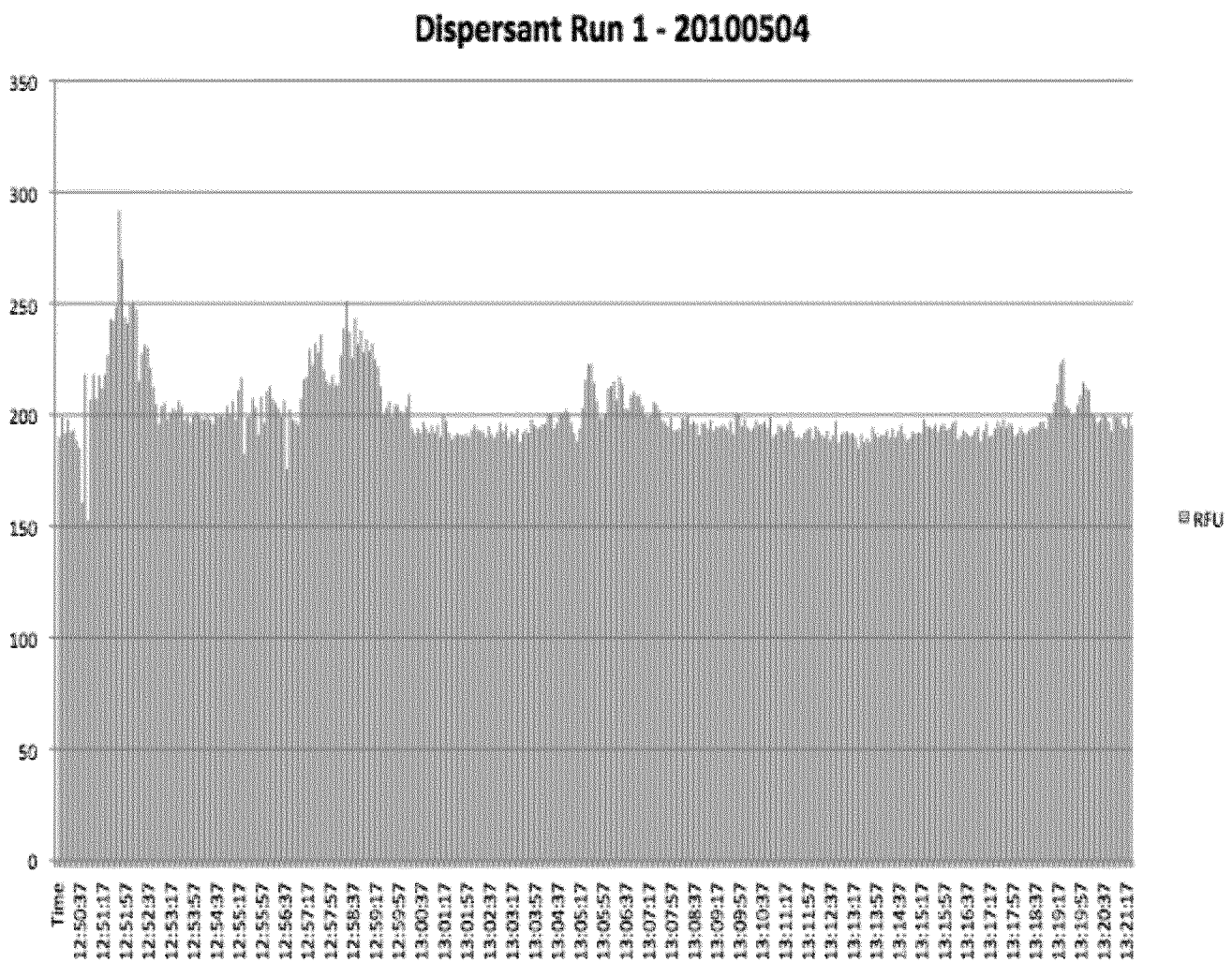
- A set of results was submitted to the HQ Science Group for assessment.
- The following 5 figures were used by EPA to determine that surface application of dispersant was not effective.
- The 6th figure is a good example of a fluorometry trace which compares mechanical and chemical dispersion near the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



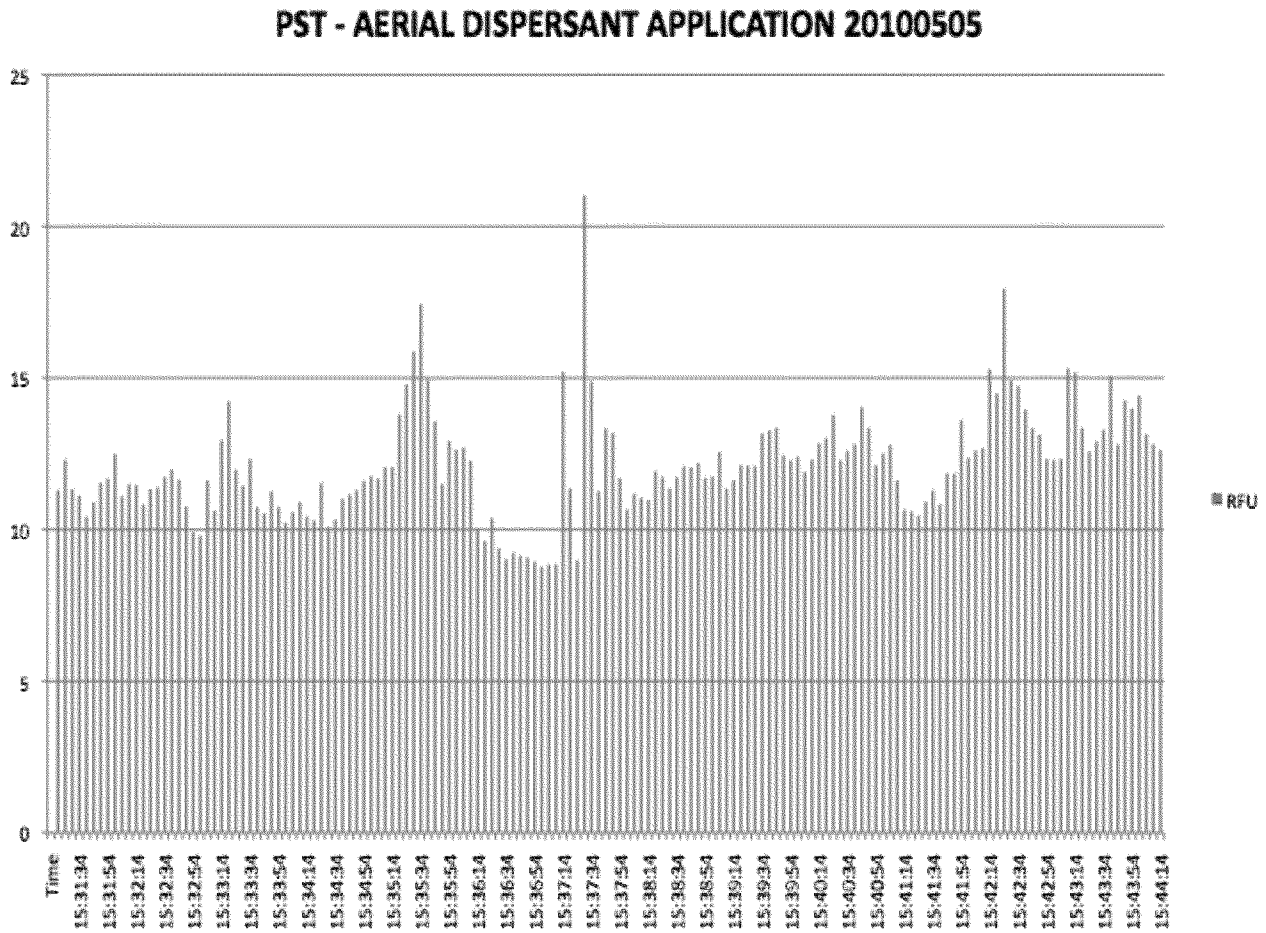
Increase of Fluorometry Reading >10x
(Almost 30x at Mid-plume)
Successful Application 4/28/2010



Unsuccessful Dispersant Application 4/28/2010

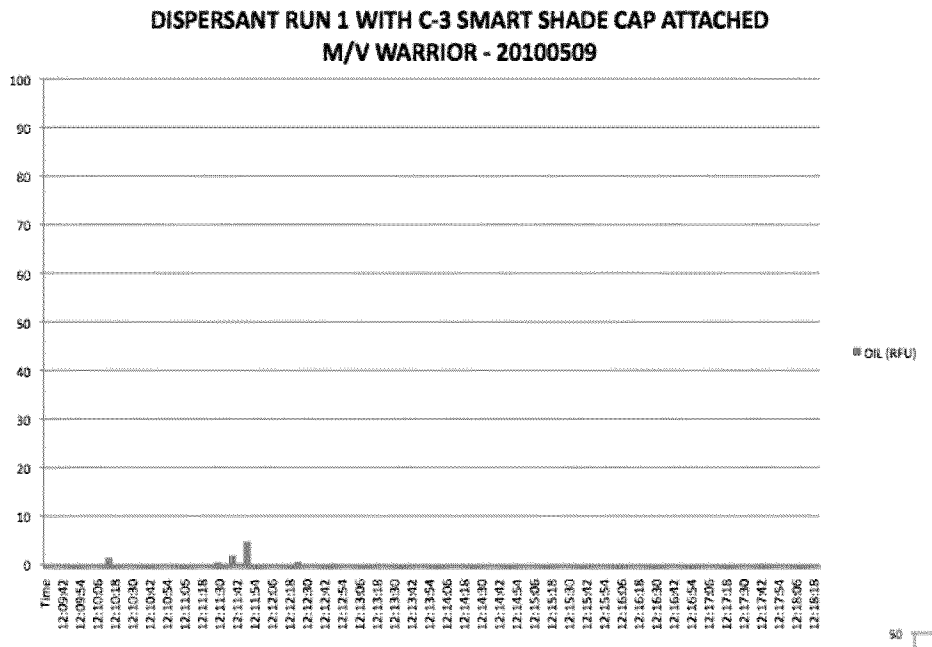


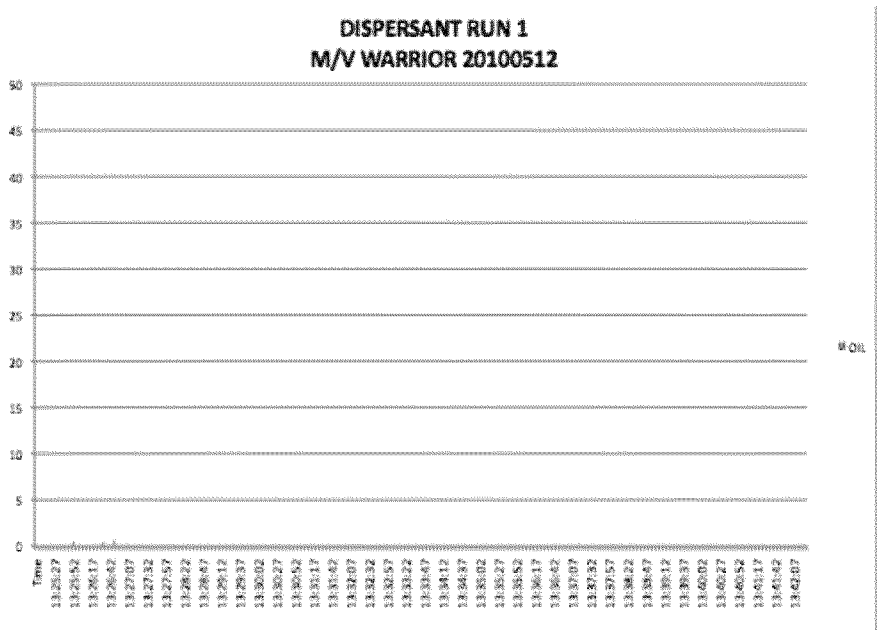
Unsuccessful Dispersant Application 5/4/2010

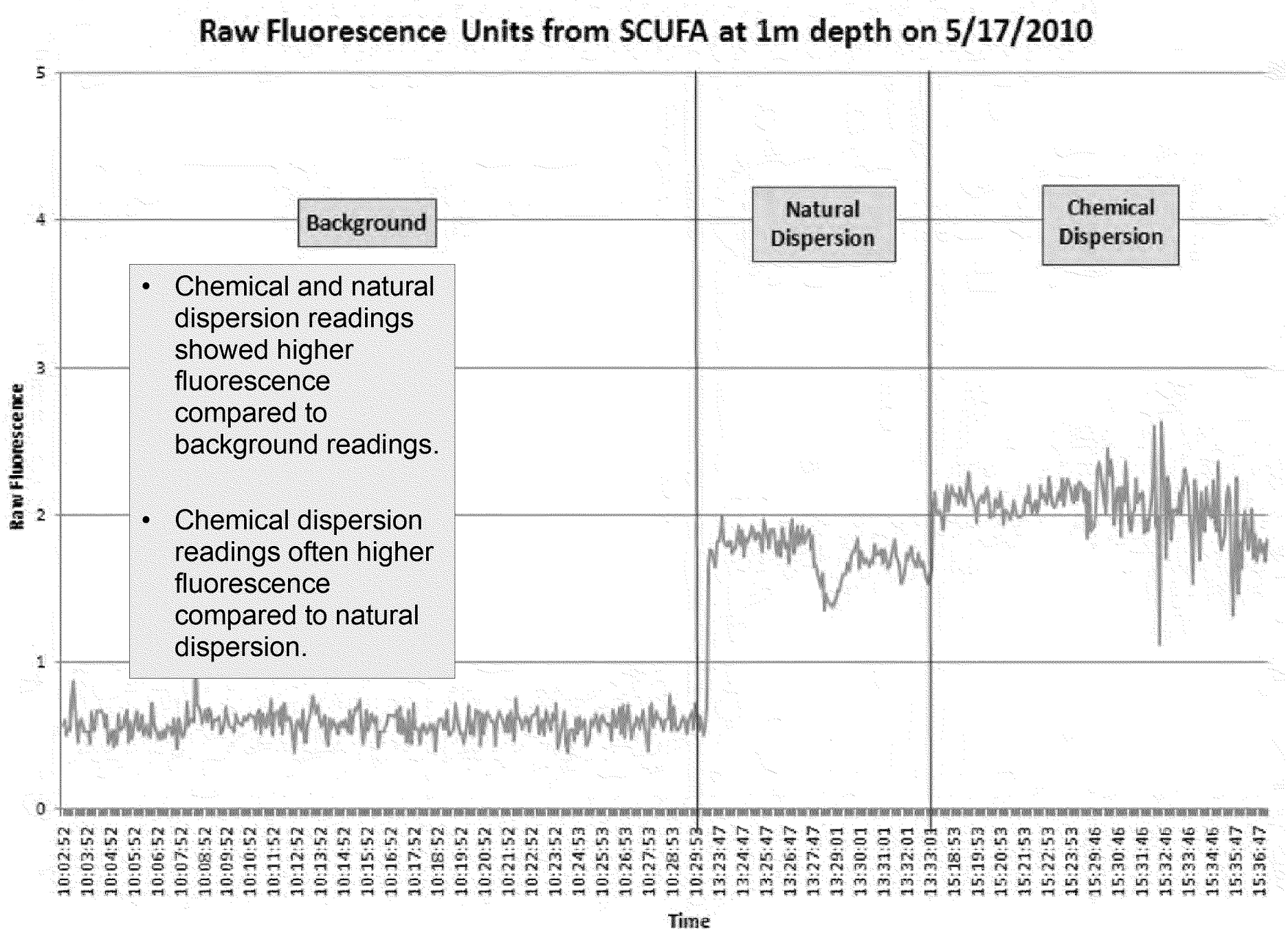


Unsuccessful Dispersant Application 5/5/2010

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
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?

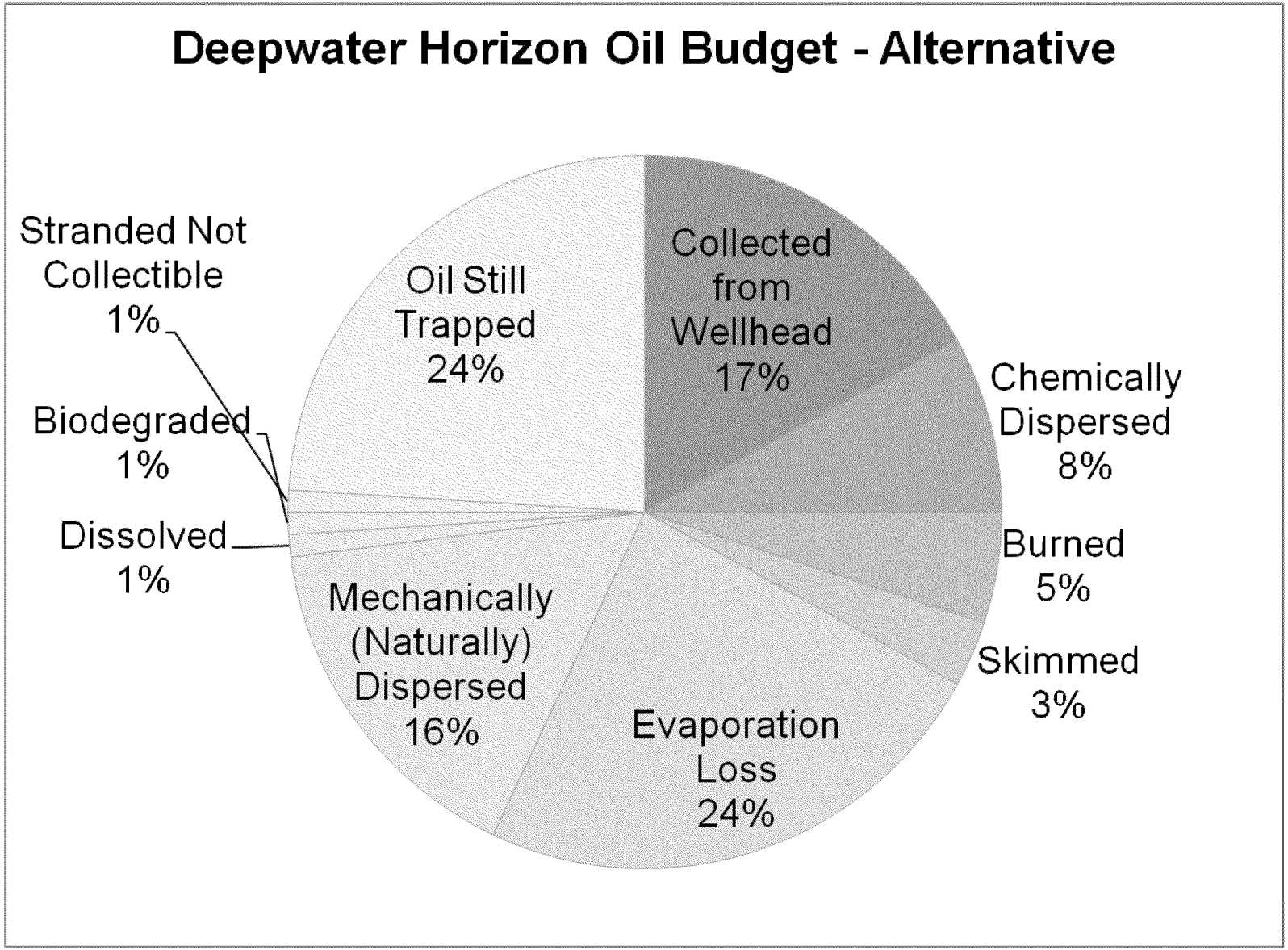
Deepwater Horizon Oil Budget Quantities

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.

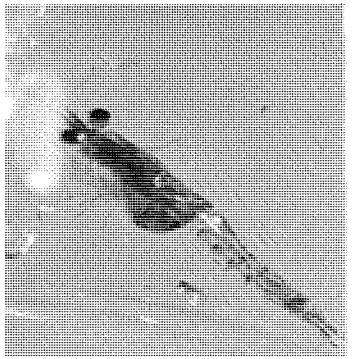
- National Academy of Sciences' 1972 Blue Book is still useful for water quality criteria relative to oil spills.

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*)

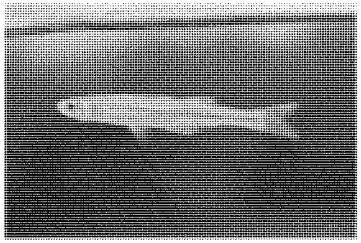


Dispersant	This Study LC50 (ppm) [95% CI]	Toxicity Category	NCP Product Schedule LC50 (ppm) [95% CI]
Dispersit SPC 1000	12 [10-14]	Slightly Toxic	16.6 [14.1-19.6]
Nokomis 3-AA	30 [27-34]	Slightly Toxic	20.2 [17.4-22.8]
Corexit 9500A	**42 [38-47]**	**Slightly Toxic**	**32.2 [26.5-39.2]**
Nokomis 3-F4	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)

NCP Product Schedule

NCP Product Schedule Technical Notebook / Web Site Bulletins: Primary Distributor and Sales Outlet Updates			
Product	**Distributor**	**Contact**	**Changes / Notes**
Dispersants			
Corexit 9527 (D-1)	Nalco/Exxon Energy Chemicals, LP ABASCO	Paul Hey N/A	Remove phone and fax numbers - phone disconnected
Mare Clean 200 (D-3)	Klinview Corporation	N/A	Change area code: (949) 753-0821 Change zip code: 92618; Updates were found on line
Corexit 9500 (D-4)	Nalco/Exxon Energy Chemicals, LP ABASCO	Paul Hey N/A	Remove phone and fax numbers - phone disconnected
Dispersit SPC 1000™ (D-5)	Maritime Solutions, Inc.	Chris Constantine	Add phone: (201) 541-0939
Biodispers (D-9)	Petrobiotech LLC	Hans Achtmann	Change company name: Petrobiotech LLC Change PO: P.O. Box 813
Sea Brat #4 (D-10)	Garner Environmental Services	Jack Campbell	Add contact: Jack Campbell
Finasol OSR 52 (D-11)	ATOFINA Chemicals, Inc.	N/A	Remove contact - Janice Mirecka and email address
Surface Washing Agents			
Corexit 7664 (SW-1)	Nalco/Exxon Energy Chemicals, LP ABASCO	Paul Hey N/A	Remove phone and fax numbers - phone disconnected
CN-110 (SW-9)	Chemex, Inc.	Gale Campbell	Change area code Phone: (337) 837-9148 Fax: (337) 837-2648
Corexit 9580 Shoreline Cleaner (SW-10)	Nalco/Exxon Energy Chemicals, LP ABASCO	Paul Hey N/A	Remove phone and fax numbers - phone disconnected
Simple Green® (SW-15)	Sunshine Makers, Inc.	Milton Krause	Change Phone: (562) 795-6000 Fax: (562) 592-3830
Petro-Green ADP-7 (SW-17)	Petro-Green, Inc.	Arnold Paddock	Add contact: Arnold Paddock
Nature's Way HS	Kaiser Industries	Gene Kaiser	Add contact:

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NCP Product Schedule

(SW-18)	(Earth Friendly Products, Coleman Pacific Environmental Services, Atec Trans-Tool, J.A.M. Distributing)		Gene Kaiser None
Cytosol (SW-19)	Cytoculture International, Inc. (Advanced Cleanup Tech, Inc., Foss Environmental, Inc.)	Randall von Wendel	Change contact: Randall von Wendel Add Mobile: (561) 762-5440 First response: vwedel@aol.com Web: rvw@cytoculture.com www.cytoculture.com None
Petro-Clean (SW-23)	Alabaster Corp. Garner Environmental - LaMarque, TX A.N. Rusche (Four Alarm Fire Equip, Garner Environmental - Deer Park, TX)	Charles Sheffield Jack Campbell N/A	Add contact: Charles Sheffield Change phone: (800) 935-0308 Add contact: Jack Campbell No contact number None
Do-All #18 (SW-24)	Studin & Associates	N/A	No contact number
SC-1000™ (SW-25)	GEMTEK® Products	Kim Kristoff	Change contact: Kim Kristoff
Gold Crew SW (SW-26)	Ara Chem, Inc.	Rita McNeally	Add phone: (619) 286-4131 Add fax: (619) 444-7256
FM-186-2 (SW-29)	Environmental Chemical Solutions, Inc.	N/A - Distributor Ed Grubbs - Manuf., Environmental Chemical Solutions, Inc.	Remove distributor contact numbers and email address - no working numbers No return call

ED_001324_00006188-00002

NCP Product Schedule

F-500 (SW-30)	Hazard Control Technologies, Inc.	Ben Wilson	Change contact: Ben Wilson
Bioremediation Agents			
Inipol EAP (B-10) **No longer being manufactured**	Elf Atochem North America, Inc.	N/A - Distributor Serge Kuchto - Manuf., Société CECA S.A.	Remove fax number - no longer in service; No phone number listed No return call / email
WMI-2000 (B-19)	WMI International, Inc.	Frank Lemmond	Add phone (P.M.): (713) 526-5829 Add Web: wmi@wt.net
Micro-Blaze® (B-41)	Verde Environmental, Inc.	William Scogin	Change distributor: Verde Environmental, Inc. P.O. Box 8706 Houston, TX 77248-8706 Phone: (713) 691-6468 (800) 626-6598 Fax: (713) 691-2331 Web: http://www:micro-blaze.com E-mail: bscogin@micro-blaze.com (Mr. William L. Scogin)
VB591™Water, VB997™Soil, and Bionutrix (B-42)	The Cynthia Group	Cynthia Girdler Sandra Hruza - Manuf., BioNutraTech, Inc.	Remove phone number: (330) 721-7141; Both contact numbers go to a fax machine No return call / email
Step One (B-43)	B&S Research, Inc. (Farm for Profit, Bioremedics Internat'l, Solv-O-Corporation)	H.W. Lashmett	Add contact: H.W. Lashmett None
BET Biopetro (B-48)	BioEnviroTech	N/A	Remove contact numbers; Numbers are incorrect
Land and Sea Restoration Product 001 (Velite) (B-55)	Land and Restoration	Todd Kenyon	Change contact: Todd Kenyon Change phone: (210) 669-3112 Remove fax number
S-200 (B-56)	International Environmental Products, LLC	Jim Lynn	Change contact: Jim Lynn Remove a/k/a's: S-200D and Bilgepro Add a/k/a's:

ED_001324_00006188-00003

NCP Product Schedule

			S-200C and Ultimate Oil Guard
Miscellaneous Oil Spill Control Agent			
CI Agent (M-17)	OnSite Waste Management	Dan Parker	Change name: OnSite Waste Management / IRST LLC
Alsocup (M-23)	Water Protection Association	JT Kirchoff	Add contact: J.T. Kirchoff

ED_001324_00006188-00004

From: Sjogren, Mya
Location: 866-299-3188; 202-564-3324 & http://epawebconferencing.acms.com/shcpartners
Importance: Normal
Subject: FW: Sustainable and Healthy Communities research program update with Program and Regional Partners
Start Date/Time: Wed 1/13/2016 7:00:00 PM
End Date/Time: Wed 1/13/2016 8:00:00 PM
SHC 3.62 Oil Research Program jan2016_conmy.pdf
SHC_PartnersUpdate_LawrenceMVD_final.pdf

In this monthly meeting, the Sustainable and Healthy Communities (SHC) research program will share ongoing and completed research with program office and regional partners.

Call in number: 866-299-3188; 202-564-3324# & http://epawebconferencing.acms.com/shcpartners
Facilitator: Mike Slimak, National Program Director for Sustainable and Healthy Communities research program

Agenda for Jan 13, 2016 Partner Meeting:

1. Speaker 1: Overview of ORD Oil Research Program (Robyn Conmy) (presentation attached)

2. Speaker 2: Status update on Lawrence, MA Making a Visible Difference (MVD) project (Valerie Zartarian, Marilyn TenBrink, Jeff Yang) (presentation attached)

3. Regional Sustainable Environmental Science (RESES) proposal season (Michele Conlon)

4. FY15 products and summaries are posted to the Deliverables Database (Greg Grissom)

a. Demonstration of RMS and our Deliverables Database

SHC 3.62 Oil Research Program jan2016_conmy.pdf SHC_PartnersUpdate_LawrenceMVD_final.pdf

Upcoming Seminars:

NIH-IHS Joint Research Partnership Highlighted. On **January 19th at 3pm,** the Indian Health Service (IHS) and the National Institutes of Health will co-present on their joint partnership supporting the Native American Research Centers for Health (NARCH). The NARCH initiative, started in the year 2000, supports partnerships between AI/AN Tribes or Tribally-based organizations and institutions that conduct intensive academic-level biomedical, behavioral and health services research. This webinar will be the third in the newly re-established EPA Tribal Science Webinar Series, co-hosted by SHC, NCER, and OSP.

System Dynamics Model for Community Transit Planning. **On January 26th at 3pm**, Rochelle Araujo of ORD's National Exposure Research Laboratory will present her team's findings as described in their recently finalized case study, "The Durham-Orange Light Rail Project: A System Dynamics Model for Integrated Decision Making." This report is a culmination of efforts dating back to SHC's inception to build capacity among decision-makers in understanding the holistic nature of community issues and how their social, economic, and environmental aspects are interconnected.

Continuing the conversation on biomimicry. Diana Hammer of Region 8 will present "Tapping into Nature's Genius: Biomimicry and EPA," a reflection on the recent biomimicry workshop in Region 8 and on how those lessons might be more broadly applied across the Agency in its work. Jayne Michaud of the National Center for Environmental Research, who attended the workshop, will co-present, offering an ORD perspective. Date and time are TBD.

Past:

Tribal Science Webinar featuring STAR Grantee Work. On January 12th EPA STAR grantees John Doyle, Anne Camper, and Mari Eggers presented on their project, "Water, Our Voice to the Future: Climate change adaptation and waterborne disease prevention on the Crow Reservation." They highlighted the complex environmental issues facing many tribal and indigenous communities.

Typology of Sustainable Communities Revisited. Nearly a hundred people participated in-person and via webinar on December 1st as SHC hosted Mike Nye, Kate Mulvaney, and Alex Hall's presentation, "Predicting community engagement with sustainability using geographically weighted regression." These three ORD scientists illustrated the ongoing progress of the Community Typology project in SHC 1.61 and discussed potential applications for EPA and partner organizations.

Resources:

- Visit SHC's intranet site to access recordings of past seminar series presentations as well as science moment presentations.
- ORD's Research Management System includes descriptions of ongoing and planned research for all of ORD's programs.
- SHC's Deliverables Database houses SHC's completed products.

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 12:49:57 PM
Subject: RE: Availability of COREXIT Products for Testing

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

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 8:29 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.

<>/<>/<>/<>/<>/<>/<>/<>/<>/<>/<>/<>/<>/<>/<>/<>

Robyn N. Conmy, Ph.D.

Research Ecologist

USEPA/NRMRL/LRPCD

26 West MLK Drive

Cincinnati, Ohio 45268

513-569-7090 (office)

513-431-1970 (EPA mobile)

727-692-5333 (Personal mobile)

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
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: 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!

<>/<>/<>/<>/<>/<>/<>/<>/<>/<>/<>/<>/<>/<>/<>/<>/<>

Robyn N. Conmy, Ph.D.

Research Ecologist

USEPA/NRMRL/LRPCD

26 West MLK Drive

Cincinnati, Ohio 45268

513-569-7090 (office)

513-431-1970 (EPA mobile)

727-692-5333 (Personal mobile)

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

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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To: Matthiessen, Craig[Matthiessen.Craig@epa.gov]; Wilson, Gregory[Wilson.Gregory@epa.gov]; Principe, Vanessa[Principe.Vanessa@epa.gov]
Cc: Raymond Bradley[bradleyr@api.org]
From: Emily Hague
Sent: Wed 4/22/2015 10:07:59 PM
Subject: API and NOIA Comments on EPA Subpart J Proposed Rule
API and NOIA Comments on EPA Subpart J Proposed Rule with PNG Attachment 04.22.15.pdf

Hello Craig, Greg and Vanessa –

API and NOIA submitted the attached comments on the EPA Subpart J Proposed Rule this afternoon through Regulations.gov. Attached is our letter for your reference. We also plan to provide this letter by mail to Mathy Stanislaus.

Thank you for this opportunity to comment,

Emily

Emily Kennedy Hague

Senior Policy Advisor, Upstream & Industry Operations

American Petroleum Institute

1220 L Street, NW

Washington, DC 20005

Ph: 202-682-8260

Fx: 202-682-8426

hague@api.org

This transmission contains information that is privileged and confidential and is intended solely for use of the individual(s) listed above. If you received the communication in error, please notify me immediately. Any dissemination or copying of this communication by anyone other than the individual(s) listed above is prohibited.

April 22, 2015

U.S. Environmental Protection Agency
EPA Docket Center (EPA/DC)
Docket ID No. EPA–HQ–OPA–2006–0090
1200 Pennsylvania Avenue NW 20460

Submitted via electronic submission to http://www.regulations.gov **and by mail**

Dear Dr. Gregory Wilson,

On January 22, 2015, the U.S. Environmental Protection Agency (EPA or the Agency) issued a Proposed Rule to amend Subpart J of the National Oil and Hazardous Substances Contingency Plan that governs the use of dispersants, other chemical and biological agents, and other spill mitigating substances when responding to oil discharges into the waters of the United States. 80 Fed. Reg. 3380 (January 22, 2015). Comments are due by April 22, 2015. The following comments to the docket are provided by the American Petroleum Institute (API) and the National Ocean Industries Association (NOIA) (collectively, "we") on behalf of our member companies based on review of the above-cited Proposed Rule.

API is a national trade association that represents over 625 members involved in all aspects of the oil and natural gas industry, including the exploration and production of both onshore and offshore Federal resources. The U.S. oil and natural gas industry supports 9.8 million U.S. jobs and 8 percent of the U.S. economy, delivering tens of millions per day in revenue to our government. API members provide most of the nation's energy and are backed by a growing grassroots movement of more than 25 million Americans.

NOIA, founded in 1972, represents more than 270 companies among all segments of the offshore industry with an interest in the exploration and production of both traditional and renewable energy resources on the nation's outer continental shelf (OCS). NOIA's mission is to secure reliable access and a fair regulatory and economic environment for the companies that develop the nation's valuable offshore energy resources in an environmentally responsible manner.

API, NOIA, and our respective members recognize the important mission of the EPA in protecting human health and the environment and share in this mission. More than most industries, the oil and natural gas industry understands the nature of risk and places at the center of its concern comprehensive planning for and effective management of risks in order to safeguard human well-being and protect environmental resources. To this end, woven into every operational endeavor are release prevention measures, preparedness methods and plans for rapid, effective response should an incident resulting in a release occur. Developed alongside regulatory agencies, operators submit to and follow a distinct set of response principles which protect shared values. The framework by which these principles are employed and tradeoffs are made in order to protect these shared values is called Net Environmental Benefit Analysis (NEBA). NEBA is a process used by the response community for making the best choices to minimize impacts of oil releases on people and the environment. NEBA aids in protecting people and the environment, and is the matrix through which every decision is made in a response event. In the offshore context, oil dispersing agents are a primary tool in the NEBA process and the response toolkit, as they

are a principal tool used for protecting human health and defending environmentally sensitive areas. When a release occurs, judgment and response speed are critical. In an offshore setting, dispersants are essential in creating a safe environment and are a key ingredient in marshaling an effective, swift response.

API, NOIA, and our respective members understand that through this Proposed Rule, EPA's goal is to develop a regulation which protects people and preserves natural resources. We too wish to accomplish the same goal, based upon sound scientific research and grounded in real-world, outside-the-laboratory scenarios and taking into account incident-specific risk. While the original intent of the dispersant rule was simply to provide for a schedule of dispersants and other chemicals that may be used in carrying out the National Contingency Plan (NCP), the Proposed Rule would essentially expand its purpose to an operational rulemaking which would significantly alter operational procedures.

In summary, the Proposed Rule, if implemented, would be substantially problematic for all stakeholders, including the response community, which is required to carry out an effective spill response. The Proposed Rule would also be problematic for the Federal and state ag ency community interests, as well as the public with regard to increasing environmental and community impacts. Although the Agency indicates that it seeks to "*encourage the development of safer and more effective spill mitigating products, and would bette r target the use of these products to reduce the risks to human health and the environment*" and "*ensure that On-Scene Coordinators (OSCs), Regional Response Teams (RRTs), and Area Committees have sufficient information to support agent preauthorization or authorization of use decisions*," API, NOIA, and our respective members submit that the Proposed Rule falls short of these objectives and in many cases would have the opposite effect . For example, and at the center of our concern, is the proposed dispersed oil toxicity test and its threshold which could result in the elimination of many dispersants and potential future dispersant s. E ven if the dispersants themselves were completely non-toxic, the proposed dispersed oil toxicity test and associated pass/fail threshold could prevent all dispersants from being listed and available for use in a spill response . The Proposed Rule covers activities broader than mere scheduling criteria for dispersants. The added complexity resulting from the Proposed Rule in auth orization, monitoring and product listing, in addition to unfounded and overly corrective assumptions about dispersant effects described in the Proposed Rule, will not assist the Unified Command during an oil spill . Instead, it will likely complicate and limit its ability to respond in the most effective manner to ensure the health and safety of people and minimize environmental and community impacts. Also, prohibiting the application of dispersants during an oil spill response or delaying their use will significantly increase the economic and environmental damage of oil spills.

API and NOIA encourage the Agency to review the comments contained herein , incorporate the corresponding recommendations in a supplemental proposed rule, and provide the public and other Federal government and state stakeholder agencies with an opportunity to provide another round of comments be fore implementing a final rule. We also recommend that EPA initiat e a Negotiated Rulemaking under the Negotiated Rulemaking Act of 1990 to establish a negotiating committee under the Federal Advisory Committee Act to develop draft regulatory text on a consensus basis for adoption and implementation as a proposed supplemental proposed rule by EPA. A balanced negotiating committee made up of response experts – from the Federal Agencies who oversee oil spill response and from industry and relevant third-party experts – would add value to further Proposed Rule revisions and ensure that Subpart J is aligned with the latest scientific consensus on, and avoid an artificial bias against, the use of dispersants. As an example, Negotiated Rulemaking was successfully used to implement vessel and facility response planning requirements under the Oil Pollution Act of 1990. At a minimum, we believe that E PA should facilitate a discussion between the response experts before finalizing the Proposed Rule.

We first provide general comments followed by detailed comments on a section -by-section basis for EPA's consideration below.

GENERAL COMMENTS

Industry Shares EPA's Goal Of Establishing Sound Dispersants Policy Grounded In Science and Executable in Real-World Spill Scenarios

In every operation, the goal of industry is to never have an oil spill, and it invests extensive time and effort to prevent spills from occurring. Industry and government have a shared interest in a unified, coordinated, and proactive approach that allows us to protect our common values. These values include the health and safety of our citizens, sensitive ecosystems, the local business community and economy, and the vitality and sustainability of tourism and other key community industries, such as fishing.

To achieve a well-managed response and the protection of our common values, the primary guiding principle is to stop the source of a spill as quickly as possible with the goals of ensuring the health and safety of people and minimizing environmental and community impacts. In many spill circumstances, dispersants play a critical role in achieving these goals, perhaps most importantly by reducing risks associated with Volatile Organic Compounds (VOCs) in the immediate vicinity of the spill that could be both a human health and safety issue, and should continue to be a response option promptly available to the Unified Command. The Proposed Rule could jeopardize the protection of the common values by potentially precluding even completely non-toxic dispersants from being listed due to the proposed dispersed oil toxicity tests and associated pass/fail thresholds. Scientific studies have shown that approximately 97.5% of the TPH constituents in dispersed oil toxicity tests come from the oil (not the dispersant), so the proposed laboratory tests will measure the toxicity of oil (not the dispersant).[1] If the standardized oils (i.e., ANS and IFO-120) required to be used in the proposed test have toxicity values (LC50) in water accommodated fractions (WAF) less than 10 ppm, then no dispersant, no matter its individual toxicity, will meet the threshold values for listing.

Moreover, the creation of arbitrary thresholds for passing such tests, especially when EPA has shown that modern dispersants are of low toxicity, is not supportable and it is not clear whether any dispersant will be approved for the NCP Product Schedule when both toxicity and effectiveness tests are required. Specifically, setting an acute toxicity threshold of dispersants plus oil at an LC50 of 10 ppm has a high probability of eliminating an effective dispersant from the list, i.e., any dispersant that passes the baffled flask effectiveness test. We know from previous testing by industry that many (or even most) crude oils by themselves have LC50's below 10 ppm. Of more relevance is the use of toxicity results to assist in a NEBA-based discussion of the relative merit of using a particular dispersant in favor of another. Similarly, the attempt to link lab test results to decisions relating to pre-authorization and use is misplaced since laboratory tests are useful in understanding differences between products, not their real world performance.

The Proposed Rule indicates that the Agency " *does not state or imply* " that one response option is endorsed over another which is a practice shared by industry. However, the preponderance of additional requirements for dispersant u se will likely have the unintended consequence of prohibiting, or delaying the approval of, dispersant use in a timely manner regardless of whether they may be the best, or only, response option. Further, the language contained in the preamble suggests that the Agency considers dispersants as a last priority, rather than giving them equal consideration with all other appropriate response options. Additionally, API and NOIA are concerned that the Proposed Rule may cause chemical

[1] Scientific reasoning that the dispersant only contributes ~2.5% of the TPH toxicity is based on the following. In a 1:20 disp ersant-to-oil ratio (DOR), the dispersant proportion is 5%. The solvent component of modern day dispersants is roughly half, which mean s the overall TPH contribution from the dispersant is ~2.5%. As a result, the toxicity is dominated by the oil constituents.

manufacturers to either disco ntinue the production of effective, commercially -available products or discontinue research into the development of the next generation of dispersants.

A Net Environmental Benefit Analysis Process Ensures Response Choices that Minimize the Impacts of Oil Spills on People and the Environment

Any changes to the rule must take into account the Net Environmental Benefit Analysis (NEBA)[2] process. When a spill occurs, the OSC must make time-critical choices about which response options to implement immediately and effectively to manage the potential impacts of the spill. The NEBA process helps the OSC select choices that minimize the impacts of the spill on people and the environment. NEBA is a consensus-based planning tool that is used to bring natural resource trustees, regulators and stakeholders together to address resource-management decision-making needs for an oil spill response. It provides a structured, scientific method to evaluate the likely net reduction, or possible increase, in environmental and socio-economic impacts resulting from the implementation candidate response options as compared to the natural recovery or "do nothing" alternative. An assessment of the trade-offs associated with each option is then conducted taking into consideration the potential impacts to sensitive environmental resources and local community values. The NEBA process determines which response option or combination of options can best reduce the overall impact of spilled oil to common values and promote the fastest overall ecosystem recovery. Of particular note, the NEBA process considers the potential effects to a wide range of concerns, ranging from likely environmental effects (i.e., deep marine to terrestrial, etc.) to possible economic consequences. When initially considering the potential outcomes, no individual area receives a greater priority over another. Instead, all are weighed from an equal footing and only after evaluating all the likely effects is a determination made regarding the response option that offers that greatest environmental benefit. In so doing, decision-makers ensure that an unbiased process is used, with input from relevant stakeholders, to determine the best course of action. This process has been adopted all over the world to identify response methods that will yield the greatest benefit with the least impact.[3]

The NEBA process can be used in both oil spill preparedness planning and response. In the United States, a formal NEBA process is conducted during the planning phase at the Area Committee and Regional Response Team (RRT) levels with input from state and Federal participants to determine the benefits and limitations from using each response technology within their individual areas of responsibility. In most offshore regions of the U.S., this is accomplished in the form of the Consensus-Based Ecological Risk Assessments (CERA) process (NEBA equivalent) used by the U.S. Coast Guard (USCG)[4] and supported by the National Oceanic and Atmospheric Administration (NOAA), EPA, other Federal and state agencies, and academia. More than twenty workshops were held in various locations around the continental U.S., Caribbean, and Alaska from 1995 to 2011 to compare the benefits and risks of various response options when considering resource trade-off decisions. All of the workshops resulted in final publications (available from USCG) that were delivered to the Area Committees and RRTs to assist with response planning. One example of how this CERA/NEBA process was used to inform dispersant use decision-making is summarized in several papers authored by regulators in the state of California.[5] The applicability of the CERA/NEBA process as a tool for facilitating dispersant decision-making during spill response and planning was also evaluated by NOAA and published in a 2008 paper.[6]

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[2] NEBA is similar to the Consensus Ecological Risk Assessment (CERA) process developed by the U.S. Coast Guard in the mid - 1990s.

[3] See, *Incident management system for the oil and gas industry: good practice guidelines for incident management and emergency response personnel*, IPIECA, August 2014, http://www.ipieca.org/publication/incident-management-system-oil-and-gas-industry-good-practice-guidelines-incident-manage.

[4] Aurand, D., Walko, L., & Pond, R. (2000). *Developing consensus ecological risk assessments: Environmental protection in oil spill response planning*. Washington, D.C.: U.S. Coast Guard.

[5] Addassi, Y. N., & Faurot-Daniels, E. (2005). California oil spill dispersant plan -Achievement through cooperation. *Proceedings of the 2005 International Oil Spill Conference, 2005* (1), 433 -437. doi:10.7901/2169 -3358-2005-1-433; Addassi, Y. N., Sowby, M.,

In 2014, the practice of incorporating a NEBA review during Source Control drills in the Gulf of Mexico was implemented by RRT VI during several large scale spill response exercises,[7] which has fostered good cooperation between the agencies to focus on the goal of minimizing shoreline community and ecosystem impacts by selecting response options that can maximize the effective treatment of oil offshore. NEBA discussions during both of these recent spill drills resulted in the concurrence of the RRT to authorize dispersants (both aerially and subsea) to treat the offshore oil slick.

Government decision-makers and/or the Responsible Party can conduct a rapid NEBA during actual spill responses to compare and rank the strengths and weaknesses of different response options for the incident-specific conditions. Lessons learned following a spill are incorporated into future policies and plans. Ecological recovery studies of the 1996 *Sea Empress* spill in the UK demonstrate the benefit of dispersant application along the coastline to prevent persistent oil from stranding in shoreline habits.[8] A more recent publication examined the recovery rates for a tropical ecosystem during a controlled study of dispersed versus untreated shoreline oil slicks and concluded that better recovery occurred in the areas where dispersant was used.[9]

Regrettably, the Proposed Rule lacks a NEBA perspective. It incorrectly focuses on intrinsic, hazard-based criteria for substance listing and ignores the more appropriate risk-based trade-off decision process responders must consider during an oil spill response. It does not recognize that dispersants are only applied when regulators and response decision-makers deem them necessary to prevent more significant and harmful consequences. The Proposed Rule favors protecting pelagic and benthic species while putting critical habitats, such as the ocean's surface and near-surface zones, as well as sensitive shorelines, at greater risk to environmental damage. Modeling results presented at the 2005 International Oil Spill Conference concluded that:

> *"…the results of the modeling support the contention that there are more opportunities to save wildlife, shorelines, and sensitive habitats along the shore with dispersant use than there are risks of impacting water column biota. If the areas that would be impacted by surface oil are those where wildlife are concentrated, as they typically are near shore, and the water column impacts resulting from dispersant use would be offshore where water column biota are lower in abundance, the trade-off is much more heavily weighted toward dispersant use before oil comes near the shoreline. In fact, for medium or smaller spills, or even larger spills where sensitive species and life stages are not present, the impact of dispersant use on water column biota could be negligible."*[10]

Parker-Hall, H., & Robberson, B. (2005). Establishment of dispersant use zones in the state of California: A consensus approach for marine waters 3 –200 nautical miles from shore. Proceedings of the 2005 International Oil Spill Conference, 2005(1), 187 -191. doi:10.7901/2169-3358-2005-1-187.

[6] Mearns, A., & Evans, M. (2008). Evaluating the consensus ecological risk assessment workshop as a tool for facilitating decision - making during spill response and planning. *Proceedings of the 2008 International Oil Spill Conference Proceedi ngs, 2008*(1), 739-741. doi:10.7901/2169-3358-2008-1-739

[7] Freeport McMoran Source Control drill (April 30-May 1, 2014) and BP Source Control drill (Nov 5-6, 2014)

[8] Lunel, T., Rusin, J., Bailey, N., Halliwell, C., & Davies, L. (1997). The net environmental benefit of a successful dispersant operation at the Sea Empress incident. *Proceedings of the 1997 International Oil Spill Conference, 1997* (1), 185 -194. doi:10.7901/2169-3358-1997-1-185

[9] Baca, B., Rosch, E., DeMicco, E. D., & Schuler, P. A. (2014). TROPIC S: 30 -year follow -up and analysis of mangroves, invertebrates, and hydrocarbons. *Proceedings of the 2014 International Oil Spill Conference, 2014* (1), 1734 -1748. doi:10.7901/2169-3358-2014.1.1734

[10] French McCay, et al., Modeling Fates and Impacts of Hypothetical Oil Spills in Delaware, Florida, Texas, California, and Alaska Waters, Varying Response Options Including Use of Dispersants. International Oil Spill Conference Proceedings: May 2005, Vol. 2005, No. 1 pp. 735-740. Also available at http://ioscproceedings.org/doi/pdf/10.7901/2169-3358-2005-1-735.

For oil spills where dispersant use is contemplated, a typical NEBA will predict the potential impacts to aquatic organisms from an increased exposure to dispersed oil droplets. Dispersant use is typically restricted to water depths greater than 10 to 20 meters so that dilution will minimize exposure or impacts to the benthic community. Studies have shown the dispersed oil concentrations are rapidly diluted within the large volume of receiving water from a high of a few hundred parts per million to a few parts per million within a few hours. Consequently, exposure to the toxic effects of the dispersed oil will be of short duration and limited to those aquatic organisms that inhabit near surface waters. The NEBA will also estimate the reduction of impacts to waterfowl, shoreline ecosystems and coastal communities resulting from the reduction in, or elimination of, the quantity of floating oil. The trade-offs of a short term increase in exposure of selected aquatic organisms to dispersed oil versus an increase in oil impacting coastal environments and communities must be evaluated and take into account local community values to determine if dispersant use is warranted.

Given the challenges of implementing other response options, a decision not to have dispersants available to responders could result in oil stranding on shorelines where it may persist for an extended time. Effectively dispersed oil will biodegrade rapidly so that the majority of the oil will persist for a much shorter period of time. Reducing the persistence of the oil in the environment is critical to reducing the overall impacts.[11] This is not to say that water column organisms are less intrinsically important than surface or shoreline species but using NEBA can and does provide a critical framework for deciding what is best for the overall ecosystem. Important considerations to understand in assessing this tradeoff include:[12]

- The impacts to the water column are mitigated by dilution – that is the potentially toxic levels of dispersed oil are limited in duration and physical coverage/extent and effected populations (e.g., plankton) tend to be ones that recover quickly.
- Oil effectively dispersed in the water column will generally biodegrade after a few days or weeks while oil stranded in near shore and shoreline areas can persist for years.
- Near shore and shoreline areas are the nursery grounds for many species, even those that live offshore as adults, so protecting the near shore areas also protects organism that live as adults offshore.
- The bio density of near shore areas (swamps and marshes) is far greater than the bio density in pelagic waters offshore.
- Dispersants also protect surface dwelling organisms offshore, i.e., marine mammals, birds, and turtles, through removal of floating oil.
- Slicks on the water surface are far more likely to impact fish eggs and larva that tend to float at or near the water surface than quickly removing oil from the surface with dispersants.
- In certain geographies, slicks can impact mangroves and other shoreline vegetation that can subsequently die off and result in shoreline erosion that increases sediments in the near shore water column and potentially affects corals and other species.

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[11] Hazen, et al., Deep-Sea Oil Plume Enriches Indigenous Oil-Degrading Bacteria, Science, 330 (2010), pp. 204-208.

[12] (a) French McCay, D., and Graham, E. Quantifying Tradeoffs – Net Environmental Benefits of Dispersant Use. International Oil Spill Conference Proceedings: May 2014, Vol. 2014, No. 1, pp. 762-775.
(b) McManus, M.A., Woodson, C.B. Plankton Distribution and Ocean Dispersal. The Journal of Experimental Biology, 215 (2012), pp. 1008-1016.
(c) DeMicco et al., Net Environmental Benefit Analysis (NEBA) of Dispersed Oil on Nearshore Tropical Ecosystems: TROPICS – The 25th Year Research Visit, International Oil Spill Conference Proceedings, May 2011, Vol. 2011-282.
(d) Varela et al., The Effect of the "Prestige" Oil Spill on the Plankton of the N -NW Spanish Coast. Marine Pollution Bulletin 53 (2006), pp. 272-296.
(e) Addassi, et al., Establishment of Dispersant Use Zones in the State of California: A Consensus Approach for Marine Waters 3-200 Nautical Miles from Shore. International Oil Spill Conference Proceedings: May 2005, Vol. 2015, No. 1, pp. 187-191.

The Agency should consider the NEBA process and how and why dispersants are used before making changes to the Subpart J Regulations.

The Proposed Rule has the Practical Effect of Treating Dispersants as Toxic and either Prohibiting or Discouraging the Use of this Critical Response Tool

Dispersants are an essential tool in the responder's toolkit. They are products used in oil spill response to dilute the oil in the water column to enhance natural microbial degradation, a process where microorganisms remove oil from the environment.[13] All marine environments contain naturally occurring microbes that feed on and break down crude oil. Dispersants aid the microbial degradation by forming tiny oil droplets, typically less than the size of a period on this page (<100 microns), thus increasing the oil's surface area and making it more available for the petroleum-degrading microorganisms to consume.[14]

All oil spill response options have their place in the response toolkit because of the extreme variability of spill conditions. Dispersants become a critical response tool for larger spills far from shore; spills more distant from stockpiles of recovery and containment equipment; when weather and ocean conditions preclude the use of other options; or when weather conditions are predicted to become more severe because they can be rapidly applied by aircraft or subsea (at a high encounter rate) when wind and wave conditions prevent other vessel-based recovery options.

The Proposed Rule focuses on the potential risks of dispersants without recognizing the benefits and core purpose of dispersants, which is to rapidly dilute the spilled oil and enhance removal of the oil from the environment through microbial degradation, resulting in reduced VOCs and shoreline impacts. Ultimately, the purpose of dispersants is to reduce the overall toxicity and persistence of oil in the environment.

We believe that research showing that dispersants do not enhance the biodegradation of oil from the environmental is based on studies that used unrealistically high concentrations of dispersed oil. Prince and Butler only recently developed a biodegradation test method that compares dispersed oil biodegradation to biodegradation of a surface slick at representatively low concentrations (i.e., 2.5 ppm).[15] This research unambiguously shows the enhanced biodegradation of dispersed oil over allowing an oil slick to remain on the surface. Most prior dispersed oil biodegradation studies used oil concentrations that were two or more orders of magnitude too high.[16]

Dispersants have proven to be an effective way to respond to an oil spill, most notably in those situations that prohibit, or otherwise limit, the effectiveness of other response measures. We submit that all response options should be contemplated based on their individual, or combined, ability to respond to

[13] American Society for Microbiology (ASM). (2011). *FAQ: Microbes & oil spills.* Retrieved from http://academy.asm.org/images/stories/documents/Microbes_and_Oil_Spills.pdf; Personna, Y., Boufadel, M., & Zhang, S. (2014). Biodegradation of dispersed Endicott oil in controlled experiments. Proceedings of the 2014 International Oil Spill Conference, 2014(1), 1126-1140. doi:10.7901/2169-3358-2014.1.1126; McFarlin, K., Leigh, M., & Perkins, R. (2014). Biodegradation of oil and dispersed oil by arctic marine microorganisms. Proceedings of the 2014 International Oil Spill Conference, 2014(1), 300-317. doi:10.7901/2169-3358-2014-1-300317.1.

[14] Hazen, T. C., Dubinsky, E. A., DeSantis, T. Z., Andersen, G. L., Piceno, Y. M., Singh, N., Jansson, J. K., Probst, A., Borglin, S. E., Fortney, J. L., Stringfellow, W. T., Bill, M., Conrad, M. E., Tom, L. M., Chavarria, K. L., Alusi, T. R., Lamendella, R., Joyner, D. C., Spier, C., Baelum, J., Auer, M., Zemla, M. L., Chakraborty, R., Sonnenthal, E. L., D'haeseleer, P., Holman, H. N., Osman, S., Lu, Z., Van Nostrand, J. D., Deng, Y., Zhou, J., & Mason, O. U. (2010). Deep-sea oil plume enriches indigenous oil-degrading bacteria. *Science*, *330*, 204-208. doi:10.1126/science.1195979

[15] Prince, R.C. and Butler, J.D. A protocol for assessing the effectiveness of oil spill dispersants in stimulating the biodegradation of oil. Environ Sci Pollut Res Int. 2014 Aug;21(16):9506-10. doi: 10.1007/s11356-013-2053-7. Epub 2013 Aug 13.

[16] Lee, K., Nedwed T., Prince R.C., Palandro D., Lab tests on the biodegradation of chemically dispersed oil should consider the rapid dilution that occurs at sea. Mar Pollut Bull. 2013 Aug 15;73(1):314-8. doi: 10.1016/j.marpolbul.2013.06.005. Epub 2013 Jun 27.

discharged oil, either on or below the water's surface, in a manner that causes the lowest negative effect on the environment and promotes the most rapid recovery of the affected ecosystem.

Laboratory Dispersant Efficacy Tests do not Predict How Well Dispersants Will Work in the Wide Range of Real World Spill Conditions

Although laboratory dispersant effectiveness testing can be used as a comparative screening tool for different dispersants under laboratory conditions, the Proposed Rule appears to suggest these results will be representative of actual effectiveness when applied to oil spills on open water. However, these results do not translate to the wide range of field conditions, oil types and weathering degrees in real world oil spills. Specifically, the static conditions in a lab, where researchers conduct experiments with known quantities of oil and dispersant, cannot be replicated at sea. Although the amount of dispersant that is to be applied is calculated based on a desired initial dispersant-to-oil ratio, the quantity and characteristics of oil during a real spill is an estimate, making any definitive, quantitative effectiveness estimation problematic. Localized determinations of the relative effect of surface dispersant application may be evaluated qualitatively using visual cues or semi-quantitatively using ultraviolet fluorometry, which is sufficient for operational effectiveness assessments. Additionally, much of the detailed spill monitoring specified by the Agency in the Proposed Rule has no bearing on dispersant effectiveness monitoring and cannot be conducted in a time-frame that will support day-to-day, near real-time operational decision-making.

We suggest the language in the Proposed Rule be modified to clarify the laboratory efficacy testing is for comparative purposes only and that the pass/fail criteria be established at a level that will only eliminate the least effective dispersants from being listed. Some dispersants that only exhibit average effectiveness in the laboratory tests may be very effective in certain situations in the field and the Response Community needs to maintain as many options as possible to select the most appropriate response option for a given set of conditions and circumstances.

Dispersant Toxicity Tests do not Accurately Simulate Real World Exposures.

API and NOIA acknowledge that there may be benefits to a so-called "gate-keeper" toxicity test with dispersant alone to ensure that any dispersants that might contain highly toxic components would not be accepted for listing on the Product Schedule. However, it is unclear what rationale was used for the dispersed oil toxicity tests stated in the Proposed Rule.

The relevant factors in dispersed oil toxicity include the concentration of dispersed oil, or oil compounds, in the water and the duration of exposure. The fundamental basis of aquatic toxicity testing is to create a set of concentrations and expose the animals for a duration where observable effects can be measured. As a result, laboratory exposures are useful for data collection and generating toxicity curves; however these conditions are not representative of the real world where the natural processes of rapid dilution and biodegradation act on the dispersed oil to dramatically reduce the exposure conditions [17]. Using acute 48- or 96-hour LC_{50} toxicity tests with dispersed oil mixtures (to calculate LC_{50} values) is considerably different from the likely exposure regime experienced by marine organisms in the open sea following an oil spill. For this reason, the Chemical Response to Oil Spills: Ecological Effects Research Forum (CROSERF)[18] was assembled to develop new dispersed oil toxicity testing protocols that account for rapid dilution. Academia, regulators and industry funded a ten year program through CROSERF to

[17] Lee, K., Nedwed, T., & Prince, R. (2011). Lab tests on the biodegradation rates of chemically dispersed oil must consider natural dilution. *Proceedings of the 2011 International Oil Spill Conference, 2011* (1), 245. doi:10.7901/2169-3358-2011-1-245
[18] Aurand, D., & Coelho, G. (2005). *Cooperative aquatic toxicity testing of dispersed oil and the chemical response to oil spills: Ecological effects research forum (CROSERF)*. Ecosystem Management & Associates, Inc., Technical Report 07-03. Lusby, MD.

develop new testing methods that are more aligned with real -world field c onditions. This data is now available via the NOAA Dtox database.[19]

Results from dispersed oil monitoring during the Deepwater Horizon (DWH) spill is clear evidence of the rapid dilution occurring after surface dispersant application [20] and subsea dispersant injection .[21] Further evidence of the rapid dilution of dispersed oil in the field is found in the analytical results from several field trials conducted in the North Sea to characterize the fate and transport of dispersants applied to an open ocean oil slick. These field experiments and the subsequent chemical characterization condu cted in 1994,[22] 1995,[23] and 1996[24] showed a rapid (within one hour) dilution of dispersed oil concentrations following dispersant application. This same effect was observed during the DWH response following surface dispersant application.[25] Since the proposed EPA dispersed oil testing does not take into account dilution, it is more likely that reported toxicity values at a rtificially high laboratory concentrations, not representative of real -world dilution exposures, will lead to misinterpretation of these tes t results and possibly preclude the use of dispersants altogether.

We strongly suggest that the laboratory toxicity test be limited to dispersants only to screen out the more toxic products and that toxicity testing for dispersed oil be explicitly elimin ated from the Rule. It is very likely that all dispersants will be unable to pass the dispersed oil toxicity test as existing oil toxicity data indicates the test oils alone will be unable to pass the test.

In the context of NEBA (and its forebear, th e Consensus Ecological Risk Assessment, or CERA), scientists understand and accept that marine organisms may experience localized, transient toxic effects from exposure to dispersed oil, but these local effects are offset by the benefit of dispersant use i n preventing or minimizing oil drifting ashore and causing severe and long -term harm to more sensitive coastal resources and communities . While knowledge of the potential for toxic effects to marine organisms is useful for conducting a NEBA, it cannot be t he sole indicator that dictates the use of dispersants. All resources -at-risk as well as coastal communities must be considered in the response option decision-making process, with the emphasis on coordinating a response that will result in the least overall impacts while promoting the most rapid overall recovery of the affected ecosystem.

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[19] Bejarano, A., Chu, V., Dahlin, J., & Farr, J. (2 014). Development and application of dtox: A quantitative database of the toxicity of dispersants and chemically dispersed oil. *Proceedings of the 2014 International Oil Spill Conference* , *2014*(1), 733 -746. doi:10.7901/2169-3358-2014.1.733

[20] Operational Science Advisory Team (OSAT 1). (2010). *Summary report for sub-sea and sub-surface oil and dispersant detection: Sampling and monitoring. Unified Area Command, New Orleans*. Retrieved from: http://www.dep.state.fl.us/deepwaterhorizon/files2/osat_report_17dec.pdf .

[21] Coelho, G., Aurand, D., Essex, L., Parkin, A., & Robinson, L. (2012). *Monitoring subsurface dispersant injection during the MC252 incident, volume 1*. Lusby, MD, USA: Ecosystem Management & Associates, Inc.

[22] AEA Technology. (1994). *International calibration of laboratory dispersant test methods against sea trials* . Oxfordshire, UK: AEA Technology.

[23] AEA Technology. (1995). *International calibration of laboratory di spersant test methods against sea trials. Field trial report. July 1995 sea trials*. Oxfordshire, UK: AEA Technology ; Jones, M., & Petch, S. (1995). A report on the analysis of hydrocarbons in sea waters and associated samples from trial oil spills off east ern England, July 1995. Newcastle upon Tyne, UK: University of Newcastle upon Tyne.

[24] Strøm-Kristiansen, T., Hokstad, J. N., Lewis, A., & Brandvik, P. J. (1997). *NOFO 1996 oil on water exercise – analysis of sample material. SINTEF Data report number STF66 A97050*. Trondheim, Norway: SINTEF ; Coelho, G. M., Aurand, D. V., Petch, G.S., & Jones, D.M. (1998). Toxicity bioassays on dispersed oil in the North Sea: June 1996 field trials. Ecosystem Management & Associates, Inc., Report 96-02. Purcellville, VA: Ecosystem Management & Associates, Inc.

[25] Huber, C. A., Steen, A., & Parscal, B. (2014). Does wave height matter for effective surface dispersant application? *Proceedings of the 2014 International Oil Spill Conference, 2014* (1), 747-761. doi: 10.7901/2169-3358-2014.1.747

During an Oil Spill, Operational Monitoring Should Focus on How the Selected Response Options Mitigate the Effects of the Oil on the Environment

Following an oil spill, the primary emphasis of operational response monitoring should be directed toward the response effort and the effect that those efforts have on reducing the net negative environmental consequences. The Agency proposes the requirement to "*monitor agent use in the environment*." API and NOIA submit that operational monitoring should not be focused on monitoring the agent (i.e., dispersant) use, but rather on monitoring the overall changes to the characteristics, transport, and fate of the oil within the ecosystem. We also submit the Agency should acknowledge that the primary issue in a spill scenario is oil in the environment (not dispersants in the environment) and that operational monitoring efforts should concentrate on evaluating how well the response option (or options) mitigates the negative effects of the oil on sensitive environmental resources.

EPA proposes monitoring that will provide a comprehensive assessment of the environment. However, the monitoring actions required in the Proposed Rule go beyond those required to inform operational decision-making and cross into the realm of Natural Resource Damage Assessment (NRDA) monitoring. One reason for this is that NRDA monitoring requires days to years before opinions on damages are made. Operational decisions require real or near-real time data. Damage assessment monitoring should not fall under the purview of spill response decision-making, and any monitoring of response options should be done solely to ensure the effectiveness of that response technique.

The Proposed Rule includes additional surface dispersant effectiveness monitoring requirements beyond those established in current practices, with no justification of how this additional monitoring burden will enhance operational response decision-making. Further, the additional requirements do not differentiate between surface and subsurface use of dispersants. As a result, the Proposed Rule would apply an unnecessary set of requirements in the event of surface dispersant usage in lieu of those monitoring techniques outlined in the USCG *et al., Special Monitoring of Applied Response Technologies* (SMART) protocols.[26] Additionally, the monitoring regime outlined in the Proposed Rule deviates substantially from that recommended by the National Response Team (NRT) in its *Environmental Monitoring for Atypical Dispersant Operations: Including Guidance for Subsea Application and Prolonged Surface Application,*[27] which also advocates the adaptation of the SMART monitoring regimen. These additional monitoring requirements, if adopted, may divert valuable resources away from the response effort, potentially prolonging the spill event. They may also preclude the use of dispersants in many cases if required to be in place as a condition of authorization, as it can take many days to assemble the equipment, vessels, and scientific experts.

During a subsea dispersant application, the Agency proposes an exhaustive set of environmental monitoring parameters that include *in situ* oil droplet size distribution analysis, *in situ* fluorometry, fluorescence signatures, dissolved oxygen, total petroleum hydrocarbons, carbon dioxide, methane, heavy metals, turbidity, water temperature, pH, and conductivity. As stated previously, we concurs with monitoring that supports effective, operational decision-making, but argues that most of these parameters will not provide any information on the effectiveness of the subsea dispersant application, will unnecessarily require additional scientific resources and will delay the reporting of key operational monitoring parameters. Spill response effectiveness monitoring should be based on simple, rapid assessments that can provide near real-time information on the progress of the response. For this reason, we believe that any mandated operational monitoring should be both incident-specific and designed to integrate into the other operational activities taking place. As such, the Responsible Party

[26] These protocols were jointly developed by the U.S. Coast Guard, National Oceanic and Atmospheric Administration, U.S. Environmental Protection Agency, Centers for Disease Control and Prevention, and Minerals Management Service.
[27] See http://www.nrt.org/production/nrt/nrtweb.nsf/AllAttachmentsByTitle/SA-1086NRT_Atypical_Dispersant_Guidance_Final_5-30-2013.pdf/$File/NRT_Atypical_Dispersant_Guidance_Final_5-30-2013.pdf?OpenElement

shares in the responsibility with the OSC in determining what monitoring needs to be done in ac cordance with the region -specific pre -approval and planning process. Comprehensive, detailed environmental monitoring is not an appropriate topic for this Proposed Rule.

The Agency's Economic Review Fails to Recognize Significant Costs of the Proposed Rule.

The Regulatory Impact Analysis (RIA) conducted by the Agency does not estimate all of the potential policy scenarios, and the economic impacts of those policies, that are issued in the Proposed Rule. Therefore, the RIA neglects to provide the public with a full description of the proposal's impact. Additionally, EPA did not provide any quantified social benefits that could result from implementation of any part of the Proposed Rule. An independent assessment [28] of the proposal (see Attachment A) has found that including the impacts of the requirements neglected by the Agency in the RIA would increase the cost of the proposal three times. In addition to underestimating compliance costs and administration costs for both industry and the federal governmen t, the RIA supporting the proposal fails to calculate the costs associated with the immediate market imbalances that could occur if products are removed from the market, either temporarily or permanently.

Beyond the market imbalance, removal of dispersants from the toolbox could result in additional clean-up costs that are not considered in the RIA. As noted in Attachment A, "To the degree this rulemaking reduces chemical and biological agent availability and innovation, the nation will have less tools av ailable to fight oil spill damage." A possible outcome of this limitation "is that future oil spill damages would be more severe than they would be if the rule did not occur." EPA did not quantify the costs associated with the possibility that the rule w ould limit the ability of the Response Community to keep oil from reaching shorelines or damaging ecosystems to a greater extent than if dispersants were readily available. We believe additional costs could extend to costs associated with environmental cla ims, increased response costs due to the need for shoreline cleanup, and other costs of environmental damages to sensitive shorelines, birds, and lost economic and recreational opportunities. In fact, EPA confuses the social benefits of avoiding an oil spill or having an appropriate response to a spill with the social costs of a spill, such as lost tourism revenue and other environmental damages. Furthermore, the Agency underestimated the costs to small businesses, which resulted in the false conclusion t hat small businesses would not be materially affected by the proposed ruling. Using realistic estimates, the attached third-party report finds that 43 percent of the firms identified by the Agency would face compliance costs in excess of three percent of a nnual sales and risk of closure. The Agency should amend the methodology and deficiencies found in the RIA, as discussed here and in the attached report.

We explicitly incorporate the comments and recommendations addressing the RIA provided by the independent assessment (see Attachment A).

The Proposed Rule Conflicts with Current Facility and Vessel Oil Spill Response Plans

Effective September 30, 2009, facility and tank vessel plan holders were required to update their response plans to include planning for responding to discharges using dispersants under a USCG rulemaking. Specifically, dispersant equipment is required in areas where it has been pre-determined that dispersants would be a viable oil spill mitigation technique and pre-authorizations have been established. Previously, with regard to dispersants for facilities located in areas with pre-authorization, a mechanical recovery equipment credit for up to 25% could be obtained for certain persistent oils.

[28] The independent assessment was prepared by the Policy Navigation Group (PNG), which consists of a diverse team of senior policy analysts with experience at Office of Management and Budget in the White House, managers, economists, engineers, lawyers and skilled researchers, with particular expertise in both private and public sector environmental management strategies including benefit-cost analysis and life-cycle assessments. See http://www.policynavigation.com/index.php?page=bios for more information about PNG.

However, since 2009 facilities handling certain persistent oils in areas with pre-authorization must ensure, through contract or other approved means, the availability of dispersant response resources and the commencement of dispersant-application operations within 7 hours of the decision by the OSC to use dispersants. Dispersant response resources must include: (1) sufficient volumes of dispersants to meet specified regulatory requirements, (2) dispersant application platforms and systems sufficient to meet planning standards, and (3) trained personnel.

Similarly, vessels transporting certain persistent oils in areas where dispersants are pre-authorized have been since 2009 required, through contract or other approved means, to have dispersant-related response resources meeting dispersant planning standards, including appropriately trained dispersant-application personnel. The dispersant resources must include the identification of each primary dispersant staging site used by each dispersant-application platform and the corresponding distance to the associated stockpile. Similar requirements were adopted for non-tank vessels in 2013.

There are also aerial tracking requirements under the current response plan requirements, and there are now pre-authorization zones for the use of dispersants outlined in the applicable Area Contingency Plan throughout the nation for every state except for Alaska and Connecticut whereby the OSC has the authority to expedite the authorization for the use of dispersants. Although there are no specific dispersants requirements under Bureau of Safety and Environmental Enforcement's (BSEE) response plan requirements for offshore facilities, it is clear based on experience with the *Deepwater Horizon* that dispersants are a key response tool that must be available on an expedited basis to respond both to a spill on the surface of the water and subsea in case of a blowout.

The Proposed Rule, however, appears to directly conflict with Coast Guard response plan requirements and raises a host of questions related to the continued validity of facility and vessel response plans. It is unlikely that any dispersants will pass both the efficacy and toxicity tests required by the Proposed Rule as a precursor to being listed on the NCP Product Schedule. For example, the EPA proposal may have the practical effect of virtually eliminating the entire stockpile of available dispersants nationwide that will be able to be listed on the NCP Product Schedule following full implementation of the Proposed Rule. In addition, it could have the practical effect of eliminating the usefulness of preauthorization zones. This could result in invalidating response plans.

Furthermore, the Proposed Rule, if implemented , would require significant additional requirements for information needed an d monitoring required before dispersants use approval is granted , which may prevent a plan holder from being able to deploy dispersants in the desired/required amount of time. For some spills it may mean that dispersants cannot be used at all due to limit ed window of opportunity. Thus, the Proposed Rule raises significant issues related to USCG and BSEE facility and vessel oil spill response plan compliance and could result in unnecessary and increased environmental damage and corresponding spill claims a s a result of increased damages. In this regard, we note that although the President delegated to EPA the responsibility for the amendment of the NCP, the Proposed Rule may extend beyond the limits of EPA's authority under that delegation or the applicabl e law. Furthermore, amendments to the NCP must be coordinated with members of the NRT , including the USCG and other relevant agencies, prior to publication for notice and comment. 40 C.F.R. § 300.2. It appears this coordination may not have been accompl ished sufficiently to avoid the conflicts discussed above. Accordingly, we recommend that EPA further coordinate with the USCG and BSEE to ensure that the Proposed Rule does not adversely affect USCG and BSEE response planning procedures and requirements.

<u>Agency Review of Public Comments</u>

Due to the significance of this rulemaking to the industry and to other Federal government agency stakeholders involved with spill response, it is critical the Agency provide adequate time for these other

agencies to review and provide feedback on comments submitted by the public for EPA's benefit and consideration. Accordingly, we strongly urge the Agency to seek and consider comments from the other relevant Federal government agencies on the public's comments befor e it decides on how to handle all input received in response to the Proposed Rule.

Availability of EPA Testing Data

It has come to the attention of API and NOIA that the Agency may have testing data related to dispersants that may not have been released to the public. If that is the case then the Agency should make that data publicly available as soon as possible in some form of a supplemental notice to this Proposed Rule. Supplemental comments should then be requested to ensure that the public has an opportunity to provide additional informed comments for EPA's consideration before finalizing the Proposed Rule.

DETAILED COMMENTS ON THE PROPOSED AMENDMENTS TO 40 CFR PARTS 110 AND 300

Our specific section -by-section comments on the Proposed Rule are presented as follows . These comments conform to the organization of the Proposed Rule on a section-by-section basis.

I. § Section 300.5 Definitions

A. *The definition of burning agents should not include ignition devices*.

Burning Agents. The proposed defi nition reads: " *Burning agents are additives that improve the combustibility of the materials to which they are applied through physical or chemical means* ." In the preamble (80 Fed. Reg. 3385) an example is given of a helitorch system, stating that the mate rials in the helitorch would be considered burning agents. Additionally, the Agency is seeking comment on whether it should add ignition devices to the definition of burning agent.

The proposed defin ition seems to combine burning agents (materials that actually change the combustibility of the material they are added to) and ignition agents (materials used to start combustion, as is the case with the helitorch). This confuses the question around including ignition devices within the definition of burning agents which, if happens, could lead to administrative pauses in requesting a test burn, or any burn during an emergency phase of a response.

Igniters are used to initially heat a small portion of the oil to release vapors that can be ignited. The initi al process of ignition is not the same as improving overall combustibility of an oil. For example, when starting a campfire, a match does not change the combustibility of the wood; it simply provides the energy to start the combustion process. Similarly, a n in-situ burn ignition system provides energy to heat and vaporize some of the oil so that it can start to combust. For this reason, we submit that ignition devices (both ignition liquids and equipment) should not be included in the definition of a burning agent.

We recommend the Agency adopt the following definitions:

> *Burning agents are additives that change the combustibility of the materials to which they are applied through physical or chemical means prior to ignition.*
>
> *Ignition agents are additives that ignite, or initiate combustion of the materials to which they are applied.*

B. *EPA's definition of dispersants does not fully define dispersants.*

Dispersants. The EPA proposed definition of dispersants in 300.5 should be expanded to include an explanation of why the production of smaller droplets is important. The following language should be added to the end of the proposed definition: *"The formation of small droplets is intended to allow the oil to be rapidly diluted in open ocean environments t o non -harmful concentrations and to promote rapid biodegradation of the oil by naturally occurring microbes."*

C. *Oil-mineral aggregate ("OMAs") are not sorbents*

Sorbents. API and NOIA offer several comments on the definition of sorbents in 300.5, as follows:

- We support the addition of clay as an example of an inorganic/mineral compound, especial ly since commercial products made from clay are currently on the market.
- The Agency expresses concern that sorbents made from particulate matter may be used as sinking agents. Many inorganic/mineral compounds that are quite dense are commonly used on terrestrial spills on roads, pavements and other hard surfaces. The rule should not limit their use for these situations.
- Very fine clays (like those used in OMAs), wh ile still nominally denser than water, will still suspend in the water column because the particle sizes are very small. The rule needs to acknowledge that OMA's are not sinking agents. If the Agency is concerned that inorganic/mineral sorbents are being u sed as sinking agents, then their use should be explicitly prohibited for use as a sinking agent. Uses for other purposes should be allowed.
- EPA should not limit how sorbents in particulate form are used. The use of OMA technologies is not to sorb oil but to promote dispersion and biodegradation. The purpose of the technique is not the same as for sorbents and should not be regulated as such. OMA technologies should be excluded in the definition of sorbents and should have separate testing/authorization requirements.
- While most sorbents are collected and recovered from the environment, some natural organic sorbents are spread over oil on habitats where the oil cannot be easily removed. The sorbent ties up the oil to reduce further migration and to limit the exposure to flora and fauna. The Agency should not discourage this application as it is sometimes considered a "best practice" for certain oiled habitats. As such, the Agency should either remove the phrase, "generally collected and recovered…" or add lang uage to indicate that loose, organic sorbents used in wetlands may not be recovered.

D. *Saltwater should be defined in the Proposed Rule*

Saltwater. In column 2, 80 Fed. Reg. 3389, of the preamble and subsequent sections the term "saltwater" is used. It is recommended that saltwater be defined in the definitions in 300.5 since the Proposed Rule states that dispersants are only allowed in saltwater environments. There is no definition of saltwater offered in the proposal. Dispersants have been shown to work a t salinity much lower than the typical 35 ppt ocean concentrations and effectiveness at salinity as low as 14 ppt has been reported. A definition where dispersants can be used needs to be provided, taking into consideration the data on dispersant performance in brackish or estuarine environments.

II. <u>Section § 300.910 Authorization for Agent Use</u>

A. *The Unified Command (UC) determines the best use of response assets on a daily basis.*

EPA should not establish a policy or rule that mechanical recovery is always the priority choice of countermeasures to use in a response. In the preamble for this section (column 1, 80 Fed. Reg. 3387), the Agency makes the following statement:

> *"During the DWH response, a priority countermeasures scheme was established to first use mechanical recovery via skimming/booming or in-situ burning followed by subsea dispersant and lastly surface dispersant use."*

This may have been the conceptual prioritization from the perspective of EPA, but in reality dispersants played a much larger role and it was the responsibility of the UC to determine the best use of response assets on a daily basis to account for weather conditions, VOC suppression, oil slick locations, response equipment availability, etc. Every spill is different and specific references to a single spill event can indirectly and inappropriately be perceived as a recommended practice and should be avoided. In any spill scenario, all response tools must be used to their maximum effect. The Agency's unprecedented use of "Directives" during the DWH incident severely limited the use of dispersants and circumvented the NEBA decision-making process allowing significantly more oil reaching the water's surface and, subsequently, the shoreline. This resulted in additional environmental impacts with no documented benefits to the marine ecosystem.

The Agency should reconsider this statement and prioritization as it puts unneeded complexity into the response decision-making process and inappropriately prioritizes mechanical recovery over other response options. The effectiveness of mechanical recovery can be limited in large, offshore spills as a result of typical environmental conditions, such as wave action/height or wind conditions as well as the extensive surface area that must be covered. Further, the Agency's artificial prioritization of this technique over other viable response options is contrary to the NEBA concept to determine the best blend of response options (with no pre-determined or pre-existing bias) to achieve the best overall protection and recovery for the ecosystem.

B. *Decision-making plans are also important to response decision-making.*

Later in the same paragraph referenced above, the Agency makes the following statement:

> *"The Agency believes that preauthorization or expedited decision making plans are critical elements of contingency planning activities."*

We strongly agree that preauthorization and expedited decision-making are important.

C. *Proposed changes involving preauthorization planning will increase the workload of all Regional Response Teams (RRTs) and Area Committees (AC) and restrict their flexibility.*

EPA should not restrict RRT or OSC activities related to preauthorization plans in areas where preauthorization is desirable and applicable. At the end of the same paragraph (column 2, 80 Fed. Reg. 3387), the Agency makes the following statement:

> *"The Agency believes these proposed revisions to the authorization of use provisions will assist OSCs, RRTs, and ACs in their advanced planning activities as they consider response methods that result in the greatest environmental protection."*

We agree with the intent to assist the OSCs and RRTs. However, the added complexity resulting from the Proposed Rule in authorization, monitoring and product listing, in addition to the overly conservative assumptions about dispersant effects described in the Proposed Rule, will not assist these entities.

Instead, it complicates and limits their ability to respond. The Agency must provide specific examples to show how this rule ass ists responders, particularly in relation to the OSC duties of making timely operational decisions, especially those decisions based on using the concept of NEBA to guide a response.

The existing rule states that the RRTs and Area Committees should evaluate the desirability of using various agents as part of their planning processes and state that "*RCPs and ACPs shall, as appropriate, include applicable preauthorization plans....* " Under the current rule, most RRTs did, in fact , create preauthorization plans, and those plans did include appropriate oceanographic and geographic limits . In practice, only Region VI used those plans to mitigate oil spills, and the Region VI OSCs, RRTs, and Area Committees became very familiar with their use . Policies and practic es for the use of the RRT VI preauthorization plan were created by the appropriate member agencies without regulatory requirements and evolved to account for changes in information technology.

The proposed language states, "*RRTs and Area Committees shall address in a preauthorization plan…*" This becomes a mandate for all RRTs and Area Committees, including those areas that may have little interest or need for such plans. In fact, some RRTs and Area Committees do not even have water bodies where dispersants could be used. Most of the factors that are required to be considered by the Proposed Rule are already addressed in preauthorization plans (e.g., water depth, distance from shorelines). Some factors, however, such as the requirement that " *preauthorization plans must specify limits for the quantities and the duration of use*," for agents are new and have the effect of limiting the application and effectiveness of the pre authorization plans. This requirement wo uld suggest that RRTs must know in advance the si ze of the potential releases, the resources at risk and what strategies are available to protect them, the dispersability of the oil, and the optimum dispersant -to-oil application rate. The OSC's flexibility and the effecti veness of the response method are limited and not assisted by such requirements, and EPA has not justified that the proposed requirement is necessary in relation to existing requirements.

The existing rule also states that " *preauthorization plans may address factors such as* ..." However, the Proposed Rule states " *Preauthorization plans should document…* " and adds requirements for consideration of factors such as "inventory" and "manufacturing capability of available agents." Again, this requires additional effort on the part of RRTs and Area Committees, where such work is already typically being done by industry as part of their planning processes.

The net effect of most of the changes involving preauthorization planning is an increase in the workload of all RRTs and Area Committees while r estricting their flexibility in areas where preauthorization is desirable and applicable.

III. Section § 300.910(a) Use of Agents Identified on the Schedule on Oil Discharges Addressed by a Preauthorization Plan

A. *Adding more entities complicates the planning process.*

Section § 300.910(a) states that the RRTs and Area Committees shall address preauthorization plans. API and NOIA do not see any valid reason to add more entities to the planning process. In the preamble to this section, the Agency makes the following statement (column 1, 80 Fed. Reg. 3388):

> *"Therefore, the Agency is proposing to include RRTs as another planning entity with responsibility for developing preauthorization plans, and is requesting comment on this change, and on the advantages or dis advantages of keeping the development of these plans at the AC level."*

We believes that while the RRTs may provide more practical experience to the planning effort, the potential benefit would be overshadowed by the added complexity and bureaucracy. Unle ss the Agency can provide a sound rationale, we recommend against including the RRTs in the development of preauthorization plans.

B. *Area Committees should identify shoreline habitats that can benefit from the appropriate use of dispersants.*

In this same section of the preamble (column 3, 80 Fed. Reg. 3388), the Agency makes the following statement:

> *"The RRT's and ACs should identify the affected biological resources and their habitats likely to be negatively impacted, as well as those that are expected to benefit."*

API and NOIA support the requirement that A rea Committees should identify shoreline habitats that can benefit from the appropriate use of dispersants or other response methods. This will advance the use of the NEBA concept. Note that many of these resources are already identified in Area Contingency Plans.

C. *Preauthorization plans should provide the OSC sufficient authority to use chemical or biological response agents.*

In this same section of the preamble (column 1, 80 Fed. Reg. 3389), the Age ncy makes the following statement:

> *"The Agency is clarifying that if the preauthorization plan is approved in advance for chemical or biological agent use under specified discharge circumstances, then the OSC may authorize the use of the agents on the Sc hedule for their intended purpose without the incident specific concurrences and consultations described in paragraphs (b) of this section unless otherwise directed by the Administrator in accordance with current concurrence authority."*

We believe that the preauthorization plan should provide the OSC sufficient authority to use chemical or biological response agents. Since the Agency will have already been involved in the preauthorization plan approval, additional Administrator concurrence is unnecessary and would unduly complicate the response.

D. *RRTs and A rea Committees should be required to address and document their review and conclusions on whether or not the use of chemical or biological agents is appropriate.*

The Proposed Rule reads that:

> *"RRTs and Area Committees shall address in a preauthorization plan, as part of their planning activities, whether the use of chemical and biological agents listed on the Schedule on certain oil discharges is appropriate."*

This appears to compel RRTs and A rea Committees to document when and why such agents are appropriate, but does not require documentation or the rationale if they are not deemed appropriate, leaving the option open for RRTs and A rea Committees to simply not address prea uthorization for use of such agents. RRTs and A rea Committees should be required to address and document their review and conclusions on whether or not the use of chemical or biological agents is appropriate. API and NOIA suggest modifying the proposed language to read:

RRTs and A rea Committees shall address in a preauthorization plan, as part of their planning activities, whether or not the use of chemical and biological agents listed on the Schedule on certain oil discharges is appropriate and document the rationale for whether or not the use of an agent is considered appropriate.

IV. Section § 300.910(a)(1) Preauthorization Plan Development

A. *Dispersant use should not be limited by the preauthorization plan.*

EPA should not unnecessarily limit the use of dispersants through new req uirements in developing preauthorization plans. In this section (column 3 , 80 Fed. Reg. 3422), the Agency makes the following statement:

> *"For discharge situations identified where such agents may be used, the preauthorization plan must specify limits for the quantities and the duration of use* (Ed. emphasis added), *and use parameters for water depth, distance to shoreline, and proximity to populated areas."*

We assume that this provision in the Proposed Rule is a direct response to recommendation C5 on pag e 270 of the January 2011 report *Deep Water: the Gulf Oil Disaster and the Future of Offshore Drilling* by the National Commission on the BP *Deepwater Horizon* Oil Spill and Offshore Drilling. However, in the four years since the publication of this report, there have been numerous scientific, peer -reviewed environmental and health publications that have examined the dispersant use during DWH.[29] Subsequent laboratory toxicological studies of dispersed oil in the water column after dispersant application showed that there was no detectable harm to the species tested. Key findings from this research program included the following:

- Following surface dispersant applications, the dispersed oil c oncentrations in the water column return within 3 hours to background l evels due to vertical and horizontal dilution into surrounding ocean waters;

[29] Atlas, R. M., & Hazen, T. C. (2011). Oil biodegradation and bioremediation: A tale of the two wo rst spill in U.S. history. *Environmental Science & Technology, 45* (16), 6709-6715. doi:10.1021/es2013227; Chakraborty, R., Borglin, S. E., Dubinsky, E. A., Anderson, G. L., & Hazen, T. C. (2012). Microbial response to the MC -252 oil and Corexit 9500 in the Gulf of Mexico. Frontiers in Microbiology, Ecotoxicology and Bioremediation, 3, 357 -367. doi:10.3389/fmicb.2012.00357; Lubchenco, J. (2010, December 29). Oil spill clarifies road map for sea turtle recovery. The Miami Herald. Retrieved from http://www.nmfs.noaa.gov/mediacenter/docs/2011/mar/oil_spill_clarifies_road_map_for_sea_turtle_recovery.pdf ; Louisiana Department of Wildlife and F isheries. (2010, July). Oyster stock assessment report of the public oyster areas in Louisiana. Oyster Data Report Series No. 16. Retrieved from https://www.wlf.louisiana.gov/sites/default/files/pdf/page_fishing/32695 -Oyster%20Program/2010-oyster-stock-assessment-report.pdf; Operational Science Advisory Team. (2010). Summary report for sub-sea and sub -surface oil and dispersant detection: Sampling and monitoring. Retrieved from http://www.restorethegulf.gov/sites/default/files/documents/pdf/OSAT_Report_FINAL_1 7DEC.pdf; Operational Science Advisory Team. (2011). Summary report for sub -sea and sub -surface oil and dispersant detection: ecotoxicity addendum. Retrieved from http://www.restorethegulf.gov/sites/default/files/u306/FINAL%20OSAT%20Ecotox%20Addendum.pdf ; Shea, D. (2014, August 15). In re oil spill by the oil rig "Deepwater Horizon" in the Gulf of Mexico, on April 20, 2010. Expert report of Dr. Damia n Shea. New Orleans, LA: United States District Court, Eastern District of Louisiana. Retrieved from http://mdl2179trialdocs.com/releases/release20150120070000/TREX -013444.pdf; Soniat, T. M., King, S. M., Tarr, M. A., & Thorne, M. A. (2011). Chemical and physiological measures of oysters (Crassostrea virginica) from oil -exposed sites in Louisiana. Journal of Shellfish Research, 30(3), 713 -717. doi:10.2983/035.030.03 11; and U.S. Food and Drug Administration. (2010, October 29). NOAA and FDA announce chemical test for dispersant in Gulf seafood. Retrieved from http://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/2010/ucm231653.htm.

- The surface dispersants were applied over an operating area of 18,000 sq. mi., as a result, surface dispersant application rarely occurred in the exact same location, which further enhanced dilution of dispersed oil in the Gulf; and
- The mixing of relatively small volumes of dispersed oil into the very large, well -mixed Gulf of Mexico resulted in very short exposure durations of animals

These studies, conducted during and after the DWH aerial dispersant operations, indicate that there is no need to specify limits for the quantities and the duration of use of dispersants in a preauthorization plan. We believe the Section 300.910(a)(1) proposed requirement that specifies limits for the quantities and duration of use should be deleted from the Proposed Rule.

If the Agency wants to determine whether and how to limit dispersant use, we propose a joint EPA/industry study of existing research results to provide scientific credibility to any limitations that are established. Without scientific justification, artificially -set limitations on dispersant use would threaten the intent of using NEBA to support response decision -making and would limit the OSC's ability to make the best overall decision concerning the actual scenario and the environment.

To be clear, API and NOIA believe the amount of dispersant used should be based on the outflow of oil and the dispersant-to-oil ratio (DOR) that is effective in dispersing the plume. It is under stood that after a specified time period (e.g., 48 hours), the OSC will request RRT concurrence for continued dispersant use (except when there is a threat to human life and health) wherein concerns over quantities and duration can be evaluated.

We believe that the proposed preauthorization requirement to provide distance to shoreline and proximity to populated areas is not justified as the RRTs/Area Committees have already set these requirements in existing preauthorization plans as appropriate . Each RRT has developed preauthorization maps which clearly depict minimum distances from shore and minimum water depths. In addition to these already established distance and depth limitations, during an actual response, dispersant responders work with the RRT, OSC, and Responsible Party to set standard requirements and operating procedures for aerial spray safety setbacks of 1,000 ft. or more from vessels, platforms, response personnel, and sensitive marine life. Because these practices are already in place, there is no need to specifically regulate new parameters. For these reasons, API and NOIA believe the parameters for distance to shoreline and proximity to populated areas should be deleted.

We suggest that the Agency confer with other Federal agencies involv ed in oil spill planning and response and revise the language in the Proposed Rule to specify that preauthorization should rely on the concepts of CERA/NEBA as the foundation for pl ans and response decisions, not on artificially set limits on dispersant volumes. The USCG has conducted more than a dozen CERAs to help inform the decision-making process, but the Proposed Rule appears to contradict the CERA/NEBA tenets that were previously used to define preauthorization zones.

B. *EPA should work with other agenc ies to implement changes to preauthorization plans.*

Finally, since the Proposed Rule suggests that the Agency is adjusting the natural resource trustee concurrence requiremen t for preauthorization plans, we believe strongly that the Agency must demonstrate how it will work with other agencies to implement these proposed changes into the existing RRT preauthorization process and should specify a time interval for the relevant agencies to complete this integration (e.g., 1-year).

C. *The USCG and Bureau of Sa fety and Environmental Enforcement (BSEE) already regulate logistical aspects of dispersant use.*

There is no reason for the Agency to regulate logistical matters related to dispersant usage because they are already regulated by other agencies. In Section § 300.910(a)(1), the Agency makes the following statement:

> *"...and logistical factors including inventory, storage locations and manufacturing capability of available agents, availability of equipment needed for agent use, availability of adequately trained operators, and means to monitor agent use in the environment."*

There have been many advances in regulations and spill response planning in the past decad e. The regulations should acknowledge that there are now requirements in 33 CFR Parts 154 and 155 that have established a surface dispersant capability throughout the U.S. to apply up to 55,000 gallons (daily) of dispersant out to 50 nm offshore. These new regulations resulted in the development of 44 strategically located dispersant stockpile bases. Fur ther, these regulations require training and exercising of equipment and personnel. Given existing compliance with 33 CFR Parts 154 and 155, preauthorization plans do not have to restate all of these assets but should be able to refer to this regulated cap ability. With current U.S. stockpiles containing close to 1 million gallons of dispersant and international stockpiles containing over 1.5 million gallons (as established via the Global Dispersant Stockpile), the requirement to assess dispersant manufacturing capability during the initial response is unnecessary.

We recommend that the Agency revise this section of the regulation to not require specific information on stockpiles, spray equipment, personnel, training or manufacturing and acknowledge that the USCG and the BSEE are regulating these aspects of spill response.

V. <u>Section § 300.910(a)(2) – Preauthorization Plan Approval</u>

A. *The proposed language for w hen a withdrawal of concurrence invalidates a Preauthorization Plan is unclear.*

EPA needs to clarify when withdrawal of concurrence invalidates a preauthorization plan. In the preamble to this section (column 2, 80 Fed. Reg. 3389), the Agency states:

> *"The Agency is proposing specific procedures for concurrence withdrawals, allowing agencies to do so if they believe the preauthorization plan no longer addressed or reflects existing situations if it were to be implemented. While an agency with concurrence authority may not decide to withdraw concurrence from an approved preauthorization plan, there are curr ently no set procedures to promptly address those situations. The proposal would require the RRT and the ACs to address the withdrawal of approval of the preauthorization plan within 30 days of the withdrawal, allowing an opportunity to address the concerns."*

However, the Proposed Rule language is not clear regarding how the withdrawal process operates. While the proposed 30-day period for the RRT to address withdrawal is a positive step as it provides structure and guidance to the process, it is unclear w hen withdrawal of conc urrence would render the preauthorization plan invalid. API and NOIA believe this only makes sense if there is no active or ongoing response. Agencies should not withdraw their concurrence from an existing plan during a response as this could make responding in a timely fashion difficult, if not impossible. This could potentially allow an agency to invalidate a plan at the time of a s pill forcing a delay in the use of dispersants at the most critical time of the response. Note that the States of Alaska and Florida have withdrawn their approval for

preauthorization in state waters, which was done effectively without any additional regul atory requirements.

Clarifying the language to allow for preauthorization plans to remain in place dur ing the 30-day period in which RRTs and A rea Committees address the withdrawal would prevent disruption to response activities. This would maintain the validity and usefulness of preplanning and preauthorization, while allowing for agencies to withdraw con currence based on changing conditions, reducing the possibility of the withdrawal based on political or media influence. This 30 -day review period should also be subject to public comment.

We also note that currently Subpart J does not include the USCG representative to the RRT as a government agency required to approve preauthorization plans. It is important to inc lude one of the key stakeholders, the USCG, in the approval of preauthorization plans.

Accordingly, API and NOIA suggest modifying the proposed language as follows:

> *(2) Preauthorization Plan Approval. The EPA representative to the RRT, USCG RRT representative for the coastal a nd ocean zones where the USCG OSC would have primary authority and responsibility for operational decisions, the Department of Commerce and the Department of the Interior natural resource trustees and, as appropriate, the state RRT representatives shall review and either approve, approve with modification, or disapprove the preauthorization plans developed by the RRT and/or the Area Committees. Withdrawal of concurrence means the preauthorization plan becomes invalid and the authorization of use for chemical or biological agents must be performed according to paragraph (b) of this section. For an agency to withdraw concurren ce, the agency must first notify the RRTs and Area Committees. The RRTs and Area Committees shall review and address the withdrawal within 30 days of the date of notification, during which time the notification of withdrawal will be subject to public comment. The Preauthorization Plan will remain in effect while the RRTs and Area Committees review the withdrawal. If the agency withdrawing its concurrence remains unsatisfied after the 30 -day review period, then the Preauthorization Plan becomes invalid at th e conclusion of the 30 -day review period, and the authorization of use for chemical or biological agents must be performed according to paragraph (b) of this section.*

VI. Section § 300.910(a)(3) – Preauthorization Plans Reviews

A. *The re-approval process for pr eauthorization plans is too frequent and the timing and process for review and revision is unclear.*

Currently there are no requirements for the review of preauthorization plans. Revised Section 300.918(a)(3) requires preauthorization plan review, and revision as needed at the following times:

> *at least every 5 years; after a major discharge or a Spill of National Significance (SONS); to address revisions of the Schedule; to reflect new listings of threatened and/or endangered species; and to address any o ther change that may impact the conditions under which the use of chemical and biological agents is preauthorized.*

The preamble explains that "other changes" may include a new or revised worst case discharge estimate, and that this review requirement is "intended to ensure that preauthorization plans are actively maintained and updated to reflect revisions to the Schedule." (80 Fed. Reg. 3389). If the Agency decides to move forward with a re view requirement, API and NOIA recommend that the Agency clarify (1) what defines a

"major discharge"; (2) what process should be followed for re-approval; and (3) what effect a change in the preauthorization would have on existing FRPs and VRPs, which are also updated on a 5 -year cycle. We believe the review of preauthorization plans every 10 years or, at the discretion of the RRT/ Area Committee after a SONS (per [a] and [b] in the statement) , is sufficient and that the "major discharge" language should be removed . The Agency should also strike the requirement for review upon new threatened and/or endangered species listings and "to address any other change" since this type of planning on a "less than five year basis" overly -burdens the RRTs. Also, the Agency should clarify what the re-approval process would entail and establish a framework for how long review and approval should take. In addition, the USCG representative to the applicable RRT should also be included in this process. This, along with the remaining review triggers, would still allow for robust, current preauthorization plans, while maintaining stability of existing, potentially affected FRPs and VRPs.

We suggest modifying the proposed language as follows:

> *(3) Preauthorization Plans Reviews. The RRT and/or the Area Committees must review, and revise as needed, pursuant to paragraph (a)(1) of this section, preauthorization plans at least every 10 years; or at the discretion of the RRT and/or Area Committee after a Spill of National Significance (SONS); to address revisions of the Schedule; to reflect new listings of threatened and/or endangered species; and to address any other change that may impact the conditions under which the use of chemical and biological agents is preauthorized. The designated EPA RRT representative, the USCG RRT representative for the coastal and oceans zones where the USCG OSC would have primary authority and responsibility for operational decisions, the Department of Commerce and the Department of the Interior natural resource trustees, and the RRT representative from the state(s) with jurisdiction over the waters of the area to which a preauthorization plan applies shall review and either approve, approve with modification, or disapprove any revisions to the preauthorization plans.*

VII. Section § 300.910(b) Use of Agents Identified on the Schedule on Oil Discharges Not Addressed by a Preauthorization Plan

A. *A reasonable consultation time of 48 hours should be established for natural resource trustees if the Agency concludes that the current "if Practicable" standards should be changed*

In this section in the Proposed Rule (column 1 , 80 Fed. Reg. 3423), the Agency has removed the words *"when practicable"* with respect to consultation with the Department of Commerce (DOC) and the Department of the Interior (DOI) natural resource trustees for the following reasons discussed in the preamble:

> *"The requirement for consultation with the DOC and DOI natural resource trustees is also maintained. However, the language is amended by removing 'when practicable' with respect to consultation with the DOC and DOI natural resource trustees. The Agency believes that the case-by-case decision making should include consultations with natural resource trustees since these discharge situations may present unique challenges when selecting a response option that involves chemical or biological agents. While the Agency recognizes the time -critical nature of decision making during a response, advances in communication technology with increased capabilities to communicate quickly."*

(column 1, 80 Fed. Reg. 3390) API and NOIA believe that while technical advances in communication (e.g., cell phones) have improved since the last Subpart J revision, it does not guarantee an immediate or timely response by the required individuals. And the current system has worked well for years. Thus,

continued flexibility in the approval process (i.e., "when practicable") is still warranted to ensure the timeliest and best possible response . If the Agency concludes that the current " when practicable" language needs tightening up it could establish a reasonable consultation time of 36 hours. Spill response decision-making requires timely decision-making. Natural resource trustees already have an independent process to assess possible damages outside of the response effort (via Natur al Resources Damage Assessments [NRDA]). The phrase could be revised to state, "*...when practicable within a 36-hour timeframe*".

B. *The change in th e term "navigable waters threatened " will set up additional barriers to dispersant use and unduly limit actions by the OSC.*

In the same paragraph (column 1, 80 Fed. Reg. 3390), the Agency makes the following statement:

> *"The Agency is also proposing to revise the term 'navigable waters threatened' to 'waters and adjoining shorelines threatened' to be consistent with the provisions in paragraph (a) of this section."*

We are concerned that this change will set up additional barriers to dispersant use and unduly limit actions by the OSC.

C. *Early dispersant use decision-making should focus on documenting that a NEBA justification exists to support dispersant application.*

The Proposed Rule would unnecessarily establish new requirements f or an OSC to document the parameters used to authorize dispersants. This is discussed in the same section (column 2, 80 Fed. Reg. 3423), as follows:

> *"...the OSC must consider and document the parameters for the use of agents including the quantities to be used, the duration of use, the depth of water, the distance to shoreline and proximity to populated areas, and should address factors suc h as environmentally sensitive resources or restricted areas that might be impacted, agent inventory and storage locations, agent manufacturing capability, availability of equipment needed for agent use, availability of adequately trained operators and appropriate means to monitor agent use in the environment."*

Because dispersants have a limited window of opportunity to be used on spills, it is important to decide quickly on their use. Decisions by the OSC should not be delayed to complete information that is not needed. Many of the proposed items for the OSC to document (e.g., stockpiles, personnel, spray assets) are already specified and required in the applicable response plan requirements of 33 CFR Parts 154 and 155. Given the current stockpile availability in the U.S. and in the Global Dispersant Stockpile, dispersant availability will not be a concern for weeks or months. As suc h, we believe that the immediate actions by the OSC should include a review of the pre -authorization plan(s) and a rapid , incident-specific NEBA to support the selection of response options that may include dispersant application as a means to lessen or eliminate impacts to sensitive shoreline resources or to pr otect worker health and safety. In addition, we recommend that the Pr oposed Rule require referencing the USCG -classified dispersant OSRO or other OSRO for many of the items requested.

VIII. <u>Section § 300.910(c) Burning Agents</u>

A. *Ignition devices for in-situ burning are not burning agents.*

Under the current rule an OSC may author ize use of a burning agent on a case -by-case basis after concurrence of the EPA representative to the RRT, the state RRT representative and in consultation with the DOC and DOI natural resource trustees, when practicable. The Agency proposes to authorize the OSC to approve the use of a burning agent without the approval or consultation with other agencies to facilitate expedited use in recognition of their increasing importance in response to spills and that small quantities of burning agents are used and are quickly consumed by the resulting fire. API and NOIA agree and commend the Agency for this proposal. Further, we agree that ignition devices should be excluded from the definition of burning agents.

We believe that chemical herder agents are includ ed within the scope of the term burning agents. In the preamble to this section (column 3, 80 Fed. Reg. 3390), the Agency makes the following statement:

> *"Further, because of the nature of burning agents and the proposed revisions to the authorization of use for these products, the Agency continues to believe it is not necessary to require product submissions for burning agents."*

We believe this statement also applies to chemical herder agents. Please clarify if this is correct.

IX. Section § 300.910(d) Exception

A. *EPA needs to clarify the phrases "protection of human life" and "near inhabited areas."*

In this section in the Proposed Rule (column 2 , 80 Fed. Reg. 3423), the Agency makes reference to "the protection of human life ." We believe it is unclear whet her "*protection of human life* " is inclusive of the protection of worker health and safety. The Agency should amend this section to clearly include the protection of oil spill response worker safety within this concept. This same section also references spi lls "*near inhabited areas.* " This language is confusing since spills where dispersant use serves an environmental benefit will rarely (if ever) be near inhabited areas.

B. *A time limit on protecting human health is inappropriate.*

We believe the establishmen t of a 48 h our limit to the OSC's use of authority to use agents to protect human health is inappropriate. There should never be a limit to the OSC's ability to make decisions that are aimed at protec ting human health or human life, and the exception shoul d be permissible until the threat to human health has subsided. The current rule adequately allows for the OSC to approve use of dispersants in such cases and EPA has not justified that the proposed requirement is necessary or provides any benefit to existing requirements.

X. Section § 300.910(e) Prohibited Agents

A. *Banning nonylphenol (NP) and nonylphenol ethoxylates (NPE) is not necessary for dispersants.*

API and NOIA submit that NP and NPE components should not be banne d. In the preamble to this section (column 2, 80 Fed. Reg. 3391), the Agency makes the following statement:

> *"The Agency is also proposing to add a prohibition from listing on the Schedule and from authorizing use of any chemical or biological agents that contain n onylphenol (NP) or nonylphenol ethoxylates (NPEs) as components."*

While we appreciate the Agency's concern about NP and NPE components, an outright prohibition seems inconsistent with the practice of allowing NP and NPE ingredients in a variety of widely-used cleaning products in the U.S. After use, these products are routinely flushed and transported into wastewater discharges on a daily basis. Spill response dispersant use is extremely infrequent and only occurs when a significant threat to shoreline or near shore resources is present. Banning these components in oil spill dispersants while allowing their wide spread use in other commercial products seems contradictory and prejudicial. API and NOIA requests that the Agency explain why NP/NPE is banned in dispersant products, but not in many more commonly manufactured products.

B. *Endocrine disruption testing has little relevance and is not necessary.*

We submit that endocrine disruption testing should not be added. In the same section (column 1, 80 Fed. Reg. 3392), the Agency states:

> *"Because validated testing methods are still being developed the agency is not proposing any test requirements with respect to endocrine disruption for products to be listed on the Schedule."*

We believe that adding any such testing provides little relevance in the context of oil spill response decisions and that testing efforts are better directed at the use of standardized toxicity tests with aquatic organisms using endpoints of population relevance (i.e., mysid and *Menidia* tests proposed).

C. *Mechanical response clean-up methods have greater limitations in offshore conditions than dispersants.*

Mechanical response clean-up methods have many limitations. In the same section (column 2, 80 Fed. Reg. 3392), the Agency makes the following statement:

> *"There are chemical and biological agent alternatives to sinking agents and to agents containing NP or NPE; <u>as well as mechanical methods</u>* (Ed. emphasis added) *for responding to oil discharges, including those situations that pose extreme threats or are time critical."*

We believe the Agency must realize the limitations that mechanical response methods have in offshore conditions. Weather conditions will preclude booming and skimming operations in sea states above six feet wave height, and even in ideal sea state conditions, responding to offshore spills historically has resulted in 5-10% of spilled oil recovered by mechanical recovery methods. For this reason, it is critical that responders have reasonable access to chemical response methods, because of the substantially higher encounter rates (80% or more) that can be achieved by treating the spilled oil with dispersants.

XI. <u>Section § 300.910(f) Storage and Use of Agents</u>

A. *No additional requirements should be put in place for product shelf life.*

Currently, the manufacturer is required to provide information on recommended conditions of storage and use for each product at the time an application for listing a product under Subpart J is submitted to the Agency. With regard to shelf life, the Agency is requesting comments on whether more information should be submitted on issues related to shelf life. Specifically, in the preamble to this section (column 1, 80 Fed. Reg. 3393), the Agency makes the following statement:

> *"To alleviate concerns that applications are submitted that establish an extended or indefinite shelf life for a product, the Agency is requesting comments on whether any*

> *additional data or information requirements should be included for the product listing determinations specific to a product's shelf li fe, or whether alternative approaches, such as limiting the shelf life for product categories to a given timeframe, should be considered."*

API and NOIA believe that no additional requirements should be put in place for product shelf life and thus it shoul d not change the current practice of having the manufacturer provide information on recommended conditions of storage and use for each product. Ensuring product efficacy (regardless of age) is the only relevant end-point. For example, research has shown that properly maintained stockpiles of Corexit 9500 have remained effective for 25 years. Given that periodic effectiveness testing is proposed, there is no justification for also mandating a shelf life that could potentially result in costly replacement of stockpiles that remain viable and effective.

If the Rule dictates a dispersant shelf -life, this could caus e an undue financial burden. We believe that suppliers may set low shelf-lives to protect themselves from liability or to promote future recurring s ales, even though there are well-documented studies indicating that properly stored dispersant stockpiles have maintained their effectiveness for decades. A 2008 study by Clark, *et al.*,[30] evaluated U.S. stockpiles of Corexit 9527 and concluded that batches of this dispersant have remained viable for spill response for over 30 years. Establishing shelf -lives for products makes sense if periodic testing is not specified. However, since the Proposed Rule specifies re -testing of the dispersant stockpiles, there is no justification for also requiring a shelf -life. We submit that the requirement for a shelf -life should be removed from the Proposed Rule and that the Agency should instead provide more clarity on product re - testing for efficacy. Specifically, the requ irement to conduct periodic 5 -year tests of effectiveness and toxicity is unclear. The sampling requirement has not been delineated in the Proposed Rule, which could be interpreted, in the extreme case, that every single dispersant container would have to be re-sampled and tested to remain in an "approved" status.

The Rule should clearly state that representative samples of batches/lots are tested for efficacy and that the testing interval take into account the aforementioned studies that demonstrated tha t dispersant stockpiles maintain effectiveness for decades. Further, we submit that there is no scientific justification for re-testing toxicity.

B. *Central dispersant stockpiles are typically maintained by OSROs, not by Responsible Parties or product manufacturers.*

Under the Proposed Rule the OSC would only be able to authorize use if the Responsible Party certifies that the products have been stored under the conditions provided by the submitter. In this section in the Proposed Rule (column 2-3, 80 Fed. Reg. 3423), the Agency makes the following statement:

> *"The OSC may authorize for use only products that are certified by the Responsible Party to have been stored under the conditions provided by the submitter under 300.915(a)(6) and whose date of use does not exceed the expiration date listed on the container's label at the time of the incident. The Responsible Party must provide the OSC product documentation, developed in consultation with the submitter of the product to the Schedule, prior to OSC authori zation of product use affirming it has maintained its integrity, including no changes in its composition, efficacy, and toxicity."*

[30] Clark, J., Becker, K., & Lessard, R. (2008). Maintaining dispersant stockpiles and assessing their quality. *Proceedings of the 2008 International Oil Spill Conference, 2008*(1), 695-698. doi:10.7901/2169-3358-2008-1-695

The Agency needs to recognize that central dispersant stockpiles are typically maintained by OSROs and are stored mainly in 200 to 300 gallon totes so that they can be transported by truck or air to the site of a spill. In most spill situations, the dispersant stockpile will not be in the control of the Responsible Party or the submitter of the product (i.e., the original manufacturer) at the onset of a spill. As a result, there is no way for these two entities to make a certification for a product that was not in its direct control just prior to the spill. API and NOIA suggest modifying the language to clarify that Responsible Parties must only demonstrate compliance with Section 300.915(a)(6) for inventory/product they control.

C. *Certification of storage conditions should not be required for authorization of use.*

Section § 300.910(f) states that the OSC may authorize for use only products that have been stored under the conditions specified by the manufacturer including the maximum, minimum and optimum temperatures as well as humidity and other relevant conditions. This proposed regulation could require dispersants to be stored in climate controlled buildings with continuous temperature and humidity monitoring. We do not support this proposed requirement.

D. *API and NOIA opposes any re-testing requirements during a spill response.*

The intent of this section is difficult to discern but it appears that the certification requirement appears to essentially requires complete retesting of the product (at the time of the spill) for the Responsible Party to certify such a statement. It appears that the Agency has included this language with the specific intent to delay the dispersant authorization process by requiring complete re-testing at the time of a spill incident. We strongly oppose any re-testing requirements during a spill response. Any product testing should be conducted at a specified, planned interval, not during an emergency response. During a response, the Responsible Party should not have to certify the dispersants that will be applied, since that is the purpose of the NCP Product List. The only requirement should be for the Responsible Party to show the OSC, if requested, the original manufacturer's verification (Certification of Analysis) that the product meets specifications for dispersants with an age of less than the period for retesting recommended by the manufacturer. For older dispersants the Responsible Party should, if requested, show the efficacy re-test data for the stockpile. The test required should only be for effectiveness as it is a reliable indicator that the composition has remained the same. We propose that this language is changed to read: *"The OSC, to authorize the use of dispersants, may request that the Responsible Party provide test data of the dispersant stockpile showing it is effective."* We also suggest modifying the language so that it applies only for product manufactured or produced after the date of final rule publication.

E. *Re-testing requirements must permit flexibility in test results over time.*

This same section specifies re-testing and re-labelling requirements. This section does not specify the criteria for re-testing results and needs to specify permissible levels of deviation from past testing results. We point out that efficacy and toxicity testing have inherent variability. Two testing runs of the same product, in the same laboratory, in the same week can yield varied results, so any re-testing requirements must permit flexibility in test results over time. We suggest an allowable 10% variance in effectiveness test results, based on manufacturer and scientific experts' opinion on effectiveness testing. As previously stated, we do not believe there is any scientific justification to re-test for toxicity since efficacy results will confirm if the composition of the dispersant has changed. We suggest clarifying language so that it is clear product testing is only required if it is not stored under requirements provided by submitter, or it has expired.

F. *The assignment of an arbitrary 5-year life to products is biased and creates unwarranted expense due to recurrent testing.*

Finally, the assignment of an arbitrary 5-year life to products without regard to prior research on product viability over time, or on manufacturer input on product re-testing, is biased and creates unwarranted expense due to recurrent testing. Proposing 'no change' in composition, efficacy, and toxicity seems unreasonable and could result in significant costs of replacing usable dispersant stockpiles. Additionally, dispersant manufacturers typically advise that container seals not be broken and the material not be exposed to air, which would be necessary to test existing stocks, which may or may not have an expiration date printed on the label under current regulation.

Studies exist that show Corexit products maintain effectiveness for 25 years. We believe that any re-certification term should be based on existing scientific and manufacturer data. There should also be an allowance for some change/degradation of product over time, aligned to international practice. For example, the United Kingdom Marine Management Organisation allows a loss of efficacy to 75% of the original minimum level. Further, there is no scientific rationale to require any form of toxicity re-testing of a dispersant that was previously tested. Manufacturers will have the best insight regarding when product recertification should be needed. In addition, the Responsible Party should never be required to re-label products they did not produce, with the possible exception of adding a re-test date for product efficacy.

XII. Section § 300.910(g) Supplemental Testing, Monitoring, and Information

A. *API believes the standard efficacy and toxicity tests already required are more than adequate for regional use.*

We do not believe there is a need for additional testing than is currently required under the NCP. In the preamble to this section (column 2, 80 Fed. Reg. 3393), the Agency makes the following statement:

> *"The proposal removes 'in addition to the test methods specified in 300.915 and described in appendix C to part 300.' While RRT's may want to use the efficacy and toxicity testing protocols specified in Appendix C of the NCP for comparative purposes, the proposed revisions clearly establish the RRT's authority to require tests using parameters beyond those specified in Appendix C. Furthermore, there may be supplementary toxicity and efficacy testing information based on recognized standard testing methods already available that RRTs may want to consider when addressing site, area, or ecosystem specific concerns."*

We believe the standard efficacy and toxicity tests already required are more than adequate for regional use. We suggest the Agency consult the NOAA Dtox database. A review of that database suggests that the sensitivities of all tested species are in the known range and that additional tests simply reinforce the existing species sensitivity distribution curves. Regional data are unlikely to fundamentally change overall NEBA considerations for dispersant use. Any regionally required laboratory efficacy tests during a response will not be as relevant as a pilot test in the field and will only delay the dispersant authorization process approval beyond the window during which dispersants could be applied (thereby precluding their use in some situations where they may have provided a net environmental benefit). This proposal allows RRTs to request a broad range of additional data on a product, a situation that creates the potential for confusing and costly testing and is unlikely to add further information of value to oil spill response decision-making.

B. *Additional monitoring during a response is unreasonable.*

Section § 300.910(g) provides the RRT with the authority to request that the OSC require the Responsible Party to conduct additional monitoring associated with use of a product. We submit it is unreasonable to require additional monitoring during a response except in exceptional circumstances. In the preamble (column 2, 80 Fed. Reg. 3393), the Agency makes the following statement:

> *"For example, the RRT may want to monitor the exposure of marine mammals to oil constituents, including the dispersed oil, or to monitor toxicity in the water column using biological assays."*

We believe such monitoring during a response is unreasonable and should only be undertaken if (a) there is some critical question associated with the spill response that has not been answered with the testing already in place; and (b) there is sufficient time to arrange for proper and scientifically defensible protocols to be established. Given that tests associated with such monitoring are likely to be complex and require considerable time to prepare, implement, and interpret, it appears that the tests would not inform operational decision-making during the response, but rather would develop data for NRDA. As previously stated, operational monitoring and NRDA are two different things and this Proposed Rule should not specify NRDA monitoring. Additionally, the "biological assays" that are referenced in the Proposed Rule are impractical given the nature of offshore spills where dilution is significant, water movement is constant, and synoptic sampling of small quantities of organisms from dynamic water masses is not representative of any chronic or resident conditions.

API and NOIA suggest revising the language as follows:

> *(g) Supplemental Testing, Monitoring and Information. The RRT may require supplementary toxicity and efficacy testing, or available data or information that addresses site, area, or ecosystem specific concerns relative to the use of a product for both planning and authorization of use. During a discharge incident, the RRT may request that the OSC require a Responsible Party to conduct additional monitoring associated with the use of a product to the extent necessary for conducting response operations. Such additional monitoring data may include supplemental sampling and testing to ensure safety of response personnel, to assess acute environmental impacts or otherwise aid the OSC and/or the RRT in operational decisions.*

XIII. Section § 300.910(h) Recovery of Agents from the Environment

A. *The OSC has the authority to use the NEBA process to make decisions on recovery of agents from the environment.*

In the preamble to this section, the Agency is requesting comments on new language that would require the Responsible Party, under OSC oversight, to remove specified products/agents from the environment after use. While the Proposed Rule hints at NEBA, it does not reference it specifically when suggesting that some situations (e.g., safety of personnel or greater harm to the environment) might preclude the removal of these agents. That would seem to contradict the main change in this section (h) while not providing any framework (e.g., NEBA) in which to make a determination for precluding the removal. The language is also potentially redundant as the OSC is already obligated to consider safety and additional adverse environmental impacts (i.e., via NEBA) as part of the normal decision-making process. Essentially, it is already an underlying tenet of the response process. Additionally, in some cases recovering 100 percent of these agents after application is not practical or even feasible regardless of the diligence of the Responsible Party

We suggest revising the proposed language to make it clear that the OSC has the authority to use the NEBA process to make these decisions:

> *(h) Recovery of Agents from the Environment. Depending on factors such as the safety of response personnel and harm to the environment (including consideration of Net Environmental Benefit Analysis [NEBA]), and as directed by the OSC, the Responsible*

Party shall, following application, endeavor to adequately contain, collect, store and dispose of the agents that are intended to be recovered from the environment.

XIV. Section § 300.910(i) Reporting of Agent Use

A. *The Agency should not adopt a prescriptive time period for reporting of agent use.*

The Agency is requesting comments on the appropriateness of requiring the OSC to provide the RRT additional reporting information " *within 30 days of completion of agent use* ." This runs counter to the adaptive decision-making that might be required during a discharge event where such agents are used.

Based on the pre authorization testing that is being proposed and, more importantly, the variability of discharge situations, we recommend that the Agency not adopt a prescriptive time period and rather provide the relevant RRT(s) discretion to determine the appropriate time period for reporting agent use. A strong justification for this approach is that during prolonged discharges, a fixed 30 -day reporting period might constrain the response personnel and interfere with higher priority resource allocations. Furthermore, the OSC would typically request this information as part of the daily briefing.

API and NOIA suggest removing the 30-day window for reporting and modifying the proposed language as follows.

> *(i) Reporting of Agent Use. Unless already included in the OSC report required under § 300.165 of this part, the authorizing OSC shall provide the RRT the following information on chemical and biological agents used in response to an oil discharge: product name, quantity and concentration used, duration of use, and locations.*

XV. Section § 300.913 Monitoring the Use of Dispersants

A. *The appropriate use of spill mitigating products will reduce the overall impact of the spill and protect the health and safety of response personnel.*

The Agency makes the following two related statements to explain the goal of the NCP Product Schedule (column 3, 80 Fed. Reg. 3393; column 3, 80 Fed. Reg. 3402; respectively):

> "*The goal of establishing a Schedule under the NCP is to protect the environment from possible damage related to spill mitigating products used in response to oil discharges.*"
>
> *"Emergency response personnel need to know whether a dispersant or any other type of chemical or biological agent on the Schedule could have negative environmental impacts relative to the oil before decisions are made about its use in a particular oil discharge situation. Consequently, it is essential to consider comparative information about the efficacy and the toxicity of these products.*"

Possible damage related to spill mitigating products used in response to oil discharges is considered, but not the possible damage that could be caused by the oil itself without the use of spill mitigating products. The main threat to response personnel, communities, and the ecosystem comes from the oil, not from the spill mitigating products. The concept of CERA/NEBA accepts that some effects might be caused by the response (including the use of spill mitigating products), but also recognizes the greater benefit of reducing the overall impact of the spill that can be achieved by using them. The Agency needs to acknowledge the importance of NEBA in justifying the use of dispersants.

We believe that the focus on the potential for negative environmental impacts that could be caused by a dispersant ignores the essential point that dispersants are used to mitigate (minimize) the negative human health and environmental impacts that could be caused by the oil. The main threat to the ecosystem comes from the oil itself, not from the dispersant. The wording of the preamble to a final rule needs to:

- reflect the ultimate aim of dispersant use;
- clarify that the toxicity of dispersed oil comes from the oil (not the dispersant); and
- acknowledge and emphasize the importance of using a NEBA process in dispersant use decision-making.

We request that the Agency consider including the following two paragraphs (or equivalent language) in the preamble to the final rule to briefly explain dispersant use and the importance of NEBA in making dispersant use decisions.

> *"Dispersant Use and Net Environmental Benefit Analysis (NEBA)*
> *The aim of dispersant use is to protect response personnel from VOC exposure and to prevent oil from drifting ashore and potentially causing severe and long-term damage to coastal resources and communities, by dispersing the oil into the water column where it will be diluted rapidly to very low concentrations and the majority of the oil will subsequently be biodegraded. This common aim of dispersant use is the same, whether it is applied to oil on the sea surface or directly at the outflow source in the case of a subsea release. The potential risk of dispersant use is that, by dispersing the oil into the water column, there is an increased potential for toxic effects to be caused to marine organisms. The severity of the toxic effects that could be caused is related to the exposure of the marine organisms to the dispersed oil (or the partly water-soluble oil compounds) and exposure is a function of concentration of the oil in the water and the duration for which such exposure persists.*
>
> *The issue of the environmental trade-offs caused by dispersant use is addressed by Net Environmental Benefit Analysis (NEBA). NEBA is a process used to make choices about oil spill response techniques to be used to minimize the potential impacts of the oil on people and the environment. NEBA takes into account the likely effectiveness and feasibility of conducting alternative response techniques under the prevailing conditions. The main principle of NEBA is that an oil spill response technique (or combination of techniques) that is used should be that which minimizes potential impacts of the oil on the environment to the greatest extent and promotes the most rapid recovery and restoration of the affected area. In many cases of dispersant use, the potential risks to the offshore marine ecosystem are very low because dispersed oil concentrations are low and persist only briefly. There is benefit in using dispersants in offshore environments to prevent damage to coastal communities and sensitive near-shore resources where persistent stranded oil can cause longer-term environmental problems."*

The Proposed Rule also appears to focus more on the environmental effects during the response rather than the health and safety of response personnel. The Agency should make it clear that one of the primary objectives of characterizing the efficacy and understanding transport is to protect the health and safety of response personnel. That critical aspect is not mentioned in this section.

B. *The OSC should determine where, when, and how monitoring resources should be deployed.*

EPA should clarify the meaning of the phrase *"upon initiation and for the duration of subsurface dispersant use."* Later in this section of the preamble (column 2, 80 Fed. Reg. 3394), the Agency states the following:

> *"The proposal requires the responsible party to implement monitoring for any subsurface dispersant use in response to an oil discharge upon initiation and for the duration of subsurface dispersant use."*

The phrase *"upon initiation and for the duration of subsurface dispersant use"* can be misconstrued to mean that all monitoring required by the Proposed Rule must be performed at all times, when in fact the monitoring timing and operational parameters should be established by the OSC. Every response is unique, and it should be left to the OSC to determine where, when and how monitoring resources should be deployed to provide the best near real-time operational monitoring on the progress of the response.

C. *The Proposed Rule should be restructured to separate surface dispersant application monitoring from subsea dispersant injection monitoring.*

EPA should distinguish between surface and subsea dispersant application monitoring. In the first paragraph of this section in the Proposed Rule (column 1, 80 Fed. Reg. 3424), the Agency states:

> *"As directed by the OSC, the Responsible Party must monitor any subsurface use of dispersant in response to an oil discharge, surface use of a dispersant in response to oil discharges of more than 100,000 US gallons occurring within 24 hours, and surface use of dispersant for more than 96 hours in response to an oil discharge, and submit a Quality Assurance Project Plan for approval to the OSC covering the collection of all environmental data".*

We believe it is significant that monitoring is to be required *"as directed by the OSC."* It should be made clear that the OSC has discretion to authorize initial use of dispersants during a time-limited efficacy testing phase while evaluating the need for and extent of additional adaptive monitoring actions. The OSC is in the best position to determine when and what operational spill response monitoring is to occur. Experience has shown that the use of phased monitoring approaches, consistent with the USCG *et al.*'s *Special Monitoring of Applied Response Technologies* (SMART) protocols, is appropriate, and they are most responsive to changes in site-specific conditions and information requirements. While the requirement for the Quality Assurance Project Plan (QAPP) is constructive in helping to maintain effective data integrity and management, the rule should provide the OSC with discretion in how detailed the document needs to be to meet this requirement. This would provide the relevant incident decision-makers with practical information that can be consistently acquired, analyzed, and understood.

The Proposed Rule seems to inappropriately replace the currently used 3-tier SMART protocols for monitoring surface dispersant use with the more exhaustive monitoring approach proposed for subsea dispersant use. The USCG Strike Teams already have the responsibility for monitoring surface dispersant operations and possess the trained personnel and equipment to conduct these activities. Many RRTs require the immediate activation of USCG Strike Team monitoring for all dispersant operations, regardless of size or location. We believe it is beneficial to have the government perform the surface monitoring to enhance credibility with the public that the operations are being conducted correctly and are working as intended. If this practice is going to change, the Agency should explain why it is circumventing an established, well-vetted process performed by the USCG Strike Teams. The information in the Proposed Rule creates confusion between existing responsibilities of the USCG Strike Teams and those of the Responsible Party. We request that this confusion be reconciled between the Agency and the USCG, as the Responsible Party should not be required to provide duplicate monitoring for surface dispersant operations.

For these reason s, we believe this section of the Proposed Rule should be restru ctured to separate surface dispersant application monitoring from subsea dispersant injection monitoring. API and NOIA offer the following relevant points:

- The section on surface dispersant application monitoring should specify that it will be implemented with existing SMART protocols using USCG resources.
- The section describing subsea dispersant injection monitoring should specify it will be performed by the Responsible Party.
- In both cases, the Proposed Rule should clearly state that the mobilization o f monitoring capabilities will not delay initial dispersant applications. Monitoring requirements should not impede the use of chemical agents during a response and should be implemented as appropriate resources become available during the response.
- The c riteria of greater than 100,000 gallons or duration of 96 hours for the spill should be replaced with a single criterion that " *any enhanced monitoring beyond SMART shall commence within seven days.* " Our rationale for a deployment schedule of seven days for any enhanced monitoring (whether subsea or surface dispersant monitoring) ensures that scientifically - defensible monitoring can be performed, by ensuring:
  - The best scientific experts can be assembled and mobilized to the spill;
  - Once on scene, the science team can design a monitoring plan that can be integrated safely into ongoing response operations, and be worked into the Simultaneous Operations (SIMOPs) schedule;
  - The team can tailor a general monitoring strategy into a specific mission plan for the monitoring vessel that is available (there is no way to know what research vessel may be available, and each vessel will have unique characteristics for equipment deployment);
  - Available monitoring vessel(s) can be identified, mobilized to port, and properly out fitted with the scientific equipment needed to implement the mission plan;
  - An appropriate sampling strategy can be developed and approved for the specific incident, taking into account ongoing response activities that may impede access to sampling sites; and,
  - Appropriate safety considerations for the monitoring vessel, dispersant application or injection platforms, and rapidly-assembled teams can be properly reviewed.

D. *Effectiveness determination is not currently scientifically feasible.*

The language in this section of the Proposed Rule appears to indicate the Agency believes that comprehensive monitoring will permit the dispersant effectiveness at sea to be quantitatively determined. This requirement for effectiveness determination is not currently scien tifically feasible. Also, use of the word "*comprehensive*" should be avoided as it is subjective. Instead, it should be replaced with "*adaptive*" which indicates that a decision could be revisited as the d ischarge situation changes. We recommend replacing all instances of the word " *comprehensive monitoring*" with "*adaptive monitoring*" throughout the proposed section. The following language could be used:

> *The agency believes that an adaptive monitoring program which includes objective science and ocean transp ort modeling in certain discharge situations is necessary to determine the overall effectiveness of the dispersants and should transcend the initial dispersant application to include the extent, character, and transport of the dispersant and dispersed oil in the water column.*

With respect to <u>surface dispersant use monitoring</u>, we offer the following comments:

- Experience at the DWH and other incidents has shown that no currently available remote sensing technique, including airborne visible/infrared spectro meter (AVIRIS) and other multi- and hyper-spectral equipment, is capable of accurately quantifying the total amount of oil on the sea surface. It is also not possible to accurately determine the total amount of dispersed oil in the water column at any time because water sampling or ultra violet fluorometry (UVF) transects cannot be made at sufficient resolution in space (i.e., distance and depth) and cannot be made at sufficient resolution in time (i.e., simultaneously at all points in the water under an oi l slick). Localized measurements by UVF made before and after dispersant spraying can reveal the relative effect of dispersant use, but is not quantitative . A sharp increase in dispersed oil concentrations in the water, after dispersant use, is a good indi cation that the dispersant is working, but such measurements cannot produce an aggregate estimate of disper sant effectiveness. As such, we believe that the Agency should remove any requirement for quantitative reporting of efficacy, since it is not technically possible.
- A QAPP should not be required for surface dispersant operations. QAPP for approval by the OSC covers the collection of all environmental data to ensure and maximize its quality, objectivity, utility, and integrity. All these requirements wil l result in the need to generate a very large document that needs to be reviewed, verified and approved by OSC. This will lead to delays in dispersants decision-making, while adding little value to the goals of the response. A more useful approach may incl ude a daily Quality Control review of the SMART data to determine if the surface dispersant applications were effective that day, to support decisions for possible dispersant use the next day. A Quality Control form was developed during DWH for this purpos e. we believe the QAPP requirement should be deleted for surface dispersant operations and replaced with a simplified Quality Control form for SMART data.

With respect to <u>subsea dispersant injection monitoring</u>, we provide the following comments:

- The Age ncy does not address methods for visual determination of subsea dispersant effectiveness. During DWH, visual monitoring of the subsea dispersant injection was conducted in two ways to provide valuable, near real -time information to help inform response dec isions. These included:
  - Aerial observations of surfacing oil quantity and appearance (provided from observation aircraft overflights); and
  - Subsea observations of changes in plume appearance at the injection site (provided from ROV imagery).

  This form of monitoring for subsea dispersant injection should be recognized as an important step for initially evaluating the operation while more "enhanced scientific monitoring capabilities" are being assembled.
- API has developed subsea monitoring guidance (API Techn ical Report 1152 , *Industry Recommended Subsea Dispersant Monitoring Plan – Version 1.0*) and recommends the Agency consider this as the basis for their approach for operational monitoring. This guidance is publicly available at http://www.oilspillprevention.org/~/media/oil-spill-prevention/spillprevention/r-and-d/dispersants/api-1152-industry-recommended-subsea-dis.pdf.

XVI. Section § 300.913(a) Documenting and Monitoring the Oil Discharged and Dispersants Used Requirements

A. *The Responsible Party should not be required to document information at the beginning of a response that has already been determin ed in planning and preparedness activities.*

The current regulations found in 33 CFR Parts 154 and 155 require OSROs that use dispersants to maintain a certain level of spray assets, dispersant stockpile quantities, and logistical capabilities to

deliver stockpiles to staging bases, and to provide information on the application dosages they can apply. Since this is regulated elsewhere, reporting of these elements should not be required in the Proposed Rule and should therefore be deleted.

The Responsible Party should not be required to provide the *"rationale for dispersant product choice(s) including the results of any efficacy and toxicity tests specific to area or site conditions."* If the dispersant product is on the Product Schedule (which means that eff icacy and toxicity data have already been provided to the government), then it is, by definition, a viable option for the response.

Providing *"hourly application rates"* does not apply to aerial and vessel application since dosages are prepared in gallons per acre application and are based on the spray assets' application speed an d spray system swath width. We suggest that this statement be modified to read: *"hourly application rates (in the case of subsea dispersant injection)."*

The phrase " *recommended di spersant-to-oil ratio (DOR)* " should be modified to " *recommended <u>initial</u> dispersant-to-oil ratio (DOR).* " Every spill is different, and the DOR should be adjusted as additional monitoring, analytical data results, and/or oil release rate information becomes available. Additionally, the DOR may need to change as the oil weathers or other conditions change. The Agency should consider providing a clarifying sentence recognizing that oil characteristics and effective DORs may vary and thus dispersant application rates/volumes cannot be fixed to pre-determined values as this practice may affect negatively the response.

The Agency should refrain from requiring estimates of dispersant volumes needed to effectively respond to the spill at the onset of the response. In the case of a subsea oil release, it is impossible to know how much oil will be released and , therefore, impossible to estimate what volume of dispersants might be necessary. Further, as oil weathers, DORs for surface application will need to be adjust ed, and these changing weathering conditions cannot be fully known in advance. Given current dispersant stockpiles in the U.S. and in the Global Dispersant Stockpile, it should be assumed that sufficient dispersants will be available if their use is warranted by NEBA.

B. *Identifying and reporting associated volatile petroleum hydrocarbons will be impossible with changing environmental conditions, and is unnecessary for response decision-making.*

The requirement to *"...document any associated volatile petroleum hydrocarbons..."* would be very difficult to achieve, given that volatiles will fluctuate with sun exposure and changing wind conditions. The reason for this requirement is not explained; therefore, the Agency should specify what is intended by this requirement or delete it.

C. *The Agency should accept best available industry practice for dispersant monitoring.*

There is no need to restate the requirement for documenting the results of toxicity testing. In general, the list of characteristics is practical and do es not create an undue burden ; however, there is a significant assumption in the requirements (i.e., that the condition of the discharge point is such that it will enable the acquisition of these data at any given time). A reference to a best available industry practice, or any of the existing guidance on dispersant sampling/monitoring (e.g., API guidelines on subsurface dispersant monitoring, API TR 1152) would be more effective for gathering the information requested by the agency without imposing undue b urden on response personnel. Additionally, there is no technical reason to differentiate subsurface discharges from the rest of this paragraph. We suggest removing this differentiation and suggests modifying the proposed language as follows:

As directed b y the OSC, the Responsible Party must monitor any subsurface use of dispersant in response to an oil discharge, surface use of dispersant in response to oil discharges of more than 100,000 U.S. gallons occurring within 24 hours, and surface use of dispersa nt for more than 96 hours in response to an oil discharge, and submit a Quality Assurance Project Plan for approval to the OSC covering the collection of operational monitoring data. When these dispersant use conditions are met, and for the duration of dispersant operations, the Responsible Party shall:

(a) Document the characteristics of the source oil; best estimate of the oil discharge flow rate, periodically reevaluated as conditions dictate, including a description of the method, associated uncertainti es, and materials; dispersant(s) product used, rationale for dispersant product choice(s), recommended dispersant-to-oil ratio (DOR); and the application method and procedures, including a description of the equipment to be used, hourly application rates, capacities, and total amount of dispersant needed.

XVII. Section § 300.913(b) Sampling Requirements

A. *Daily water sampling and testing is burdensome.*

The requirement to conduct these required tests on water samples daily may prove overly burdensome and not necessary after the initial efficacy tests. We suggest modifying the Proposed Rule to ensure that the OSC has discretion in h ow frequently the samples must be acquired after the initial efficacy tests are conducted. Sampling on a daily basis, once efficacy is determined and agreed, is arbitrary and does not fit the timeline required to provide in-depth analysis of samples.

The collection of water column samples where the dispersed oil plume is located is not necessary and in many cases is not possible for aer ial dispersant application. For spills of up to 100,000 gallons, aerial dispersant assets can be activated and apply dispersants to the entire spill area during Day 1, before a monitoring team can arrive on-site to conduct water sampling. It was shown during the DWH event that to collect water samples, special operations had to be developed and coordinated so that the vessel monitoring team had sufficient time to obtain the water samples of the dispersed oil. This was due to the fact that most of the area u nder the aerial dispersant application returned to normal background levels within one hour following the application. It should also be understood that water samples will only determine the amount of oil in the sample, not the effectiveness of the dispers ant, as there is no way of determining the amount of oil that was treated. As stated previously, these sampling requirements do not provide information on dispersant effectiveness and can therefore not inform the operational response. Water sampling requir ements are more appropriate to NRDA and should be directed under NOAA jurisdiction.

B. *The oil droplet size distribution measurement, as described, is not technically feasible.*

The requirement in 300.913(b)(1) to conduct *"in situ oil droplet size distribut ion, including the mass or volume mean diameters between droplet sizes ranging from 2.5 to 2000 µm* " is not possible for three reasons:

- The General Information section suggests that this measurement can be done via a Laser In Situ Scattering and Transmissometry (LISST) instrument, but the LISST detection limit is roughly 500 microns;
- Commercial droplet size measurement equipment suitable for deep water monitoring that ranges up to 2000 microns does not exist; and

- Even if such instrumentation became availab le in the future, there would be no way to safely deploy it in the resulting dispersed oil plume by either ROV or research vessel without interfering with other critical, oil spill response operations.

With respect to droplet size determination, the Agenc y should focus on the most important aspect of subsea dispersant injection, which is to significantly reduce the initial droplet size to slow and change the surface expression of oil release as well as "thin out" the surface slick for better dispersion on the surface. Work by API and sponsored by BSEE suggest that HD high speed photography or sonar are the most promising methods of studying changes in droplet size during a full scale applic ation of subsea dispersants. We propose that alternative methods (i. e., high definition, high speed photography; sonar; etc.), as they mature and become available, should be allowed. Additionally, there should be flexibility to use other, improved scientific methods as they become available.

C. *Fluorometry is only useful as a screening tool.*

Indirect measures, such as fluorometry, are useful only as a screening tool to help refine monitoring locations and not as direct evidence of oil or specific oil concentrations in the subsurface as suggested.

In 300.913(b)(2), in addition to *in-situ* fluorometry, the Proposed Rule also requires the Responsible Party to conduct a fluorescence intensity analysis on collected water samples to determine fluorescence signatures of the dispersed oil for use as a relatively simple and rapid mea ns to assess dispersion effectiveness. Fluorescence intensity in this context is redundant and not as meaningful a measure as particle size analysis. An alternative would be to simply suggest this as a potential measure that could be used as the situation demands. Moreover, dispersant effectiveness assessments using SMART Tier 1 visual monitoring is a relatively simple, rapid way to evaluate this and is a well-accepted practice, as is the use of simple fluorometry from the SMART Tier II protocol for surface dispersant application. The Agency should substantiate the need to replace the tiered monitoring approach of the SMART protocols and, rather than listing all possible tests that can be conducted, specify how they add value to response decision-making and offer improvements over other, existing approaches.

D. *Detailed chemical analysis is unnecessary and many of the tests are too di fficult to perform in the field.*

In 300.913(b)(4), the Agency should recognize that more real-time operational monitoring information can be obtained by "quick screening" some samples for total petroleum hydrocarbons (TPH) by means of a hand-held gas chromatograph flame ionization detector (GC -FID). Detailed chemical analysis will not inform the response decision-making process and should instead fall under the purview of NRDA.

The requirement in 300.913(b)(5) for carbon dioxide measurements is unclear. While pH and dissolved oxygen monitoring seem logical, carbon dioxide (CO_2) measurements are not routinely made in deep water. It is not clear from the Proposed Rule what benefit carbon dioxide monitoring would bring that dissolved oxygen does not already provide. Similarly, the proposed requirement to measure methane is also unnecessary as it is also linked to potential oxygen deple tion, and the measure of DO is a reliable and sufficient method. There is a limited amount of sensors and water sampling devices that can be deployed from a research vessel at one time and inclusion of CO_2 detection complicates other elements for the deployment of the instrument array.

Regarding the DO measurements, we suggest simply requiring the *in situ* measurement of DO using best available technology (which would currently be automated sensors) to measure dissolved oxygen at depth and not expose it to surface pressures and temperatures before or during analysis. Verification can be achieved through the use of consistent sensor cleaning procedures, calibration tests, and redundant sensors which can be compared. Winkler titration, as discussed in the Proposed Rule, is an outdated

analytical method that is impractical for use on unstable offshore vessels, is prone to the introduction of human errors, and would slow the information flow within the response. If periodic bench tests are required to verify the integrity of the *in situ* DO sensor measurements, there are more consistent and reliable techniques than Winkler titration. We also recommend that only a fraction of the water samples be used to verify the *in situ* DO measurements as opposed to every sample , which will slow the process and information flow.

With respect to TPH analysis, the recommendation would be to provide these data for a fraction of the water column samples as opposed to every water sample (as currently proposed).

The requirement in 300.913(b)(7) for analyzing heavy metals has no bearing on dispersed oil monitoring. There is no operational reason for collecting these data. This should fall under the purview of NRDA. The source samples of oil are much better sources for determining the proportion of individual constituents. The carbon dioxide, methane, and heavy metals analysis requirements do little to inform response decisions, add unnecessary time and cost to the response activities, and would have a high degree of uncertainty in the absence of understanding the natural variations that might occur in the water column or in the case that a compounding discharge event (e.g., major flood) occurs during the response.

The focus of the Proposed Rule is almost exclusively on empirical data a nd should include some elements of 3-D and 4-D modelling to broaden the overall understanding of subsurface conditions.

We suggest revising the proposed language as follows:

> *(b) In areas not affected by the discharge of oil, collect a representative set of background water column samples following standard operating and quality assurance procedures, at the closest safe distance from the discharge as determined by the OSC and in any direction of likely transport considering surface and subsurface currents and oil properties for the variables listed below. Adherence to API TR1152 meets the requirements of this subsection. In the dispersed oil plume, at an interval designated by the OSC, collect water column samples following standard operating and quality assurance procedures, at such depths and locations where dispersed oil is likely to be present to analyze for the following:*
>
> > *(1) In-situ oil droplet size distribution, including mass or volume mean diameter for droplet sizes, with the majority of data coll ected between the 2.5 and 100 µm size;*
> > *(2) In -situ fluorometry signatures targeted to the type of oil discharged and referenced against the source oil;*
> > *(3) Dissolved oxygen (DO);*
> > *(4) Total petroleum hydrocarbons (based on an extracted water sample), individual resolvable constituents including volatile organic compounds, aliphatic hydrocarbons, monocyclic, polycyclic, and other aromatic hydrocarbons including alkylated homologs, and hopane and sterane biomarker compounds;*
> > *(5) 3-D and/or 4-D modeling when/where practical*
> > *(6) Turbidity;*
> > *(7) Water temperature;*
> > *(8) pH; and*
> > *(9) Conductivity.*
>
> *The purpose of analyzing these components is to map the extent and location of subsurface oil ; to characterize the condition of that oil ; and to help inform transport models that are also a key part of the decision-making process by helping to characterize the overall movement of subsurface oil.*

XVIII. Section § 300.913(c) Dispersant Effectiveness and Oil Distribution Characterization

A. *The Proposed Rule needs to be clearer on what is required for surface monitoring and what is required for subsea monitoring.*

Section § 300.913 provides monitoring requirements collectively for "subsurface use of dispersant in response to an oil discharge, surface use of dispersant in response to oil discharges of more than 100,000 U.S. gallons occurring within 24 hours, and surface use of dispersant for more than 96 hours in response to an oil discharge…" However, the preamble is often unclear as to whether every requirement within this section applies to surface or subsea dispersant applications or both. To facilitate a better evaluation of the proposed changes, each subsection should be divided into those aspects that apply to subsea applications and those to surface applications and those that apply to both. Elements within this section are already addressed in other sections of this Proposed Rule, particularly water column monitoring. The sections ought to be combined. The concept of an informed monitoring program (one that includes fixed and adaptive sampling locations and modeling) is already well understood and acknowledged in the spill response community.

In 300.913(c), requiring best available technologies may result in equipment not suitable for field conditions. Consideration should be given to changing "*available*" to "*practicable*."

In 300.913(c), the best available technology requirement should acknowledge aerial photography as a tool to measure effectiveness. This was a key method of effectiveness assessment during DWH and is not mentioned in the Proposed Rule. It is much more practical than the concepts put forward in the present proposal.

The relative effectiveness of the surface application should be determined by using the SMART protocols. For surface application, it is impossible to determine a numerical effectiveness as the amount of oil on the surface that is being sprayed is not known. Note that the analysis equipment often cannot return to the spray site in time to capture the information requested as the dispersant plume quickly dilutes or cannot be found.

XIX. Section § 300.913(d) Ecological Receptor Characterization

A. *Monitoring required to determine possible environmental effects is too time consuming to support dispersant operations decisions.*

Industry agrees that environmental monitoring should be performed to support operational decision-making. Monitoring required to determine environmental effects, however, is likely to be too time consuming to support dispersant operations decisions and should remain a NRDA activity.

This section of the Proposed Rule requires the Responsible Party to characterize the ecological receptors and to consult with the OSC to determine an acute toxicity level of concern for the dispersed oil using available dose/response information relevant to potentially exposed species. Conducting the required ecological characterization of the spill site may not be possible in the available response time-frame. If the untreated oil is likely to drift ashore and impact a sensitive coastal resource within a day or two unless it is dispersed, there will be a very finite period of time for such considerations suggested in the Proposed Rule.

With respect to the proposed ecological thresholds, although it is constructive to have known benchmarks, it is not clear what decision would be forthcoming if a threshold were exceeded and would certainly be misplaced to derive new thresholds during a response. The documented toxicity of dispersed oil to individual laboratory organisms is by no means a measure of the overall population of that

organism, nor of the ecosystem as a whole, to recover from oil exposure. During a spill, dispersants operations might be stopped because of the threshold of an individual species even though there may be the potential for higher environmental damages beyond that species. During a spill, dispersants operations might be stopped based on a threshold for an individual species . The suggestion of using species sensitivity distributions (SSD) during an active response is a misuse of the method (which requires long periods of time to assess) and is counter to establishing frameworks that are relevant in the dynamic ocean setting.

Rather than requiring the Responsible Party to make this real-time assessment, a CERA/NEBA process (conducted as part of contingency planning) should serve as the basis to make operational decisions on whether dispersants and/or other agents should be used during a response. A CERA/NEBA is the only mechanism that allows a full environmental trade-offs analysis of all response options to be conducted.

XX. Section § 300.913(e) Immediate Reporting Requirements

A. *Reporting requirements should be more flexible.*

The Proposed Rule does not include any indication of what happens if such a requirement to immediately report the information is not met for any reason. From a functional standpoint, the idea of reporting is sound, but the OSC should have the discretion to determine the frequency of reporting.

The Agency is also requesting comments on whether similar requirements should be applied to surface dispersant application. There are already practical and agreed reporting requirements for surface dispersant use and the natural weathering and dispersion that takes place at the surface is fundamentally different than what might occur in the subsurface.

XXI. Section § 300.913(e)(1) Daily Sampling and Data Analyses Reporting

A. *The Agency should not develop requirements for daily authorizations of dispersant quantities.*

This section requires reporting of a deviation of more than 10 percent from the mean hourly volume of dispersant authorized for "*24 hours use*." The Proposed Rule does not require authorization of dispersant use in 24 hour increments. Such restrictive authorization requirements tremendously complicate dispersant operations while providing little environmental benefit. The Agency should not develop requirements for daily authorizations of dispersant quantities, as this decision should be based on the ongoing spill scenario and should be left to the OSC. Dispersant application rates may need to vary to account for dynamic spill conditions, environmental conditions, and other ongoing response operations. Placing daily limits on volumes of dispersants that may be used prevents trained response personnel from utilizing appropriate dispersant application rates. Furthermore, it circumvents the NEBA process that evaluates the best response options that protect the environment as a whole.

We suggest modifying the proposed language as follows:

> *(e) Report to the OSC as soon as practicable or at an interval determined by the OSC:*
> *(1) Deviation of more than 10 percent from the mean hourly dispersant use rate for subsurface application, based on the dispersant volume authorized for 24 hours use, and the reason for the deviation; and*
> *(2) Any threatened or endangered species, or other priority ecological receptors formally identified by the OSC in consultation with the Environmental Unit, that may be exposed, based on dispersed plume trajectory modeling and level of concern information.*

XXII. Section § 300.913(e)(2) Immediate Reporting of Ecological Receptors

A. *Real-time ecological receptor analysis is unrealistic and should be part of a CERA/NEBA process.*

The requirement in this section for real -time ecological receptor analysis is unrealistic. Such efforts need time and broad stakeholder participation to be meaningful. This information should be part of a NEBA process to document the resources at risk of the potentially affected ecosystem. Only through this detailed NEBA process can an adequate understating of overall ecosystem recovery be developed and assessed. Further, the process of overall environmental trade -offs is independent of individual species impacts and should be based at the ecosystem level.

XXIII. Section § 300.913(f) Daily Sampling and Data Analyses Reporting

A. *Daily reporting of water sampling data should only apply to subsea dispersant injection and is not useful for dispersant decision-making.*

This section should be amended to clarify that daily reporting of water sampling data only applies to subsea dispersant injection. Further, the requirement in Section 300.913(f)(3) for a 5-day turnaround time for analysis is unrealistic, given that it could take several days for the sample to be transported to shore and additional time for it to reach a qua lified laboratory and put in the queue for analysis. During DWH, the sheer quantity of samples overwhelmed both the regional and the nation's labs processing abilities. In many cases, the backlog of samples lasted 30 days or longer. A blanket requirement o f five days is unrealistic and should be replaced with a negotiated time that is staggered on the basis of sample data priority for operational decision-making. The data may be useful for NRDA, but not for dispersants decision-making because other monitori ng techniques can better inform decision-making. These water samples will provide information about concentrations in water from 5 or more days previously, but will be irrelevant for operational questions that require near real-time feedback.

We recommend combining this section with the proposed "*Immediate Reporting*" section into one section that notes the importance of reporting in supporting the coordination of response actions. Suggest modifying proposed language as follows:

(e) Reporting

(1) Report to the OSC as soon as practicable or at an interval determined by the OSC any:

(i) Deviation of more than 10 percent from the mean hourly dispersant use rate for subsurface application, based on the dispersant volume authorized for 24 hours use, and the reason for the deviation; and

(ii) Ecological receptors, including any threatened or endangered species that may be exposed based on dispersed plume trajectory modeling and level of concern information.

(2) Report to the OSC at an interval determined by the OSC, water sampling and data analyses collected in § 300.913(b) and include:

(i) Specific hourly dispersant application rate and the total amount of dispersant used for the previous reporting period established by the OSC with concurrence from the EPA representative to the RRT;

(ii) All collected data and analyses of those data within a timeframe necessary to make operational decisions, including documented observations, photographs, video, and any other information related to

dispersant use, based on a reasonable and appropriate timeframe authorized by the OSC;
(iii) Estimates of the transport of dispersed and non-dispersed oil and associated volatile petroleum hydrocarbons, and dispersants, using the best available trajectory modeling.

XXIV. Section § 300.915(a) General Information for any Product Category

A. *The proposed information requirements to be submitted by dispersant manufacturers may reduce the number of dispersant suppliers.*

The proposed requirements for information to be submitted, most likely by dispersant manufacturers, as described in 300.915 (a)(1)-(21), are extensive. API and NOIA are concerned that dispersant manufacturers may not have a sufficient business case to meet all proposed data requirements. The Agency therefore needs to demonstrate that this Proposed Rule will not collapse the market for dispersants and drive away all viable producers from supplying products to meet the need. Further, the Agency should consider developing a total re-listing cost analysis.

XXV. Section § 300.915(a)(5) Safety Data Sheet

A. *A Safety Data Sheet for each component in a product is unnecessary.*

The proposed requirement includes *"A Safety Data Sheet ('SDS') for the product."* We believe this is a reasonable request. However, in the preamble, the Agency solicited comments on the value of requiring an SDS for each individual component. We believe that requiring more than just an SDS for the whole product will add unnecessary burden to the submitter that will not add any protection. The information needed to protect responders will be provided in the SDS for the product as a whole.

XXVI. Section § 300.915(a)(11) Environmental Fate Information

A. *Vendors should not be required to generate new environmental fate information for their products.*

The proposed language in this section should be modified to clearly state that this data should be reported *only* if it is already available. As currently written it is unclear if the vendors are being asked to collect new data for their products to cover these parameters.

XXVII. Section § 300.915(a)(13) Identity and Concentration of Product Components

A. *Vendors should not be required to provide the identity and concentration of product components.*

Some vendors may refuse to submit this detailed data as it may threaten a proprietary advantage. This may result in less favorable/effective product being listed in the Product Schedule. We recommend that reporting should be restricted to naming the ingredients, but should not require that the percentage of each ingredient is disclosed. Although Proposed Rule Section 300.950(b) allows this information to be claimed as confidential business information, the requirement under 300.915(a)(13) still presents challenges because there is no guarantee that the claim of confidentiality will be accepted. This may discourage manufacturers from supplying dispersant products.

XXVIII. Section § 300.915(a)(15) Certification

A. *The requirement that product not contain levels exceeding the National Water Quality Standards is unnecessary.*

The agency is proposing certification, including data, methodology, and supporting documentation, indicating that the product does not contain levels that exceed the National Water Quality Standards lowest aquatic life acute value for the following contaminants: metals reasonably expected to be in the product including arsenic, cadmium, chromium, copper, lead, mercury, nickel, vanadium, zinc; cyanide; chlorinated hydrocarbons; pesticides; polychlorinated biphenyls (PCBs); and polynuclear aromatic hydrocarbons (PAHs).

The National Water Quality Standard Contaminants are defined as concentrations in the water column. Water quality criteria are applicable to receiving waters, not formulated products, and this proposal assumes the appropriate exposure is to full-strength (100%) product rather than a reasonable environmental-realistic exposure concentration.

This requirement is not reasonable because of the enormous dilution that occurs when any product is used in an oil spill situation, and it is not required for other chemicals released into the environment. We believe that the existing requirements to communicate hazardous impurities on product SDSs should be sufficient and suggests removing the requirement.

XXIX. Section § 300.915(a)(19) Annual Product Production Volume

A. *The requirement for vendor production capability is not realistic of the market for dispersants.*

Most dispersants are blends of components and are only manufactured upon request. Capacity is not fixed and varies with available blending tankage, existing business demands, other product orders, and component supplies/shipping constraints. While such data are very useful in a large spill where existing stockpiles could be depleted, the information provided in such a request at the time of the application would not be relevant to a future time when product manufacturing could be required during a response. Further, the development of both U.S. stockpiles and international Dispersant Global Stockpiles were designed to ensure that sufficient, effective dispersants will be available when needed. We believe this requirement should be removed. If not removed altogether, the Agency should consider modifying the language to require dispersant or agent producers to be able to provide such information within 24 hours should the OSC need it and make it a condition of product authorization. If the Agency is concerned about the availability of sufficient volume of dispersants required for operations, it should ensure that the main dispersants products that are used around the world and are extensively studied are included on the National Product Schedule and are available for response in the U.S.

XXX. Section § 300.915(a)(20) Recognition

A. *Design for Environment recognition is unnecessary.*

The Agency asks for recognition from EPA's Design for the Environment (DfE) if applicable. DfE recognition should not be included in the Proposed Rule because it is not required, and the Agency has other ways to advance voluntary programs.

XXXI. Section § 300.915(b)(1) Dispersant Efficacy

A. *The new efficacy test cannot predict field dispersant effectiveness.*

API and NOIA support the Agency's proposed change in efficacy testing from the Swirling Flask Test (SFT) to the Baffled Flask Test (BFT) method. The SFT was a very low energy test and required the use of low viscosity test oil s to achieve significant levels of measured dispersant effectiveness. The BFT is a much more energetic test method thus permitting the use of higher viscosity test oils to achieve higher levels of measured effectiveness with the same dispersant. It is impo rtant to recognize that such laboratory tests can evaluate relative effectiveness between different dispersants, but cannot be used to predict the effectiveness of dispersants in the field on specific oils under specific conditions , such as differences in wave height, possible application in high turbulence subsea or using prop wash in ice - covered waters.

B. *The new test oils may not provide comparable results if new test samples are obtained.*

We also support the Agency's proposed changes in test oils from South Louisiana Crude (SLC) and Prudhoe Bay Crude (PBC) to Alaska North Slope (ANS) and Intermediate Fuel Oil (IFO–120), since these new test oils provide a wider range of properties in the oils to be tested. The agency should note that ANS is a blend of c rude oils produced on the North Slope of Alaska, and the composition and properties have varied through the years as the crude oils produced on the Alaska North Slope have changed . Also, IFO-120 composition is entirely dependent on the crude run at the supplying refinery and their blending needs. However, IFO-120 is a blend of residual fuel components including vacuum resid uum cut with a lighter product to achieve a specified viscosity (i.e. , 120 cSt at 100F in this case), but will vary dramatically in composition between lots at a given refinery and between refineries. It is probable that the varying composition of IFO-120 will result in inconsistent DE results over time. This means that a single batch of IFO-120 will have to be preserved for all future pro duct testing to ensure comparability. The Agency should conduct stability tests of ANS and IFO -120 stocks to ensure they can maintain viable samples over time. The Agency could consider substituting a heavy crude oil rather than this heavy refined product or store a large single batch of IFO -120 with data provided on shelf stability or a provision to account for changes over time.

C. *Testing dispersant efficacy at different temperatures will not provide information that will predict dispersant effectiveness in real world conditions.*

We oppose introducing testing at different temperatures. This new approach implies that laboratory tests represent field conditions in some way which is not the case. The Agency proposes that dispersants should only be approved for the type of oil they worked in the lab and temperatures tested in the lab. This is incorrect as:

- different oils will be treated than the two tested in the laboratory;
- even the same oil will weather with potential effects to dispersant efficacy;
- turbulence in environment will surely be different;
- subsea injection even into the same oil in the Arctic is different because of oil temperature and turbulence level subsea; and
- dispersing oil in ice is also different from lab tests because of the mixing provided by vessel propellers.

In the preamble to this same section, the Agency appears to suggest that the Proposed Rule changes are intended to indicate the likely effectiveness of operational dispersant use on oil spilled in the Arctic or Gulf of Mexico (column 3, 80 Fed. Reg. 3403; both locales are specified). Relatively simple efficacy tests such as the BFT are incapable of simulating the range of parameters and processes that will be encountered and influence real -world dispersant effectiveness. The Rule sho uld clearly state that laboratory efficacy testing is a comparative screening tool for different dispersants under laboratory conditions and should recognize that a ctual dispersant effectiveness on oil treated at sea can vary a great deal from

effectiveness data collected in a laboratory. A dispersant/oil combination that produces an effectiveness result in the BFT laboratory method of 70% might result in >95% dispersion at sea (e.g., in a moderate sea state), and less dispersion in other circumstances (e.g., calmer sea state). Therefore as part of dispersant use authorization, divorced from the product approval process, the availability of suitable mixing energy becomes an operational consideration, coupled with the dilution potential for the dispersed oil. We suggest that reference to specific regions should be deleted from this section.

D. *Dispersant efficacy thresholds listed in the Proposed Rule are too high.*

In the preamble to this section (column 2, 80 Fed. Reg. 3403), the Agency's justification for dispersant efficacy thresholds (DE values) includes:

> "*Three of the eight dispersants tested clearly differentiated themselves from the other five dispersants for having the best DE_{LCL95} efficacy results… This natural break in the results provided the Agency with the basis for the proposed threshold criteria.*"

We believe the proposed thresholds of efficacy for listing on the Schedule are high. The supporting documentation in the docket shows that only six (not eight) dispersants were tested and two of these six dispersants were only tested with one oil. The rationale for selecting the proposed efficacy thresholds for listing on the Schedule is not convincing on the basis of the limited data presented. Data from another EPA study[31] shows significant variability in the results obtained with the BFT. Variability in test results is troubling and this variation could lead to confusing data sets where the same dispersant sometimes "passes" and sometimes "fails" because of the high threshold limit that has been set. While the Agency states it tested the dispersants currently listed and found three of them to be sufficiently effective, the EPA study on the BFT funded by BSEE and published in 2011 suggests otherwise. As shown in Table 3 of this BFT study, Corexit 9500 may not be listed based on published Dispersant Effectiveness (expressed as the LCL95) of 69% and 61% on ANS Fresh and IFO-120, respectively, at room temperature (15° C). This suggests that the recommended thresholds are potentially too restrictive and do not sufficiently take into account the variability of the BFT.

The Agency should reconsider the proposed efficacy thresholds for listing on the Schedule. We suggest that these thresholds could be lowered without any significant impairment to the effectiveness of operational dispersant use at a response. In addition, reporting only the DELCL95 reduces the amount of information available on a product. We recommend that the test average and standard deviation should be provided, which would provide additional information on the precision of the testing.

The Agency makes the following statement in the preamble (column 1, 80 Fed. Reg. 3404):

> "*As a result of this increased mixing energy, better dispersion is realized under conditions more realistic of wave action in the sea*"

We believe that this statement would be more accurate if it were re-phrased as follows:

> "*As a result of this increased mixing energy, higher dispersant effectiveness results are obtained.*"

Since the recent subsea dispersant injection development does not have major implications for the rationale behind the current tests for dispersant product approval, it might be important to recognize that the laboratory test data are sufficient to identify whether a product has appropriate effectiveness,

[31] Venosa and Holder, 2011, Laboratory-Scale Testing of Dispersant Effectiveness of 20 Oils Using the Baffled Flask Test

irrespective of whether the product may be considered for use in surface application or subsea injection (SSDI) scenarios. Additional testing for SSDI approval is not necessary.

XXXII. Section § 300.915(b)(2) Dispersant Toxicity tests and listing criteria

We offer the following comments on the proposed revisions to the toxicity testing and has ordered the comments by specific test.

A. *Standard static acute toxicity testing should be used only for the dispersant alone.*

The Agency proposes that a dispersant should be tested using a modified standard static acute toxicity test for the dispersant with *Americamysis bahia* and *Menidia beryllina* using the 48 hour and 96 hour duration LC_{50} procedure. We agree there is a need for toxicity testing of dispersants to prevent highly toxic (LC50 <1ppm) dispersants from being listed on the Schedule. The proposed toxicity test method, although designed for effluent testing and having no relevance to real-world exposures of marine organisms to dispersants during dispersant use on oil releases, is a convenient way to screen individual dispersants. We agree with this proposal for dispersant-only toxicity tests.

The Agency also specifies a threshold for a dispersant to be listed on the Schedule, *"the LC_{50} being that at the lower 95% confidence interval for all acute toxicity tests must be greater than 10 ppm."* We believe this is a reasonable threshold for the "dispersant only" toxicity test.

B. *Standard static acute toxicity testing of dispersant/oil mixtures does not represent real world exposures.*

The purpose of the proposed toxicity testing of dispersant/oil mixtures is not clear. If the objective of the toxicity testing is to ensure that any dispersant that is to be listed has less than a specified level of toxicity measured in the test, then a dispersant alone toxicity test is sufficient.

We oppose the proposed dispersant/oil acute toxicity testing as a requirement for a dispersant to be listed on the Schedule, for the following reasons:

- It is now widely accepted by scientists that any concerns about the potential for toxic effects on marine organisms resulting from the use of modern dispersants should consider the potential effects of dispersed oil, not the dispersant itself. This is logical because dispersant is used at low concentrations, compared to the dispersed oil concentrations produced by their use, and they have much lower toxicity than oil. The potential severity of toxic effects that could be caused to marine organisms by exposure to dispersed oil will be a function of exposure: the concentration of dispersed oil (or oil components) in the water, the duration of that exposure, and oil type and receiving organisms. The Agency proposed dispersant/oil mixture tests will not provide any information about real-world exposure.
- More sophisticated dispersant/oil mixture toxicity testing procedures, using more relevant exposure regimes, can produce information about the potential for toxic effects on marine organisms by oil dispersed (or oil compounds released in to the water) as the result of dispersant use. Such toxicity studies may be relevant to deciding where and when dispersant use may be authorized, but not to dispersants being listed on the Schedule.
- Toxicity testing of dispersant/oil mixtures (i.e., dispersed oil) using the proposed standard static acute LC_{50} procedures will inevitably discriminate against more effective dispersants which disperse more oil into the water, thereby increasing exposure to aquatic organisms. Such testing does not give any indication of the potential for toxic effects to be caused by dispersant use on spilled oil on the sea surface.

- Previous work on dispersant/oil mixture toxicity testing conducted by the Agency in 2010 (Comparative Toxicity of Louisiana Sweet Crude Oil [LSC] and Chemically Dispersed LSC to Two Gulf of Mexico Aquatic Test Species [published by Hemmer, Barron and Greene]) shows that the proposed 10 ppm threshold (determined with LSC oil, not ANS or IFO -120) with *Americamysis bahia* would not be met by any of the eight dispersa nts tested at that time. Only one dispersant would have met the 10 ppm threshold with *Menidia beryllina*.

In general, the Agency should clearly distinguish between the requirements of (i) the toxicity testing required to assess which dispersants should be listed on the Schedule, and (ii) toxicological studies with appropriate oils, test organisms and exposure conditions that will inform discussions about how the listed dispersants might cause impacts in U.S. waters under the specific circumstances of an oil spill or release. The two toxicity test approaches required are incompatible. Attempting to use the same standard, static acute LC_{50} procedures to provide information or guidance on both aspects will not achieve these goals. Since the proposed dispersant/oil mixture toxicity testing requirements in this section do not address item (ii) above, the Agency needs to clarify the objective and rationale of the proposed acute exposure toxicity testing of dispersant/oil mixtures and should explain how this relate s to the listing of a product on the Schedule.

C. *Testing of dispersants using the developmental assay for the purple sea urchin is not relevant.*

The Agency proposes a requirement for an EPA test protocol involving sea urchin embryos, routinely used in eff luent testing, to be used to assess the potential for a dispersant product to cause adverse effects on the developmental process. The relevance of this test, which was developed for the assessment of wastewater effluents, to dispersant use is highly questi onable. Again, trying to estimate potential real world consequences to dispersed oil exposure should be part of a NEBA decision -based process. The environmental trade-offs of using dispersants in offshore environments to protect sensitive shoreline habitats from oil exposure is being circumvented. Given that the purple sea urchin is found in shallow coastal waters, there is no relevance of applying purple sea urchin data given that dispersant operations are unlikely to occur in these environments. In additi on, the proposed threshold that the LC_{50} must be greater than 10 ppm is not a relevant indicator to inform any potential real -world effects of dispersant use in the environment. Additionally, if the agency applies their proposed toxicity thresholds to the sub-chronic sea urchin toxicity tests, it is likely that many (maybe all) current and approved dispersants in the U .S. will fail the threshold . Some of them could also fail with the sub -chronic *M. beryllina* tests.

We oppose the proposed developmental ass ay and do not believe it should be a requirement for a dispersant to be listed on the Schedule. API and NOIA are also concerned that little experience is available in application of this assay to dispersants, and it is unclear about the intra -lab precision associated with this proposed requirement and the practical challenges that may arise in interpretation of test results.

D. *Sub-chronic 7 -day static toxicity tests for dispersant are not relevant and are unnecessary.*

The Agency states (300.915(b) (2), 80 Fe d. Reg. 3405) that it " *has limited information concerning the possible sub -lethal effects of dispersants currently listed on the Product Schedule* " and that " *This information would also be of value as guidance to regional responders and OSC's on possible ad verse effects on survival and growth of larval fish and invertebrates caused by longer -term exposure to dispersants.*"

Chronic exposure to dispersant alone is not a relevant indicator of risks posed when dispersant is used to mitigate the effects of an oil release. As stated previously, this test was developed and validated for wastewater effluents and is not relevant to the use of dispersants in offshore spill response. Rather than proposing sub-chronic toxicity testing requirements for any dispersant to be listed on the Schedule, the Agency could undertake studies to establish whether this is a valid concern, or whether it could provide useful information under the likely conditions of dispersant use on offshore oil releases.

The Agency's proposal of a No Observed Effect Concentration (NOEC) equal to or greater than 1 ppm listing threshold level for sub-chronic effects is arbitrary. Although this threshold level provides a ten-fold safety factor over the proposed 10 ppm acute toxicity threshold values, it could also be questioned on the same basis; static toxicity tests over 48 to 96 hours do not represent relevant exposure scenarios in the marine ecosystem following offshore applications of dispersant.

We oppose the proposed sub-chronic toxicity testing and does not believe it should be a requirement for a dispersant to be listed on the Schedule. Sub-lethal/sub-chronic studies are not necessary (acute toxicity endpoints are considered relevant) since the global commercial dispersant products are confirmed as biodegradable so that the surfactants and solvent constituents of the dispersant formulation do not persist in the marine environment causing adverse effects. The French dispersant product approval regulator requires a biodegradability test of the dispersant as part of its product approval process. Commercial dispersants commonly stockpiled around the world are therefore readily biodegradable and pass the French test. If a dispersant is approved in France, it must have passed the biodegradation test (AFNOR standard NF T90-346). It is recommended that ready biodegradability of a dispersant be required for approval in the U.S. as well. Therefore any candidate dispersant product would need to be tested for biodegradability, or the dispersant manufacturer could be required to state that the formulation constituents are biodegradable and provide supporting evidence.

E. *Dispersant testing should only be used for screening individual dispersant products.*

If the objective of the toxicity tests are to select less toxic dispersants (based on an aquatic toxicity threshold), then dispersant alone toxicity tests are sufficient and the maximum toxicity threshold of a candidate dispersant should be set if the dispersant is significantly less toxic than the reference oils. The dispersed oil toxicity testing (CEWAF) should not be considered for dispersant use authorization as it discriminates against the effective dispersant products which disperse more oil into the water thereby increasing exposure to the aquatic test organisms. It is also important to note that CEWAF toxicity testing does not simulate actual dispersant use on spilled oil in the marine environment. Additionally, static toxicity tests over 48 to 96 hours do not represent relevant exposure scenarios in the environment following surface application of dispersants.

In summary, the Agency's suggested toxicity testing changes in the Proposed Rule do not take into account the essential role of NEBA in considering the potential benefits and risks of dispersant use as a response option for an offshore oil release. The Product Schedule should focus on the basic testing to compare the efficacy and toxicity of the dispersants against each other with the sole purpose of screening good products that should be listed. The Proposed Rule should not attempt to translate any laboratory data into possible real-world implications. This process should instead be defined by full stakeholder NEBA discussions specific to a given spill scenario.

XXXIII. Section 300.915(c)(1) Surface Washing Agent Efficacy

A. *Surface Washing Agent (SWA) efficacy testing should not be required until the Agency develops its own test protocol.*

In the preamble the Agency has requested comments on available methodologies and whether the rule should identify the specific methodologies to be used until the Agency develops and adopts a new testing protocol for SWA efficacy testing (column 1, 80 Fed. Reg. 3407). The Agency lists two tests by ASTM and Environment Canada as possible interim tests while the Agency develops its own test. There is no evaluation of how the ASTM test compares to the Environment Canada test. As a result, expecting similar results by both tests is unrealistic. The average efficacy in the published data reported using the Environment Canada test may indeed be approximately 30%, but the variation is high and the tests were performed on a Canadian oil using only one test. We believe the Agency should delay requiring SWA efficacy testing until it develops its own test protocol that utilizes a U.S. oil.

XXXIV. Section § 300.915(d) Bioremediation Agent Testing and Listing Requirements

A. *An additional protocol specific to products containing enzymes only would be appropriate.*

The Agency is requesting comments on whether an additional protocol specific to products containing enzymes only would be appropriate. This would consist only of exposure water, weathered oil and the enzymatic product in the concentrations specified by the manufacturer. A new protocol would be useful because effectiveness data from the testing would help determine whether this technology would be beneficial during a response. Many claims may be made about "safer" products to treat oil and thus more credible scientific information is warranted on products approved on the Schedule.

XXXV. Section § 300.915(e) Solidifier Testing and Listing Requirements

A. *Solidifier toxicity testing would be useful.*

The Agency is requesting comments on the need for acute toxicity tests conducted with solidifiers - reference oil mixtures. Toxicity tests with oil may be beneficial as they will help to evaluate efficiency of solidifiers in retaining water soluble hydrocarbons and preventing them from leaching into water. Simple efficiency tests may not provide such data.

XXXVI. Section § 300.915(g) Sorbent Requirements

A. *The proposed Sorbent Product List should not exclude natural sorbent materials.*

The Agency proposes to make available a Sorbent Product List that includes certain publically available non-proprietary sorbent materials. We believe this should be a generic list and should not exclude natural sorbent materials (e.g., hay) that could be obtained locally at a spill site.

XXXVII. Section § 300.950 Submission of Confidential Business Information (CBI)

A. *Full public disclosure of product information may reduce the number of products being made available in the U.S.*

In 300.950 (column 3, 80 Fed. Reg. 3426), the Agency requires everything in the product listing be made public except the actual concentrations of product ingredients. While the Agency may need full disclosure of product formulae, we do not believe the Agency needs to make them public and can accept products with both the ingredients and the concentrations as CBI. Any disclosure of information on product formulae (either ingredients or % concentrations) could put a manufacturer at a competitive disadvantage. This may discourage some manufacturers from listing their product at all and could result in effective dispersant products not being available in the United States.

XXXVIII. Section § 300.955 Addition of a Product to the Schedule

A. *The transition period for currently listed products is too short.*

In 300.955(f), the Agency specifies a 24 -month transition period for currently listed products. This is a very short timeframe given the variety of products listed and depth of technical work (e.g., toxicology studies) required to be contracted, conduc ted, analyzed, and reported. We believe the Agency should extend the transition period to the lesser of five years, the current product expiration date, or after suitable replacement products are listed and commercially available.

We also believe that this section should include a discussion of how currently owned stockpiles purchased in 2010 and 2011 (more than one million gallons of Corexit, in the U .S.) will be tested to comply with the proposed existing stockpile testing requirements of being tested every five years. It is recommended the Agency state that currently held stockpiles will have five years to be re-tested after that dispersant product is listed on the new Product Schedule.

XXXIX. Appendix C to Part 300 Requirements for Product Testing Protocols and Summary Test Data

A. *The dispersant-to-oil ratio (DOR) ratio used in the BFT should be 1:20.*

In Appendix C, Section 2.1 (column 3, 80 Fed. Reg. 3428), the BFT mandates a DOR of 1:25. A DOR of 1:20 has commonly been accepted for use in the U.S. and abroad. Further, the 1:25 DOR may not even be within the manufacturer's recommended use ratio. The Agency needs to ju stify this test requirement. We believe that the DOR for the BFT should be changed to 1:20 to align with the regulatory requirements in 33 CFR 154 and 155 for calculating aerial and vessel dispersant capabilities and to align with standard dispersant spray system calibration. A DOR of 1:20 leads to a 5 gallon per acre dosag e for surface spray systems and is the minimum amount of dispersant to oil slicks that can be visually identified as having sufficient thickness to warrant dispersant application. Having the testing procedure completed for the same DOR would provide more reliance that, when applied, the dispersant will be effective.

B. *The Agency should explain how it will address changes in the refe rence oils as they age and as new samples are acquired for the future.*

In Appendix C, Section 2.3.2, the Agency requires the u se of ANS and IFO -120 as standard reference oils. The Agency is supplying these materials to labs but no data is presented showing shelf stability over time for either and whether stable equivalent materials can be provided in the future. No provision is provided for addressing changes in dispersant efficacy due to changes in composition of ANS (e.g., field production changes, new fields in pipeline blend, etc.).

Also, IFO -120 composition is entirely dependent on the crude run at the supplying refinery an d their blending needs. It is a blend of residual fuel components including vacuum residue cut with a lighter product to achieve a specified viscosity (i.e., 120 cSt at 100 degrees F in this case), but it will vary dramatically in composition between lots at a given refinery and between refineries. If multiple IFO -120 samples were provided from different refineries to a toxicity laboratory, there would be varying results because IFO-120 composition changes from day to day and between refineries. This means that a single batch of IFO -120 will have to be preserved for all future product testing to ensure comparability. The Agency should conduct stability tests of ANS and IFO -120 stocks to ensure they can maintain viable samples over time.

CONCLUSIONS

In conclusion, as evidenced by the extensive substantive comments provided herein, it is clear that much work needs to be done before the Agency should finalize a rule in this key area of spill response, including to make sure that the final rule does not have the unintended consequence of eliminating all or most commercially available and future dispersants for use in spill response. We believe the Proposed Rule will likely result in dispersants being eliminated as a response technique, for the following reasons:

- The Proposed Rule does not recognize that response option decisions must be based on NEBA and that dispersing oil in offshore environments , where it may dilute and biodegrade, is often preferred over the long -term environmental damages that will occur when untreated oil strands and persists in shoreline environments;
- The Proposed Rule focuses on potential risks of dispersants without recognizing the primary purpose of dispersants, which is to rapidly dilute the spilled oil and enhance removal of the o il from the environment through microbial degradation, resulting in reduced VOCs (personnel safety), and a reduction in persistent, stranded oil in shoreline ecosystems (leading to faster ecosystem recovery);
- The Proposed Rule's dispersed oil toxicity tes ting thresholds could eliminate all dispersants that are on the current NCP list and could preclude the listing of future dispersants that are currently in development. Furthermore, the proposed dispersed oil toxicity testing thresholds favor ineffective dispersants over effective products and will mistakenly measure the toxicity of the standard test oils, not of the dispersant product;
- The Proposed Rule adversely constrains the ability of the OSC to make the necessary operational decisions to ensure for an expeditious, efficient, and effective response to mitigate the impacts of a spill to the greatest extent possible;
- The Proposed Rule raises significant issues related to USCG and BSEE facility and vessel oil spill response plan compliance and could resul t in unnecessary and increased environmental impacts and corresponding spill claims as a result of increased damages;
- The Proposed Rule's stockpile re-testing procedures have not taken into account manufacturer recommendations, nor considered scientific publications on the demonstrated, lengthy shelf-life of dispersant products; and
- The Proposed Rule's dispersant monitoring requirements are not focused on collecting data that can provide useful information regarding an ongoing dispersant operation. Instead, these requirements have the potential to delay dispersant use resulting in unnecessary environmental damage.

In addition, the RIA conducted by EPA is substantially flawed. The RIA falls woefully short of EPA's regulatory requirements. EPA fails to provide any quantification of the potential social benefits of the Rule; in fact, the RIA lists benefits associated with avoiding and limiting the impacts of oil spills as potential benefits of this Rule, even though the Proposed Rule has the potential to ag gravate the impacts of an oil spill by limiting response options. As a result, the RIA significantly underestimates the potential costs of the Proposed Rule , while also underestimating the direct costs that the Rule would impose on small businesses, government, and the greater industry.

Accordingly, API and NOIA strongly urge the Agency to consider these comments and suggested revisions to the Proposed Rule to ensure that the best dispersants and dispersant-use practices are available for offshore oil spill response. We recommend that there be further discussions between the Federal agencies and industry scientific and operational experts to add value to further revisions of the Proposed Rule to ensure that the proposed changes to Subpart J align with the latest scientific practices and do not artificially bias against the use of certain response options, such as dispersants.

Furthermore, API and NOIA recommend EPA initiate a Negotiated Rulemaking which has proven to be effective in controversial rulemakings such as this one. At a minimum, we urge the Agency to publish a Supplemental Proposed Rule in the Federal Register for additional public comments before publishing a final rule to ultimately make sure that responders, both from the government and industry, are able to use dispersants in the most effective and expeditious manner, taking into consideration necessary environmental and safety factors, to provide for the best response possible depending on the circumstances of a particular spill event. Given the time it will take to initiate and complete a new rulemaking after the final rule is published it is imperative for the general public and all stakeholders that we get it right the first time.

Thank you for your time and attention to these comments on the Proposed Rule. API, NOIA and our member companies share EPA's goal of establishing sound Dispersants Use Policy and are committed to working with the Agency and the other Federal Agencies involved in oil spill response to ensure the health and safety of people and minimize environmental and community impacts during an oil spill. Please do not hesitate to contact Emily Hague (202-682-8260, Hague@api.org) or Nicolette Nye (202-465-8463, nnye@noia.org) if you have any questions.

Sincerely,

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Attachment A

Analysis of EPA's Regulatory Impact Analysis for the Proposed Revisions to the National Oil and Hazardous Substances Pollution Contingency Plan in 40 CFR 300 Subpart J

Submitted by:

Policy Navigation Group

April 2015

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EXECUTIVE SUMMARY

Policy Navigation Group (PNG) was asked by the American Petroleum Institute to review the Regulatory Impact Analysis (RIA) for U.S. Environmental Protection Agency's (EPA) proposed rule entitled *National Oil and Hazardous Substances Pollution Contingency Plan.*[1] We were asked to evaluate whether the RIA for the proposed rule is consistent with the analytical standards set forward in OMB Circular A-4 and EPA's Guidelines for Preparing Economic Analyses and to perform an independent cost analysis.[2] In our analysis, the proposed RIA has the following principal deficiencies:

- The proposed rule's RIA does not have a consistent baseline that allows the public and policy officials to compare the incremental social costs and the incremental social benefits of EPA's proposed regulation and the individual policy options within the proposal.
- The RIA fails to estimate many policy scenarios and requirements issued in the proposed rulemaking. The RIA thus fails to provide the public a full description of the proposal's impact and undermines the public's opportunity to provide meaningful comment on the proposed rule.
- Further, for the provisions that it does give quantified social cost estimates, the RIA often underestimates compliance costs. The RIA thus underestimates the full social cost to comply and to administer the changes for both private firms and government agencies.
- The RIA does not provide any quantified social benefit estimates either for the proposal as a whole or for its individual options. Moreover, its qualitative description of social benefits is inaccurate and at times actually describes social costs of the proposal. Without estimates of the incremental social benefits of the rulemaking and the proposal's regulatory options, the public cannot provide meaningful comments on the merits of EPA's proposal.
- The RIA's methodology is designed to underestimate the small business impact. EPA's economic impact analysis is inconsistent with EPA's economic analysis guidelines and EPA's requirements under the Regulatory Flexibility Act (RFA).[3] In this analysis, we address some of the RIA's deficiencies and find that the rulemaking could have a significant impact on a substantial number of small businesses subject to the rulemaking.

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[1] 80 FR 3380. Also, U.S. Environmental Protection Agency, *Regulatory Impact Analysis for Proposed Revisions to the National Oil and Hazardous Substances Pollution Contingency Plan Regulations*, December 3, 2014.

[2] U.S. Environmental Protection Agency, *Guidelines for Preparing Economic Analyses*, 2014.

[3] 5 U.S.C. 601-612

- These principal issues are among many aspects of the analysis that are inconsistent with Executive orders on regulatory review, OMB guidance, and EPA's own guidance for economic analysis.[4]

In the RIA, EPA estimates that the total incremental net present value (at 7 percent) social cost of the rule is $7.8 million, or approximately an annualized cost of $0.7 million over 20 years. In our analysis, we find that the estimated social costs are at least three times higher than EPA's estimate. The cost of the major provisions are given below:

Table ES-1. Estimated Social Costs of the Proposal

	NPV at 7% ($)	Annualized Cost over 20 years at 7% ($)
Product Loss Costs	4,000,000-7,300,000	380,000-720,000
Product Testing Costs	5,300,000	500,000
Stranded Capital/Stockpile Value Loss	1,000,000-1,250,000	90,000-120,000
Label	180,000	20,000
Recovery Costs	1,700,000	160,000
Monitoring Costs	11,000,000	1,000,000
Preauthorization Costs	200,000	20,000
EPA Costs	800,000	80,000
Totals[5]	24,000,000-27,000,000	2,300,000-2,600,000

These costs disproportionately burden small businesses. Most producers in this market are small businesses. The RIA did not find a significant effect on a substantial number of these small businesses. However, when we adjust for the more significant costs in Table ES-1 for the provisions the RIA omits and for real cost of capital, 43 percent of small businesses that the RIA analyzed have compliance costs greater than three percent of their 2011 revenues. As shown in Table ES-2, many small businesses face severe impacts. EPA should evaluate whether it must comply with the procedural and other analytic requirements of the Small Business Regulatory Enforcement Fairness Act (SBREFA).

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[4] Executive Order 12866 Regulatory Review, September 30, 1993.

[5] Throughout this report, totals and summaries may be different due to rounding. Reflecting the likely precision of these estimates, figures are presented to two significant digits or less.

Table ES-2. Economic Impact of the Proposal on Small Businesses

Pct of 2011 Revenue	Number of Product Types	Percent of Companies
<3%	17	57%
3%-5%	5	17%
>5%	8	27%

We recommend that EPA correct these deficiencies including undertaking a comprehensive benefit analysis to determine if the rule is in the national interest. Once EPA conducts its analysis of the incremental net social benefits of each proposed provision, it should select the regulatory options that maximize net social benefits. As EPA's economic analysis guidelines states:

> Preparing high -quality economic analysis can greatly enhance the effectiveness of environmental policy decisions by providing policy makers with the ability to systematically assess the consequences of various actions. An economic analysis can describe the implications of policy alternatives not just in terms of economic efficiency, but also in terms of the magnitude and distribution of an array of impacts.[6]

This report discusses the major issues with the RIA in more detail, provides alternative estimates for the proposal's social costs, and recommends how EPA should correct these flaws before reissuing a proposed rule.

[6] U.S. EPA, *Guidelines*, pg. 1-2.

SECTION 1. INCONSISTENCY BETWEEN BASELINE AND POST-REGULATION MARKET SCENARIOS

1.1. BASELINE IS INCOMPLETE AND INCONSISTENT WITH OMB GUIDANCE

The RIA's description of the analytic baseline is incomplete and inconsistent with OMB guidance.[7] There are several problems with the RIA's regulatory baseline:

- The RIA does not establish baseline conditions for many proposed requirements. As discussed in Section 2 below, the RIA does not fully estimate the social benefits and costs of all of the provisions of the proposal. As it corrects the serious deficiency of omitting cost estimates for proposed provisions, EPA must apply a consistent framework for both baseline and post-proposal market conditions in any final rulemaking.

- The RIA assumes a regulatory baseline where all existing manufacturers must pay to test their products. Even in absence of a rule, manufacturers may choose to conduct additional toxicity testing to demonstrate the inherent low hazard of their product and thus to differentiate their products in the market. Oil spill response organizations and responsible parties may also insist on further toxicity testing from producers due to liability concerns. Other jurisdictions also require testing of oil response products. For example, the corresponding European Union (EU) authority, the European Maritime Safety Agency, lists the dispersant testing requirements as of 2014 in the EU member states.[8] Eight EU members require testing of dispersant products. For all these reasons, producers may have some or all of the proposed testing data already available.

Recommendation. EPA should gather additional information on available data not only to prepare a more accurate economic analysis, but also to properly estimate the incremental social costs of this rule. If additional data already exists, EPA could tailor the final rule's requirements to this data and only mandate additional testing where meaningful data gaps exist.

1.2. PROPOSAL DOES NOT HAVE CONSISTENT SCENARIO FOR THE SOCIAL BENEFITS AND SOCIAL COST ESTIMATES

The RIA assumes all existing products comply with the new testing requirements and remain on the market.[9] The RIA also assumes new products are approved by EPA at the same

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[7] U.S. Office of Management and Budget, Circular A-4 Regulatory Analysis, September 2003.

[8] European Maritime Safety Agency, *Inventory of National Policies Regarding the Use of Oil Spill Dispersants in the EU Member States*, 2014

[9] U.S. Environmental Protection Agency, *Regulatory Impact Analysis for Proposed Revisions to the National Oil and Hazardous Substances Pollution Contingency Plan Regulations*, December 3, 2014.

pace as in the past. In other words, society gains the same benefits from products with the same capabilities and efficacy with or without the rule.

If this post-regulatory scenario is true, the rule has few, if any, social benefits.[10] For example, EPA cites reduced product toxicity on marine life as a potential social benefit. However, any potential ecological harm could only possibly be reduced if some existing (and future) products are withdrawn, not used, or disallowed due to the new toxicity testing requirement and due to the new EPA approval process.

However, the RIA's scenario is not the most plausible post-regulation scenario. It is more likely that some existing products will not remain on the approved list after the rulemaking. This outcome is more likely than the RIA scenario for two reasons. First, EPA may decide not to approve some of the existing products. It seems unlikely that EPA would use its scarce resources to promulgate increased toxicity testing standards if it did not have concerns with the toxicity of some existing products.

Second, given the uncertain sales volume, producers may not make a competitive expected rate of return with the additional testing and application expense and the greater risk of disapproval. In this case, they can be expected not to remain on the schedule after the rule is effective.

There is ample evidence that existing producers face a non-zero risk of product disapproval:

- Interest groups and media alleged significant concerns with oil spill product safety during the 2010 SONS.[11,12] Media attention and interest group attention to the issue does not mean that products are toxic per se; however, the threat of media scrutiny dampens producers' interest in bringing products to market. Increased attention is likely to lengthen EPA's approval process and the costs for the producer to respond to media inquiries. For producers, these response costs decrease the rate of return for oil spill products and potentially raise the costs for other company products.[13]

- Many producers are small businesses and need certain rates of return to compensate for their cost of capital and for the opportunity cost to innovate in

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[10] There is the argument that there is an information externality - the producers of the agents have a more concentrated interest and easier access to the potential toxicity information than the purchasers. However, since the producers are mostly small businesses and the purchasers are typically government agencies or large businesses, the purchasers can be expected to have sufficient resources and potential legal liability to overcome any potential information externality.

[11] See for example, http://www.biologicaldiversity.org/programs/public_lands/energy/dirty_energy_development/oil_and_gas/gulf_oil_spill/dispersants.html.

[12] E. Rothsenthal, *In Gulf of Mexico, Chemicals under Scrutiny*, The New York Times, May 5, 2010.

[13] For example, the parent company, and not individual product, may face public criticism.

other markets. Their internal rate of return requirements may preclude further investments once the costs and the risk increase.

In addition to the effect on existing products, the rulemaking is likely to affect the number of future products. By requiring additional testing and approval, the rulemaking increases market barriers. Some new products may not reach the market in the future due to the costs and risks that new products will not pass the new testing requirements.

1.2.1. Social Cost Estimate

To overcome these limitations, we conduct an alternative estimate to illustrate the importance of considering how the rule will raise market barriers. In Section 6 below, we demonstrate that many smaller producers could face a significant economic impact from the rule, i.e., greater than three percent of their annual revenue. As EPA and Small Business Administration guidance suggests, we assume those firms fail or leave the market due to the regulatory costs.[14]

The social cost is the lost value added to society from these products that leave the market. Value added is the remaining revenue after the costs of the inputs (e.g., labor, materials, and energy) are subtracted. Since value added is often proprietary information and varies from firm to firm, we use a recent value added metric for the chemical industry as a whole. From 2013 Bureau of Economic Analysis data, the average valued added in chemical manufacturing is 44 percent of revenue.[15] We assume that each company in the oil spill product market has a value added of 44 percent of revenue.

Once existing firms leave the market, society loses the value added of their products for Subpart J responses. However, in a competitive marketplace, other firms will enter and offer their own products. Since the regulation is not changing the demand for oil spill response products or acting to reduce the likelihood of spills, post-regulatory supply will rise to meet this unchanged demand. Society, therefore, only temporarily loses the availability of some oil response capabilities once existing producers leave the market in response to regulation.

We assume the value added is lost for three years. While three years is an assumption, it is a reasonable one given the proposed rule's timing. Since existing firms have two years to provide EPA with the new test data, if they decide not to reapply, they will likely try to stay on the market for the full two years. Once EPA removes them from the schedule, competitors will then see a market opening. We assume these competitors offer alternatives and submit their applications to EPA one year later.

We recognize other outcomes are possible. Instead of replacing existing products with new products at a 1:1 ratio, fewer new products could enter the marketplace, leaving the

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[14] U.S. Small Business Administration, *Guide for Government Agencies How to Comply with the Regulatory Flexibility Act*, May 2012. See U.S. EPA, *Final Guidance for EPA Rule writers: Regulatory Flexibility Act as amended by the Small Business Regulatory Enforcement Fairness Act*, November 2006.

[15] U.S. Department of Commerce, Bureau of Economic Analysis, *Value Added by Industry*, November 2014

approved products with a greater market share. In this case, compliance costs would be lower than this estimate; however, an additional social cost would be the loss of resiliency to responds to market disruptions. In addition to small firms, large firms may also not submit the new information due to the expense. On an individual product basis, larger firms may not find it profitable to continue.

Recognizing these limitations, based on these assumptions and the revenue information the RIA provides in Exhibit 7-1, Table 1-1 shows our estimate of the social cost of market disruption/transition due to the proposed rule.

Table 1-1. Social Costs from Market Transition

Annual Revenue	Product Type	Assumed Value Added	Social Cost	Discounted Social Cost (7 percent)
$ 62,000	Solidifiers	$ 27,000.00	$ 81,000.00	$ 74,000.00
$ 160,000	Surface Washing Agent	$ 71,000.00	$ 213,000.00	$ 195,000.00
$ 120,000	Solidifiers	$ 53,000.00	$ 159,000.00	$ 146,000.00
$ 200,000	Solidifiers	$ 88,000.00	$ 264,000.00	$ 242,000.00
$ 30,000	Solidifiers	$ 13,000.00	$ 39,000.00	$ 36,000.00
$ 120,000	Surface Washing Agent	$ 53,000.00	$ 159,000.00	$ 146,000.00
$ 150,000	Surface Washing Agent	$ 66,000.00	$ 198,000.00	$ 181,000.00
$ 1,000,000	Dispersant(2) & Surface Washing Agent	$ 441,000.00	$ 1,323,000.00	$ 1,211,000.00
$ 187,000	Surface Washing Agent	$ 82,000.00	$ 246,000.00	$ 225,000.00
$ 290,000	Bioremediation Agent	$ 128,000.00	$ 384,000.00	$ 352,000.00
$ 280,000	Surface Washing Agent	$ 123,000.00	$ 369,000.00	$ 338,000.00
$ 559,000	Bioremediation Agent	$ 246,000.00	$ 738,000.00	$ 676,000.00
$ 120,000	Bioremediation Agent	$ 53,000.00	$ 159,000.00	$ 146,000.00
Total (rounded)				$ 4,000,000.00

Summary	NPV at 7%	Annualized Cost over 20 years at 7%
Product Loss Costs	$4,000,000	$380,000

The social costs for existing products are estimated to be $4 million. If it takes longer for alternative products to enter the market, these costs would be higher. These social costs do not include the loss of efficacy and resiliency to respond to oil spills during this transition period. In Section 2.3 below, we expand this estimate to add the potential product loss social costs from the proposed ban on products containing NP and NPE.

As discussed previously, the regulation will not only discourage existing producers from re-qualifying, but also discourage new entrants by raising the costs and the risks of market

entry. The RIA assumes new entrants arrive after the rule at the same pace as in the baseline, or 10 per year. This assumption is not supported by economic theory. As discussed below in Section 3.4, we predict that application costs would rise by 40-50 percent for surface washing and stabilizer products, 260 percent for bioremediation products, and 120 percent for dispersants compared to current requirements. While we did not find estimates of the supply elasticity in these markets, such significant increases in prices will affect supply. We assume new product applications decrease by 30 percent from 10 to seven per year in response. The cost implications of this change are further discussed in Section 5.

1.2.2. **Recommendation**

Setting the baseline and policy alternative scenario is one of the key foundations of a regulatory analysis. As EPA's Guidelines for Economic Analysis states: "Because the level of detail presented in the baseline specification is an important determinant of the kinds of analysis that can be conducted on proposed regulatory options, careful thought in specifying the baseline is crucial."[16] The RIA has not shown this careful thought. For the final rule, EPA should understand the available toxicity and efficacy data available from producers. EPA should select, at a minimum, alternative market outcomes from the regulation in which some existing products do not return to the approved list. EPA must estimate the incremental social benefits and social costs from more accurate baselines.

[16] U.S. EPA, *Guidelines*, pg. 5-1.

SECTION 2. SOCIAL COSTS NOT INCLUDED IN THE RIA

2.1. STRANDED PRODUCTION CAPITAL AND PRODUCTS

EPA has not estimated the full social costs from a decision not to approve a product or from a producer's decision not to reapply. For the reasons listed in the previous section, it is plausible that some existing products will not be listed in the future due to the new regulatory requirements. In Section 1.2.1, we estimate the temporary lost value to society. The full social costs include the net change in value of the oil spill response product and the stranded human and physical capital used to produce the product. In addition, existing stockpiles of the dis-approved product can be expected to suddenly have lower value due to the disapproval. While on scene coordinators (OSC) could still allow their use during a spill response, the likelihood is lower once the product is no longer approved.

These costs are potentially significant. Stockpiling response products is an essential strategy to minimize oil spills' consequences. Response products must be deployed within hours of an oil spill; there is not time to ramp up production once a spill happens. Stockpiles are substantial and deployed across the globe. For example, a 2014 EU report lists nearly 3,500 metric tons of more than 40 different compounds in EU member state stockpiles.[17]

EPA has recognized this social cost category in other rulemakings. EPA has banned or phased-out products in other environmental programs. For example, EPA regulates the phase-out of ozone-depleting substances (ODS) under the Clean Air Act (CAA). EPA has conducted several major RIAs for the multiple phase-out decisions for ODS use under Title VI of the CAA. For example, in its Section 604 and Section 606 rulemakings, EPA considered the stranded capital and product costs for the ODS subject to the phase-out. EPA also attempted to estimate the social costs of the reduced efficacy of the substitutes.[18]

2.1.1. Social Cost Estimate

We consider the stranded capital and product costs separately. For the stranded capital, there are several considerations in estimating the social cost. First, the regulation does not destroy the labor and physical capital, but blocks its highest valued use. Workers and entrepreneurs can use their knowledge and machinery to make other products and/or the same product. Second, there is a distinct loss as suppliers move their capital from this highest valued use before the regulation to a lower valued use after the regulation. They also have costs as they retrain and retool their equipment for this shift.

This information guides our estimate. At one extreme, if the regulation completely destroyed the economic value of the enterprise, the loss could be estimated as the enterprise values of the firms. Using a standard financial estimation of small business enterprise value, the loss would be three to five times the firm's intrinsic value (i.e., value added). In this

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[17] European Maritime Safety Agency, *Inventory of National Policies Regarding the Use of Oil Spill Dispersants in the EU Member States*, 2014

[18] For a good summary, see Appendix G of *The Benefits and Costs of the Clean Air Act, 1990 to 2010*, U.S. EPA, 1999.

case, the maximum social cost would be $6 million to $8 million. At the other extreme, in a dynamic economy, excess capital and labor is rapidly moved from one use to another, with almost zero transition cost. Since the regulation fundamentally does not change demand, we assume that the stranded human and physical capital costs will be closer to the low end and assume a loss of $1 million.

For the stranded product costs, knowledge of which existing products will not return to the schedule and the amounts of those products are stockpiled is important information. The RIA gives information about the product types that are likely to leave the market due to regulation (see Section 6 below), but not the specific products.

For current amounts in stockpiles, in support of its 2009 vessel response plan (VRP) rulemaking, the Coast Guard complied data on US stockpiles of products listed on Subpart J.[19] Although this data is comprehensive, it is from 1998. The VRP rulemaking required responsible parties to have contracts with oil spill removal organizations (OSRO) or organic capacity to respond to categorical spills.[20] The rulemaking required owners and operators to have response resources capable of applying dispersants. This rulemaking, and subsequent ones, increased the amount of dispersants stockpiled in the United States.

From public information given by OSROs, most advertised dispersant capacity is for Corexit® formulations. While it is very likely that these organizations also stockpile stabilizers, surface washing agents, and potentially bioremediation agents, we did not find a current, comprehensive list of stockpiled substances.

We therefore constructed our estimate under two scenarios: (1) if EPA does not approve Corexit® formulations; and, (2) If EPA does not approve other agents. For the latter, we include these costs in Section 2.4. A potential ban on Corexit® is discussed in this section.

We gathered available data on current and relatively recent reports of Corexit® formulation stockpiles in the United States and globally. Since the chemical is not approved for use in Europe, we found that global stockpiles are located primarily in the United States and Brazil.[21] Table 2-1 gives the organization and the reported stockpile amount.

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[19] U.S. Coast Guard, "Caps" Review of Oil Spill Response Plan Equipment Capability, at https://homeport.uscg.mil/cgibin/st/portal/uscg_docs/MyCG/Editorial/20080725/combined%20document.pdf?id=213ab594d05ab39ffd49d74a2e188eb8246d23ed&user_id=7ee08b44562829c5918c18d08ac87c29.

[20] 74 FR 45004

[21] http://www.oilspillresponse.com/files/OSRL_GDS_Equipment_20Nov2014.pdf

Table 2-1. Estimated Stockpiles of Corexit® Formulations

Organization	Units	gal/unit	Total
MSRC[22]	1	104,000	104,000
Clean Seas Cooperative[23]	1	20,750	20,750
Oil Spill Response[24]	500	264	132,000
Alyeska Pipeline[25]	1	60,000	60,000
Clean Islands[26]	1	37,260	37,260
LOOP[27]	1	33,600	33,600
Clean Gulf Associates[28]	1	34,650	34,650
CISPRI[29]	1	20,570	20,570
Nalco[30]	1	12,000	12,000

Total (rounded)	450,000
Estimated Value	$ 250,000

[22] https://www-msrc-org-documents.s3.amazonaws.com/major-equipment-list/MSRC_Major_Equipment_List.pdf?AWSAccessKeyId=AKIAIGH7YZWA2HRSZUFA&Expires=1427976589&Signature=lYm5WdnIB7M4XV%2BR1foyl5kUg70%3D

[23] http://www.cleanseas.com/equipment.htm#ABSORBENTS/DISPERSANTS/SPRAY

[24] http://www.oilspillresponse.com/files/OSRL_GDS_Equipment_20Nov2014.pdf

[25] Minerals Management Service, *Assessment of the Use of Dispersants on Oil Spills in California Marine Waters*, S.L. Ross Environmental Research Ltd, June 2002.

[26] http://www.cleanislands.com/

[27] Minerals Management Service, *Assessment of the Use of Dispersants on Oil Spills in California Marine Waters*, S.L. Ross Environmental Research Ltd, June 2002.

[28] http://www.cleangulfassoc.com/equipment.

[29] Minerals Management Service, *Assessment of the Use of Dispersants on Oil Spills in California Marine Waters*, S.L. Ross Environmental Research Ltd, June 2002.

[30] http://www.rrt9.org/external/content/document/2763/904415/1/Nalco%20Dispersant%20Mfgr%20Capability.pdf

Table 2-1 may overestimate the amount stockpiled since different organizations may have overlapping agreements to use the same stockpile. The estimates may also be underestimates since we could not find publicly available data on the stockpiles of some of the larger OSROs such as NRC.[31] Based on a recently reported retail price from an OSRO of $0.55/gallon, the reported stockpiles in Table 2-1 are worth $0.25 million. Since the product is not approved for use in other jurisdictions, if EPA did not approve its continued use, it is likely that current stockpiles will have little residual value.

In summary, the stranded capital/stockpile value loss is the sum of the loss of enterprise value (assumed to be $1 million) and the potential loss of in value of Corexit® formulations. Since the loss in Corexit® formulations is speculative, we present our estimate for this rulemaking outcome as a range.

Summary	NPV at 7%	Annualized Cost over 20 years at 7%
Stranded Capital/Stockpile Value Loss	$ 1,000,000-$1,250,000	$90,000-$120,000

2.1.2. Recommendation

Once EPA establishes a more plausible baseline and post-regulation market conditions, it must account for all social costs that flow from an EPA decision not to approve products currently on the list. These costs include the stranded physical and human production capital, the loss in value of stockpiled products, and any loss in oil spill response efficacy from these decisions. EPA has access to data on oil response product stockpiles that it should use to better estimate the social costs of this rulemaking. EPA's analysis for the final rule should at least be as comprehensive as EPA's approaches in other comparable EPA rulemakings.

2.2. Periodic Revisions of Preauthorization plans

In the proposal, EPA requires Regional Response Teams (RRTs) to review and to update their preauthorization plans for chemical and biological response agents after major oil spills or at least once every five years. The RIA does not estimate the social costs of this proposed requirement.[32]

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[31] http://nrcc.com/our-services/response-services/response-equipment-rental-packages/

[32] On page 37 of the RIA, under the section entitled "Authorization of Agent Use (part 300.910)," the RIA notes that RRTs and Area Committees are required to provide a preauthorization plan and to follow other requirements. The RIA states: "The incremental burden for members of the RRT and Area Committees requires labor hours to participate in the development of preauthorization plans and to add them to RCPS and ACPs." However, it is not clear whether the extremely low burden the RIA uses (2 hours) is to update the 11 or more preauthorization plans or the title of section,

There is evidence that this provision would have meaningful costs if finalized. Recently, EPA's Inspector General (IG) issued a report finding defects in emergency management planning and contingency planning for oil spills.[33] In response, EPA stated:

> Thus, although we generally agree with the recommendations in this report, and they parallel our efforts, two key obstacles (i.e., limited involvement by other agencies and stakeholders and resources) must be overcome for their successful implementation.[34]

The EPA program response to the IG suggests that resources, not interest, is the barrier to updating preauthorization plans. If local governments and other RRT team members are constrained by a lack of resources, then it is not clear how a regulation will alter this reality. The social costs then must reflect this scarcity. The social costs are not limited to the full compensation costs and capital costs necessary to maintain that employee. Unlike private markets, the supply of government officials' time does not increase with greater demand. For this reason, the social costs are the opportunity costs of that official's time - i.e., the social benefits society would gain if the government official spends the time on the next most valuable use of that person's time--enforcement, policy setting, permit approvals, or other public matters. The opportunity cost of this resource - a government agency official's work time - is how EPA's Guidelines for Economic Analysis defines social cost.[35]

2.2.1. **Estimated Social Costs**

Based on the IG's analysis, we estimate the social costs as the resources required to update preauthorization plans more frequently than is current practice. We assume in the baseline that plans are currently revised once every seven years; the proposal requires them every five years or after major oil spills. Based on the IG report finding that some plans had not been updated since the 1990s, a seven year update frequency in the baseline may underestimate social cost. For the post-rule scenario, we use a five year frequency since the other trigger, major spills, are rare and may be expected to lead to preauthorization plan reviews even in the absence of this rulemaking.

The resources required are the time spent revising each plan and the review of each plan by the member organizations. From the agenda of recent RRT meetings, we count the number of distinct Federal and state agencies. In a recent Region 6 RRT meeting, 13 Federal agencies sent staff.[36] We assume that 13 Federal agencies are part of each RRT. States,

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authorization of agent use. In either case, the RIA's estimate is far too low to comply with the proposed requirement.

[33] U.S. Environmental Protection Agency, Office of the Inspector General, *EPA Could Improve Contingency Planning for Oil and Hazardous Substance Response*, February 15, 2013.

[34] Ibid, pg. 19.

[35] "Social cost represents the total burden that a regulation will impose on the economy. It is defined as the sum of all opportunity costs incurred as a result of a regulation where an opportunity cost is the value lost to society of any goods and services that will not be produced and consumed as a result of a regulation," *Guidelines*, p.8-1.

[36] http://www.rrt6.org/Uploads/Files/rrt_semi_annual_meeting_summary_2014_November.pdf

territories, and Tribes also serve on the RRTs. Among the 11 RRTs (one for each EPA region and one for Alaska), we assume 56 States, Tribes, and territories send representatives and participants.

We make some assumptions on the effort needed to revise each preauthorization plan. We assume 20 percent of the RRT's member organizations assign one staff person to serve on an RRT subgroup to revise the plan. Each assigned staff person spends 40 total hours in this revision process. Then, each Federal, State, Tribe, and territory agency reviews the draft revised plan in their organization. Three people in each organization are a part of the review to account for the agency's management and likely legal review. Each person reviewing the draft plan spends six hours reading and discussing the revised plan.

For the costs of government staff time, we use median and mean wages for Federal employees and State employees, respectively.[37] To these wages, we apply recent Federal government values for benefits and overhead to the Federal and State hourly wage values.[38] For the reasons discussed above, this estimate of the opportunity cost of this resource likely underestimates its true social value and thus the social cost of this proposed requirement.

We then compare the social costs for the baseline and proposed requirements - the costs of revising the plans on a seven versus five year frequency. We discount the baseline and proposal time stream of costs at a discount rate of seven percent and take the difference between those time streams as the social cost. The net present value of the additional social cost at a discount rate of seven percent is $0.18 million.

Summary	NPV at 7%	Annualized cost over 20 years at 7%
Preauthorization costs	$180,000	$20,000

2.2.2. Recommendation

The RIA must fully include the social costs and social benefits of this provision and calculate the social costs as the opportunity cost of government agency staff time.

2.3. Prohibition on Chemicals and Proposal to Ban EDCs

The RIA does not estimate the social benefits or the social costs for the proposed option to prohibit approving products containing nonylphenol (NP) and nonylphenol ethoxylates (NPE). More significantly, the RIA did not estimate the social benefits and costs of a regulatory option discussed in the preamble, a ban on endocrine disrupting compounds in approved products.

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[37] U.S. Bureau of Labor Statistics, May 2014 State Occupational Employment and Wage Estimates, http://www.bls.gov/oes/current/oes_ms.htm#11-0000.

[38] See for example, U.S. Office of Personnel Management, Federal Investigative Services Division, *White Paper: Support Services Contract Cost Benefit Analysis.*

Banning any compounds will have social costs and potentially social benefits. As discussed elsewhere in these comments, EPA has acknowledged in other rulemakings the loss of income and loss of productive capital from product bans. These costs must be included in the economic analysis of this option.

One notable option EPA lists is to prohibit materials containing endocrine disrupting compounds from the approved list. More broadly, EPA's proposed prohibition - without any stated criteria for the ban - raises significant market uncertainty. Without transparency into EPA's rationale for the prohibition, producers may decide not to pay for testing costs and risk disapproval, reducing the overall efficacy and variety of products available.

However, the social costs are more significant than the loss of net value in the oil spill response market. Bans by a government agency will cast a cloud over the public's perception of the health and safety of a chemical compound. States and companies maintain lists of "toxic" chemicals and have policies that discourage purchasing and use of chemicals on these lists.[39] By banning a substance in oil spill response products, it is more likely that the market for NP and NPE compounds will shrink throughout the overall economy.

Moreover, the incremental social benefits of the proposed NP and NPE ban are uncertain. The RIA did not quantify these benefits. There is reason to believe that any such social benefits will be small. EPA's own test data provides evidence that the proposed bans would have minimal, if any, social benefits. EPA conducted tests of eight dispersant compound-oil mixtures, some of which contained NPE, for their endocrine activity.[40] EPA found:

> None of the eight dispersants tested displayed biologically significant endocrine disrupting activity, with the exception of a weak response for two of the dispersants (Nokomis 3-F4 and ZI- 400) in one of the tests. This estrogenic result is likely not of biological significance. Cell death (degree the dispersant is toxic to living cells) was observed in some tests at concentrations above 10 parts per million. The endocrine and the cytotoxicity screening were conducted at dispersant concentrations from 0.001 parts per million up to 10,000 parts per million. None of the dispersants triggered cell death at the likely concentrations of dispersants expected in the Gulf.[41]

Therefore, although EPA's study had a small sample set, EPA's test data provides no evidence that these oil spill response compounds with NP and NPE pose any inherent hazard that would justify the social costs of a precautionary ban. The preamble does not provide quantified social benefit estimates to support a ban over other policy alternatives.

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[39] See, for example, Maine's "Chemicals of High Concern," at http://www.maine.gov/dep/safechem/highconcern/.

[40] Judson, R. S., Martin, M. T., Reif, D. M., Houck, K. A., Knudsen, T. B., Rotroff, D. M., Dix, D. J. (2010). *Analysis of Eight Oil Spill Dispersants Using Rapid, In Vitro Tests for Endocrine and Other Biological Activity.* Environmental Science & Technology, 44(15), 5979-5985. doi:10.1021/es102150z

[41] http://www.epa.gov/bpspill/dispersants-qanda.html#toxtest8. See also U.S. Environmental Protection Agency, *Toxicity of Louisiana Sweet Crude Oil (LSC) and chemical dispersed LSC to two Gulf of Mexico aquatic test species,* August 2010.

EPA failed to consider and to evaluate policy alternatives to its proposed ban. Under the Executive orders, EPA must evaluate available policy alternatives and select the ones in which the benefits justify the costs.[42] There are several policy alternatives EPA could choose and could evaluate besides a ban on NP and NPE compounds, such as imposing lesser restrictions or requirements. Such options could tailor the social costs more directly to any potential hazard than a product ban. Only through objective, transparent policy analysis of these alternatives can senior officials and the public weigh the options to decide upon the best policy.

2.3.1. **Estimated Social Costs**

We searched PubMED for published, peer-reviewed articles that found evidence of NP and NPE-containing oil spill response agents. The only study that specifically listed these compounds was EPA's 2010 work in response to the SONS.[43] It identified NP and NPE compounds in two listed dispersants, Nokomis 3-F4 and ZI-400. For the purpose of this estimate, we assume these products are subject to the proposal's ban.

Based on our evaluation, the manufacturers of these products are likely small businesses. To estimate the impact of the ban, we use a similar approach as in Section 1.2.1. The social costs are not permanent; the social value of the banned products is eventually replaced by substitutes or through greater sales of other dispersants. In EPA's testing, the most widely-used dispersant did not contain NP and NPE. The social costs, therefore, are limited to the immediate disruption in the market.

Since we do not know the actual sales of these dispersant products, we average the annual revenue from the three small business manufacturers of dispersant products given in the RIA. As done is Section 1.2.1, we use the value added of the chemical industry to estimate the added value from these products. The social cost of the ban is the lost value from these two products for a three year period.

There are several reasons this approach underestimates the likely social cost. First, medium and large companies may have their products banned also. While these companies may have resources to reformulate their products, there still will be social costs to switch to substitutes. Second, our estimate of two banned products comes from our search of the public, peer-reviewed literature. Given the controversy over dispersants during the SONS and EPA's proposed rule, companies have an incentive not to disclose voluntarily NP and NPE ingredients. Third, it is possible that NP and NPE compounds are used in other product types such as surface washing agents. Fourth, the manufacturers of the two dispersants that EPA identified as containing NP and NPE have similar products on the schedule. If these products also contain NP and NPE, they would also face bans under the proposal.

Finally, we do not estimate the social costs of a more sweeping ban on all EDC compounds. EPA's proposal is too vague for the public to understand its implications. First,

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[42] U.S. Office of Management and Budget, Circular A-4 Regulatory Analysis, September 2003, pg. 16.

[43] Judson RS, Martin MT, Reif DM, et al. Analysis of Eight Oil Spill Dispersants Using Rapid, In Vitro Tests for Endocrine and Other Biological Activity. *Environmental science & technology.* 2010; 44(15):5979-5985. doi:10.1021/es102150z.

EPA does not define what it means to be an EDC. Second, EPA does not state whether all compounded named as an EDC are banned as ingredients or whether *de minimis* amounts are permitted.

Since some of these same products may drop out of the market due to the new testing requirement, we structure our NP product ban cost estimate so as not to double count the product loss estimates already presented. In Section 1.2.1, one product is a dispersant. Our range is simply whether this product's loss is included in the $4 million product loss calculated in Section 1.2.1 or is an additional social cost.

Summary	NPV at 7%	Annualized Cost over 20 years at 7%
Product Loss Costs	$4,000,000-$7,300,000	$380,000-$720,000

2.3.2. Recommendation

The RIA must fully estimate the social costs and the social benefits of the proposal to ban NP and NPE compounds in listed products and the alternative to ban EDCs. To comply with the Executive orders and OMB guidance, EPA must also evaluate policy alternatives to banning compounds and select the one with the greatest net social benefits.

2.4. Expired Product Testing and/or Replacement Costs

EPA proposes that stockpiled products must be tested in order to be used after their expiration date. The RIA does not estimate the social costs of this requirement.

This provision has social costs and potentially social benefits. There are two costs: increased product testing costs and potentially the cost of more frequent product shipments to stockpile locations. The social benefits are potentially more effective products due to this requirement.

2.4.1. Estimated Social Costs

Over time organizations that stockpile oil response products will attempt to minimize the cost of this requirement through inventory management. They can change their ordering procedures to better match inventory to use. More significantly, they can shift sales of products past their official expiration date to other markets. Numerous oil spills and cleanups occur that do not involve Federal OSCs. Since many expiration dates are minimal (e.g., "at least two years"), buyers may be willing to accept response products with older shelf lives for a discount or because their spill response need is less. Vendors/organizations that stockpile will, over time, manage their inventories so that products with young shelf lives are reserved for any Subpart J needs and then, rather than retest to verify their continued use, are migrated to other markets.

This strategy can only work if the major stockpiled products have sufficiently long shelf lives. In the Attachment, the recommended shelf lives for each existing product are listed. We assign a shelf life of 20 years to products reporting unlimited shelf life.

Bioremediation products have the shortest average shelf life of less than three years. Dispersants have the longest average shelf life, with the most widely stockpiled dispersant having an unlimited shelf life. While products vary significantly, there are numerous products in each category with relatively long shelf lives to allow inventory management. To the degree there are effects, management of existing bioremediation products could be most vulnerable to the requirement for additional testing.

For these reasons, we model the social cost as a one-time event to shift management of existing inventories. We assume future purchases and sales will direct products with older shelf lives to cleanups outside National Contingency Plan jurisdiction. We also assume that some operators of existing stockpiles and inventories will decide it is more cost-effective to test rather than replace their existing inventory.[44] They may have quantities of the surface washing products with shorter shelf lives than the average nine year life-span of these products. Different stockpiles will have different products; therefore, the testing decision is based on the number of stockpile-product combinations. We assume that operators find 20 stockpile-product combinations where testing is more cost-effective than selling into other markets or discarding and replacing the product. Since dispersants have a much longer shelf live on average, we only assume four stockpile-product decisions to test. Table 2.2 presents the results based on these assumptions. This provision could have social costs of $1.7 million.

Table 2-2 Estimated Costs of Testing Expired Products

Product	Testing Cost	Number of Stockpiles-Products	Total Cost
Bioremediation Agent	$31,800	20	$1,270,000
Dispersant	$13,050	4	$52,200
Surface Washing Agent	$10,300	20	$206,000
Solidifier	$10,300	20	$206,000
Total			**$1,740,000**

In Section 2.1.1, we consider the social cost of managing stockpiles of existing products that are not approved in the post-regulatory scenario. We assume that OSRO and others manage their inventories of surface washing agents, sorbents, and other products to market them to non-NCP spill responses. In Section 5 we combine all of the provisions that require testing into one estimate so that the analysis makes consistent predictions of market dynamics after the rulemaking.

2.4.2. **Recommendation**

EPA must estimate the social benefits and social costs of this provision if it is included in the final rule. EPA should use current data on stockpile amounts and their expiration dates.

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[44] Or they will replace products in response to the rule up to the expected value of testing them to prove their efficacy. We use the testing cost as the upper limit of the cost to replace existing inventories.

2.5. RECOVERY OF AGENTS FROM ENVIRONMENT

In the proposal, EPA adds a regulatory requirement that responsible parties are obligated to recover certain oil spill response products from the environment. When stabilizers, surface washing agents, and sorbents are used, responsible parties must recover them when it is safe to do so. The RIA does not estimate any social benefits or social costs from this provision.

This requirement has social costs and potentially social benefits. For major spills, it is likely the regulation formalizes the likely site-specific orders by the OSC. By making it a regulatory requirement, the major change is that it subjects the responsible party to the full enforcement authorities under the Clean Water Act. The proposal reduces the government's administrative effort to levy fines and penalties.

The marginal increase in the threat of fines and penalties may change responsible party behavior. Responsible parties may put greater effort into recovery operations and respond to reports of agents in the environment after the spill for a longer period of time. More effort at recovery may then yield some environmental benefits on the margin. However, greater human activity - boats, motors, skimmers - in environmentally-sensitive areas may cause damage while recovering response products. The current framework - to take actions which have the greatest net environmental benefits - is more flexible and allows site-specific balancing of ecological, human safety, and response product use.

2.5.1. Estimated Social Costs

As a practical matter, this provision may not have any additional social costs for major Tier I, Tier II, or Tier III oil spills. On scene coordinators effectively order product recovery for these major spills. For larger spills, the greater level of government oversight in both the baseline and the post-regulation may be expected to lead to similar levels of responsible party activity. For smaller spills, the proposed regulatory requirement could increase social costs by diverting resources into product recovery, especially after the immediate spill response. It is difficult to estimate the additional costs in these site-specific decisions.

Since 2000, there have been on average 13 spills per year of between 5,000-10,000 gallons of oil products into U.S. navigable waters.[45] We assume that these spills are large enough that responsible parties use significant amounts of response products, but not so large that they trigger substantial government oversight.

We assume that the regulatory provision triggers an additional $10,000 in response costs per spill of this medium-to-large spill size. Since daily penalties under the Clean Water Act are up to $37,500 per day per violation, a responsible party may be willing to respond to reports of sorbents and other products in the environment after a spill rather than risk a penalty. They may be willing to spend much more than $10,000 per incident to avoid the fines. However, assuming an average per incident additional cost of $10,000, the net present value (at seven percent) social cost of this requirement is $1.7 million.

[45] United States Coast Guard, *Polluting Incidents In and Around U.S. Waters: A Spill/Release Compendium: 1969 – 2011*, December 2012.

2.5.2. **Recommendation**

EPA should articulate in any final rule the specific social benefits and social costs it believes will occur as a result of this provision. Specifically, EPA should explain the value of this requirement as a regulation as opposed to a site-specific/incident-specific decision that maximizes net environmental benefits.

SECTION 3. UNDERESTIMATED COSTS

3.1. MONITORING COSTS

The proposal requires responsible parties to carry out extensive monitoring of dispersant use, oil concentrations, and ecological effects in the event of a major oil spill where dispersants are used. The RIA estimates the cost of these monitoring requirements to be $500,000 per year for an average of one applicable major, off-shore oil spill per year.

The justification for the cost estimate in the RIA is two studies. However, these studies do not replicate the specific proposed requirements and therefore do not provide adequate justification for the RIA's estimate.

3.1.1. Estimated Social Costs

We build a bottom-up estimate of the social costs to monitor and to report the information listed in the proposed rule. We first make some assumptions concerning the duration of the spill. We assume the responsible party conducts active monitoring of the oil plume and dispersant use for 14 days, followed by 21 days of monitoring of the dissolved oil/dispersant mixture in the water column. Modeling of the oil movement in the water is carried out for 14 days; fluorescence monitoring occurs for the entire 35-day period.

Since dispersants are used, the oil spill is assumed to occur off shore, meaning boats are needed to obtain the water samples and to gather data for the modeling. Background samples are assumed to be gathered at four points upwind and downwind of the plume. In-plume measurements are assumed to be gathered at five points, with three different sampling points in the water column at each point. After the 14 day period, monitoring requirements for the next 21 days fall from five locations in the plume to four areas in the affected area. Background samples are still collected.

Field and test blanks are assumed to be analyzed for each background and plume collection point. The proposal also requires the responsible party to submit a quality assurance plan for the sampling and analysis.

Given the need for rapid decisions, the ecological characterization and risk assessment requirements are divided into two phases. For immediate decisions during the 14 day active response, experts gather available information from already-published studies and regional ecological evaluations. This study also sets the acute toxicity level from available data. Once the response moves to the 21-day monitoring of the ultimate dispersion, a more complete, written ecological characterization report is compiled.

The responsible party assigns 10 managerial and technical staff to manage, carry out, and to report compliance with the monitoring requirements during the 35-day event.

Based on this scenario, we gathered publicly-available price data from OSROs and commercial laboratories to build a social cost estimate. The Oil Spill Response Limited

organization has a global price list and cost data for their Florida-based response location.[46] Table 3-1 gives the principal data used in this cost estimate:

Table 3-1. Prices for Oil Spill Dispersant Use Modeling

Fluorescence Tracking[47]	659	GBP/day
Boat Rental[48]	400	GBP/day
Oil Modeling[49]	2,300	GBP/day
Heavy Metal Analysis[50]	350	$/sample
Volatile Organic Compounds and Benzene, Toluene, Ethylbenzene, and Xylenes[51]	250	$/sample
Total Petroleum Hydrocarbons[52]	150	$/sample
Other Parameters[53]	150	$/sample

Based on this scenario, the estimated monitoring costs are approximately $850,000 per spill. This value is substantially greater than the RIA estimate. This estimate does not include insurance costs, contingency costs, surcharges for rapid delivery, sample shipping costs, travel costs, or other logistical needs. Including these costs would increase the social costs of this provision.

Given the frequency of one spill per year, the net present value and annualized value of these social costs are given below.

Summary	NPV at 7%	Annualized Cost over 20 years at 7%
Monitoring Costs	$11,000,000	$1,000,000

[46] http://www.oilspillresponse.com/

[47] http://www.oilspillresponse.com/files/ScaleOfFees2015.pdf.

[48] Ibid

[49] http://www.oilspillresponse.com/files/ScaleOfFees2015.pdf.

[50] See for example, Price List from Water Testing Labs at http://www.wtlmd.com/wastewater-testing-pricing-maryland-md-va-dc-de.php.

[51] Ibid

[52] Ibid

[53] Ibid

3.1.2. Recommendation

EPA should use the available data from OSRO equipment price lists and laboratory sampling costs to build up a more complete cost estimate for all of the required parameters for dispersant modeling in the proposed rule. With a frequency of dispersant use of approximately once per year, there is sufficient existing data and markets to use market prices to estimate the social cost. EPA should also characterize plume size and expected monitoring requirements from past spill responses. Gathering this data will provide more support for a social cost estimate.

3.2. EPA Costs to Administer the Rule

The RIA underestimates the total resource cost for EPA to administer the rule because it fails to include the total compensation and overhead costs to employ Federal agency staff and it omits the time necessary for EPA to administer the new requirements. The RIA's approach does not comply with EPA's obligations under the Paperwork Reduction Act's implementing regulations (PRA).[54]

The RIA use BLS data from 2011 as estimates of the opportunity cost of government employees. There are several problems with this data:

- It is out of date. The BLS has compensation data available through September 2014.[55] Moreover, the General Services schedule of Federal wages for 2014 is also available as it determines EPA employees' paychecks.

- It underestimates total compensation. It is unclear whether the data the RIA uses is for salary and wages only or for total compensation. It appears that the RIA uses a labor cost of approximately $54 per hour for EPA employees.[56] The

[54] See 5 CFR 1320.3(a)(1):

(1) *Burden* means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal agency, including:

(i) Reviewing instructions;

(ii) Developing, acquiring, installing, and utilizing technology and systems for the purpose of collecting, validating, and verifying information;

(iii) Developing, acquiring, installing, and utilizing technology and systems for the purpose of processing and maintaining information;

(iv) Developing, acquiring, installing, and utilizing technology and systems for the purpose of disclosing and providing information;

(v) Adjusting the existing ways to comply with any previously applicable instructions and requirements;

(vi) Training personnel to be able to respond to a collection of information;

(vii) Searching data sources;

(viii) Completing and reviewing the collection of information; and

(ix) Transmitting, or otherwise disclosing the information.

[55] See the Employment Compensation Survey, http://www.bls.gov/ncs/tables.htm.

[56] Calculated from data in RIA, pg. 36.

RIA should use total compensation measures to account for Federal employee benefits such as pension, health care, disability insurance, and personal leave. This information is readily available in EPA budget documents, in OMB budget memoranda, and from the Office of Personnel and Management.

- The total resource costs for government services is more than the total compensation cost of labor. Government workers do not work in the open air. They need buildings, electricity, computers, telephones, water, and many other overhead costs. Estimating the overhead costs for government employment is a routine practice in Federal budgeting, in program evaluation, and for compliance with the Paperwork Reduction Act.[57]

Further, the RIA does not include the costs for EPA to administer certain provisions of the rule. In addition to the costs to participate in the RRT and AC meetings included in Section 2.2.1, the RIA fails to include the EPA resources necessary to remove a product from the listing schedule.

3.2.1. Estimated Social Costs

We estimate the social costs of EPA resources to oversee the proposed requirements. Although it is likely an underestimate, we retain the RIA's estimate of 26.5 hours for EPA staff to review each product application. Interestingly, the RIA estimates producers of existing products spend only 7.7 to 27.7 hours to submit the required testing data to EPA. Thus, by the RIA, EPA's review time is longer - up to three times longer - than the time needed to prepare the information. If this ratio is correct, EPA's review process could take over 100 hours. We also agree with the RIA's estimate that the same number of hours is needed when a manufacturer submits new testing data after a product has been reformulated.

However, the RIA assumes EPA spends only 2.5 hours reviewing resubmissions of data from applicants. Since EPA has only 90 days to review an application, it is likely to extend its review by asking applicants for additional information. It seems implausible that EPA would need less than 10 percent of its estimated total review time to review resubmitted data. We use an estimate of 20 hours. We also double the amount of time the RIA estimates to review an appeal of a product disapproval. We believe other divisions of EPA, including the Office of General Counsel, will support the Administrator's review of an appeal and a final Agency decision.

For the opportunity cost of EPA personnel time, we use the fully-loaded employment costs. In FY13, the median EPA employee salary was nearly $108,000, or nearly $55 per hour.[58] We apply OPM's benefit and overhead percentages to calculate a fully-loaded rate of

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[57] 5 CFR 1320.3(a)(1).

[58] U.S. Office of Personnel Management, *Salary Information for the Executive Branch Fiscal Year 2013*, April 2014.

$81.50 per hour.[59] This estimate is a slight underestimate of the likely median wage due to general schedule increases since FY13.

Using the post-regulation rate of existing product submissions and new product submissions, we calculate a net present value (at seven percent) of $0.81 million in social costs for EPA to administer the testing requirements.

3.2.2. Recommendation

The RIA should include costs of EPA to carry out all the proposal in its entirety. EPA should include the total compensation cost for government personnel and the overhead costs necessary to house and to equip these employees so that they can perform their new tasks under this proposed regulation. EPA must include these costs and the resources to oversee all of the provisions of the rule in subsequent analyses.

3.3. Testing and Product Listing Costs

The RIA underestimates the costs an organization expends to understand and to comply with this regulation. The RIA assumes essentially that one or two individuals are solitary actors that read, plan, and implement a regulation for a company. In reality, many employees and managers in an organization will be involved in a product's application.

In addition to underestimating the costs for producers, the RIA underestimates the costs to understand, to comply, and to submit product applications. For example, the RIA does not include these costs:

- Laboratory Personnel Understanding the Rule. The RIA does not include the cost for laboratory personnel either within the manufacturer or at a commercial lab to understand the new testing requirements.
- Legal Personnel Time. It seems implausible that a company would file an important submission to EPA without it undergoing legal review. The submission could determine the entire market for a product.
- Response Costs. Often EPA staff will seek clarifications from respondents on their data submissions to the agency. Seeking clarifications in lieu of outright denials/approvals conserves resources for both EPA and respondents. Oddly, the RIA includes EPA's cost to review these re-submissions, but not those of the respondents to prepare them.[60]

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[59] See for example, U.S. Office of Personnel Management, Federal Investigative Services Division, *White Paper: Support Services Contract Cost Benefit Analysis.*

[60] Even if the RIA estimates the full resource cost for the respondent to submit a "perfect" application that does not require clarification, the respondent is not in control of EPA staff comprehension of the submission and their ability to ask questions, triggering respondent costs.

3.3.1. Estimated Social Costs

In Table 3-2 below, we present alternative labor estimates for producers to comply with the rule that addresses the RIA's limitations. We include hours for all the provisions required of producers, including ones the RIA omits like the product label redesign.

Table 3-2. Estimated Skilled Labor Resources Producers Require to Comply with Proposal's Testing Requirements

(Hours)

	Labor Hours Needed		
	Managerial	Technical	Clerical
Hourly Compensation	$ 55.56	$ 55.56	$23.57
Understand Rule	4	8	2
Contract for Tests	2	16	4
Manage Tests	0	8	8
Prepare Documentation	4	40	16
Design Label	0.5	8	8
Legal Review	4	0	2
Revise Documentation	2	4	45
Respond/Follow up	4	16	8
Total (Hours)	20.5	100	93
Total ($) including overhead rate of 17 percent			$10,400

We include hours for essential tasks to prepare the required information. First, the producer must find and contract with an independent certified laboratory for the efficacy and toxicity testing. They must manage the outside laboratory's performance and review the results. In addition, the producer must prepare the written submission to EPA and follow up with any EPA questions.

For labor rates, we use the BLS Employer Cost for Employment Survey data for December 2014.[61] We use the same overhead rate as the RIA, 17 percent, and use the RIA's relative proportion of the application costs among dispersants, solidifiers, surface washing agents, and bioremediation agents. We use these labor costs for product testing in the multiple provisions in the proposal that require product testing.

[61] http://www.bls.gov/ncs/ect/sp/ececqrtn.pdf.

3.3.2. Recommendation

EPA should include all the costs to understand, to explain, and to incorporate the proposed rule into their organizations' operations. EPA is required to perform this analysis under the PRA regulations. In addition, from past applications, EPA should review whether, and if so, the scope of additional information requests it gave to applicants and include these costs in the any final rule. These costs must be assigned to the regulation.

3.4. Limitation To Tested Waters and Efficacy and Toxicity Testing Costs

In the proposal, EPA limits use of a product to the water characteristics of its toxicity and efficacy testing. Product data with just freshwater test data are limited to freshwater uses, for example. The proposed rule expands the number of efficacy tests for bioremediation agents and alters the efficacy test for dispersants. The proposed rule adds new toxicity tests for dispersants and freshwater/saltwater tests for bioremediation, solidifiers, surface washing agents, and other products.

The RIA makes a global assumption that producers chose just one testing environment, salt water or freshwater, and bear the costs for only one test protocol. Rather than chase market demand and maximize net profits, producers instead make their marketing decisions based on the testing cost. The RIA's assumption violates basic economic theory and thus underestimates social costs.

EPA's own data demonstrates this point. Producers list which of the current required toxicity and efficacy testing they have conducted. This information is available on the Subpart J schedule. Except for the bioremediation products, all other products list test data in both the reference saltwater and freshwater species. For bioremediation products, 27 products do not list any information; 21 report test data in both species. In other words, producers currently want to sell in both markets due to the demand for oil spill remediation in both waters. The rulemaking does not change this market demand.

3.4.1. Estimated Social Costs

Since producers currently market to oil spill response demands in both freshwater and saltwater environments, we assume existing and new product manufacturers will pay for the new efficacy and toxicity tests required for both environments. Using the RIA's testing costs, the total laboratory testing cost per product is listed in Table 3-3.

Table 3-3. Testing Costs by Product Type

Dispersants	$13,050
Bioremediation	$31,800
Solidifiers,	$10,300
Surface Washing	$10,300

We use these testing costs to estimate the application cost and the economic impact of the proposed rule. The labor and laboratory testing costs are combined and presented in Section 6.

3.4.2. Recommendation

Consumer demand will drive producers' decisions on marketing, not the testing requirements of the rule. EPA should align its economic analysis to observed producer decisions and thus expect increased testing costs rather than the estimates found in the RIA.

3.5. Retesting Whenever Chemical Composition Changes

In the proposal, producers would be required to retest its products and submit the results to EPA whenever they change the chemical compounds or their concentrations in an approved product. The proposal calls for comment on an option for allowing *de minimis* changes in concentrations or formulations, but proposes retesting for any change. The RIA assigns the same amount of cost to this requirement as it does for a new product application. For the reasons discussed in Section 3.3 above, the RIA underestimates social costs.

3.5.1. Estimated Social Costs

For a cost estimate, we assume that on average one product each year undergoes a change that triggers the requirement to retest. With more than 100 products and product lines on the Subpart J list, the RIA's assumption seems reasonable that approximately one product would undergo a change each year to trigger retesting.

Since we do not know which product type will undergo change, we take an average of the estimated testing costs for the four product types. Therefore, if one product triggers the retesting requirement per year, the net present value (at seven percent) of this proposed provision is $1.7 million/year.

3.5.2. Recommendation

EPA should articulate in any final rule the specific social benefits and social costs it believes will occur as a result of this provision. Specifically, EPA should explain the value of this requirement as opposed to a performance standard that makes manufacturers responsible to demonstrate that formulation changes do not affect toxicity or efficacy.

3.6. Product Label Redesign

In the proposed rule, applicants must submit a sample product label that includes the manufacture and expiration date, the storage conditions, and the mandatory disclaimer language. Producers must not only change the description on the label on the physical product, but also the description on any promotional material, websites, and other presentation forms. The RIA includes the social cost of submitting the sample label in its overall producer cost estimates.

EPA has estimated the social costs of mandatory labeling and labeling changes in multiple rulemakings.[62] The social costs include the one-time labor and capital costs to craft the new label design, any on-going incremental costs to produce the new label, and costs to digitize the information for electronic media.

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[62] See, for example, U.S. Environmental Protection Agency, *Final Technical Support Document, Fuel Economy Labeling of Motor Vehicles: Revisions to Improve Calculation of Fuel Economy Estimates*, EPA420-R-06-017, December 2006.

3.6.1. Estimated Social Costs

We include additional labor hours to account for the changes to a producer's website and marketing materials. Table 3-4 shows the labor costs for this requirement. We add $500 for each producer in capital and material costs to create the new label.

3.6.2. Recommendation

In any final rulemaking RIA, EPA should draw upon other EPA analyses to estimate the labor hours and capital cost requirements to redesign labels and marketing materials.

3.7. Accredited Laboratory Requirement

The proposed rule requires test data be generated from an accredited laboratory. In the baseline, companies could use any laboratory or generate the information in their own laboratories. While the RIA states that it gathered costs from laboratories to conduct the tests, it is unclear whether this cost information is from accredited labs.

3.7.1. Estimated Social Costs

If the RIA data is from accredited labs, then the costs of this requirement is included in the test costs used in the RIA. If it is not, then the RIA's costs for each test is likely underestimated.

3.7.2. Recommendation

In any final rule, the accompanying RIA should disclose the sources of its information so that policy officials and the public can evaluate the incremental social benefits and social costs of this provision as required by the Executive orders on regulatory review.

SECTION 4. THE RIA'S SOCIAL BENEFIT DESCRIPTION IS INACCURATE AND DOES NOT COMPLY WITH EPA'S REGULATORY ANALYSIS REQUIREMENTS

Fundamentally, the RIA fails to comply with the Executive orders on regulatory review because it does not quantify the potential social benefits either in dollars or in any other metric.[63]

Even more troubling, the RIA lists social benefits that are irrelevant to this rule and, if applicable at all, are actually social costs. The RIA lists qualitative benefits from avoiding oil spills such as lost tourism revenue and enjoyment. However, this rulemaking has the potential for aggravating the potential damages from oil spills. To the degree this rulemaking reduces chemical and biological agent availability and innovation, the nation will have less tools available to fight oil spill damage. A possible, but hopefully remote, outcome of this rule is that future oil spill damages would be more severe than they would be if the rule did not occur. Therefore, the potential social costs from oil spills should be considered, if at all, as a social cost of this rulemaking, not a benefit.

The RIA also does not quantify the marginal social benefits from each provision and each regulatory option. Under Circular A-4, agencies are required to estimate the marginal social costs and benefits for each regulatory provision.[64] Since this rulemaking proposes multiple changes to Subpart J, the public and policy officials cannot determine which provisions have net social benefits and which provision provides the most social benefits.

As discussed in Section 1, the other fundamental problem is that the RIA does not have a consistent baseline and post-regulatory alternative to allow a consistent measurement of social benefits. We present our recommended post-regulatory scenario in Section 5.

Recommendation. The RIA does not comply with the basic requirements of a social benefit estimate. First, it must define clearly what the social benefits are from this rulemaking and describe the real social goods that increase from the baseline to the post-regulation scenario. Second, an RIA for any final rulemaking must attempt to quantify the incremental amount of these social goods that can be attributed to this rulemaking and to the specific provisions of the rulemaking that will generate these social goods. Finally, EPA must use the established literature to value the gains, if any, in ecological services from the rulemaking.

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[63] OMB, Circular A-4, pg. 27.

[64] OMB, Circular A-4, pg. 7.

SECTION 5. TOTAL SOCIAL COSTS

5.1. POST-MARKET CONDITIONS

As discussed in Section 1, EPA's economic analysis guidelines emphasize the need for a clear and consistent market baseline and description of post-regulation market conditions. This guidance is especially relevant for this rulemaking because of the interaction of the requirements, the effect on regulated parties' behavior, and the ultimate social cost of the rulemaking.

This section describes a potential sequence of actions flowing from EPA's promulgation of the final rule. The social cost of these actions, and the time they occur, is the structure of our social cost estimates:

- In year 1, EPA promulgates the final rule.
- In year 1 and 2, existing products remain on the market. At the end of year 2, 13 existing products do not submit testing data due to high costs. The value of 13 comes from the results of the economic impact analysis in Section 6. Therefore, the number of existing submitted application is 13 less than the baseline. It is likely that these 13 products include the products banned due to the NP and NPE formulation ban.[65]
- Starting in year 1 and continuing, the rate of new product applications falls from 10 per year to 7 due to increased costs and market barriers
- In year 3, 13 new product applications are submitted to fill the baseline market demand.
- In years 1-3, 64 expired product applications come as suppliers adjust their inventory. We assume 24 in year 1 and 20 each in years 2 and 3.
- One new application appears each year for product reformulation.

[65] In other words, the social costs of the product loss from the banned products are estimated. However, we assume that for the one or two potential products subject to the ban, only one new product is added in the future.

Table 5-1. Pace of Product Applications

	Year						
	1	2	3	4	5	6	7
Baseline							
Existing Products	109						
Annual New Products	10	10	10	10	10	10	10
New Estimate							
Existing Products	59	27					
Expired Products	24	20	20				
Annual New Products/New Formulations	7	8	8	21	8	8	8
Total	**90**	**55**	**28**	**21**	**8**	**8**	**8**

5.2. ADDITIONAL SOCIAL COSTS

5.2.1. Additional Social Costs from this Analysis

Based on the information in Table 5-1, we can integrate the social cost estimates for the different provisions of the rule. Table 5-2 gives the net present value and annualized social costs for the provisions with estimates in this analysis. As in Table 5-1, the social cost for testing includes the costs for expired products, for new products, for retesting of existing products, and for impact of existing products dropping out of the market.

Table 5-2. Additional Social Costs of the Proposal

	NPV at 7% ($)	Annualized Cost over 20 years at 7% ($)
Product Loss Costs	4,000,000-7,300,000	380,000-720,000
Product Testing Costs	5,300,000[66]	500,000
Stranded Capital/Stockpile Value Loss	1,000,000-1,250,000	90,000-120,000
Label	180,000	20,000

[66] This number is the net present value of the weighted annual testing cost multiplied by the number of products per year that is given in Table 5-1. The weighted annual testing cost is that year's mix of dispersant, solidifiers, surface washing, and bioremediation products that submit testing information. For existing products, the each yearly mix of different product types is proportional to the number of each type on Subpart J and the number of each type subtracted/added to the additional testing cost. As discussed in Table 2-2, different product types also have a different frequency of expired product testing. This proportion thus changes the number of each product type tested per year and thus the weighted annual testing cost.

Recovery Costs	1,700,000	160,000
Monitoring Costs	11,000,000	1,000,000
Preauthorization Costs	200,000	20,000
EPA Costs	800,000	80,000

Totals[67]	24,000,000-27,000,000	2,300,000 --2,600,000

5.2.2. Other Costs from the RIA

The RIA included social costs estimates for other proposed requirements that are not re-estimated in this analysis. The RIA estimates the costs for some sorbent manufacturers to submit technical data to be considered on a Sorbent Product List. The RIA estimates the annualized cost to be approximately $15,000. Adding this provision to the costs in Table 5-2 does not materially change the social cost estimate.

[67] Throughout this report, totals and summaries may be different due to rounding. Reflecting the likely precision of these estimates, figures are presented to two significant digits or less.

SECTION 6. THE RIA UNDERESTIMATES THE SMALL BUSINESS IMPACT

The RIA's methodology underestimates the rule's economic impact on small businesses. The proposed rulemaking may have a substantial effect on a significant number of small businesses in the oil spill response product market. EPA should evaluate whether it must comply the procedural and other analytic requirements of the Small Business Regulatory Enforcement Fairness Act (SBREFA).

EPA's methodology underestimates the economic impact in two principal ways. First, as discussed above, it underestimates the direct labor and capital costs to comply with the rule. Second, it underestimates the cost of capital in at least two ways: (1) by assuming owners can finance testing requirements over a longer time period than is likely; and, (2) by underestimating the cost of capital for small businesses. Each of these issues is discussed below.

First, firms producing existing listed products only have two years to reapply and to resubmit the newly-required information. Yet, the RIA annualizes a firm's costs over a 20 year period. It is highly unlikely that a small business could borrow funds over a 20 year period for a product that may only have a limited market for two years. Nor would rational business owners with high opportunity costs for capital tie up their capital for such a long time period. A more realistic financing period is two years.

Second, as EPA's economic guidelines state for economic impact analyses, EPA should use the private cost of capital for small businesses.[68] EPA uses the social cost of capital established by OMB. However, due to the increased loss risk, capital lending institutions or capital investors charge higher effective interest rates for loans to small businesses. The Federal Reserve conducts routine survey of small business lending conditions.[69] In recent months, they have found completed, Small Business Administration-backed small business loans at an interest rate of between 5.1 and 5.6 percent. However, the average effective borrowing rate across all small businesses is much higher. As firms report, if they do not qualify for commercial credit, they use instruments with higher interest rates such as credit cards, trade credit, or debt consolidation. The average effective borrowing rate across all small businesses and all credit needs is substantially greater than seven percent.

We present an alternative estimate of economic impact to small business as an illustration of how large the impacts are likely to be. Table 6-1 shows the testing and the labor costs for existing producers to comply with the proposed rule using different discount rates and annualization periods.

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[68] EPA, *Guidelines*, pg. 9-16.

[69] Federal Reserve Banks of New York, Atlanta, Cleveland and Philadelphia, *Joint Small Business Credit Survey Report, 2014*, February 2015.

Table 6-1. Annualized Compliance Costs for New Testing Requirements, RIA Estimate and Revised Estimate

	Testing Costs	Estimated Labor Costs	RIA's Total Costs	Estimated Total Costs	Annualized at 7% over 20 Years	Annualized at 7% over 5 Years	Annualized at 7% over 2 Years
Dispersants	$13,050	$10,398	$14,240	$23,448	$1,344	$3,473	$12,969
Bioremediation	$31,800	$7,728	$14,042	$39,528	$1,325	$3,425	$21,863
Solidifiers,	$10,300	$6,412	$5,986	$16,712	$565	$1,460	$9,243
Surface Washing	$10,300	$5,077	$5,880	$15,377	$555	$1,434	$8,505

Table 6-2 replicates Exhibit 7-1 of the RIA to present the testing and application costs as a percentage of the firm's annual sales. For economic impact analyses, if a regulation's cost to a firm is three percent of its revenue or more, the general conclusion is that the firm is at risk of closure.[70] The RIA reviewed 30 of the 35 small businesses and found that none exceeded the three percent significant impact threshold. However, using a more realistic financing period and more realistic estimates of costs, 43 percent (13/30) of the firms would face compliance costs greater than three percent of their annual 2011 sales. We recognize that Table 3 uses 2014 values for labor costs and 2011 data for revenue. In any final rule, EPA should update the revenue estimates and recalculate the economic impact using costs and financing options that reflect market conditions.

[70] U.S. Small Business Administration, *Guide for Government Agencies How to Comply with the Regulatory Flexibility Act*, May 2012. See U.S. EPA, *Final Guidance for EPA Rulewriters: Regulatory Flexibility Act as amended by the Small Business Regulatory Enforcement Fairness Act*, November 2006.

Table 6-2. Economic Impact on Small Businesses

Company	Number of Employees	Annual Revenue	Product Type	Annualized Cost	Pct of Revenue
1	1	$ 62,000	Solidifiers	$9,243	14.9%
2	1	$ 1,000,000	Surface Washing Agent	$8,505	0.9%
3	1	$ 160,000	Surface Washing Agent	$8,505	5.3%
4	2	$ 2,500,000	Bioremediation Agent	$21,863	0.9%
5	2	$ 120,000	Solidifiers	$9,243	7.7%
6	2	$ 200,000	Solidifiers	$9,243	4.6%
7	2	$ 30,000	Solidifiers	$9,243	30.8%
8	2	$ 10,000,000	Solidifiers	$9,243	0.1%
9	2	$ 120,000	Surface Washing Agent	$8,505	7.1%
10	3	$ 280,000	Surface Washing Agent	$8,505	3.0%
11	3	$ 1,300,000	Surface Washing Agent	$8,505	0.7%
12	3	$ 150,000	Surface Washing Agent	$8,505	5.7%
13	3	$ 5,000,000	Surface Washing Agent	$8,505	0.2%
14	4	$ 559,000	Bioremediation Agent	$21,863	3.9%
15	4	$ 1,000,000	Dispersant(2) & Surface Washing Agent	$34,442.26	3.4%
16	4	$ 730,000	Solidifiers	$9,243	1.3%
17	4	$ 500,000	Surface Washing Agent	$8,505	1.7%
18	4	$ 187,000	Surface Washing Agent	$8,505	4.5%
19	4	$ 350,000	Surface Washing Agent	$8,505	2.4%
20	5	$ 5,000,000	Bioremediation Agent	$21,863	0.4%
21	5	$ 290,000	Bioremediation Agent	$21,863	7.5%
22	6	$ 120,000	Bioremediation Agent	$21,863	18.2%
23	6	$ 15,000,000	Dispersant(1) & Surface Washing Agent	$21,473	0.1%
24	6	$ 500,000	Surface Washing Agent	$8,505	1.7%
25	6	$ 5,000,000	Surface Washing Agent	$8,505	0.2%
26	7	$ 660,000	Surface Washing Agent	$8,505	1.3%
27	8	$ 3,054,214	Bioremediation Agent	$21,863	0.7%
28	8	$ 2,500,000	Surface Washing Agent	$8,505	0.3%
29	8	$ 1,500,000	Surface Washing Agent	$8,505	0.6%
30	9	$ 2,500,000	Surface Washing Agent	$8,505	0.3%

ATTACHMENT: SHELF LIFE OF LISTED AGENTS[71]

Product	Type	Shelf Life	Assumed Shelf Life (years)
AGROREMED (see SPILLREMED (MARINE)®)	Bioremediation Agent	one year	1
BILGEREMED (see SPILLREMED (MARINE)®)	Bioremediation Agent	one year	1
HYDROREMED (see SPILLREMED (MARINE)®)	Bioremediation Agent	one year	1
INIPOL EAP 22	Bioremediation Agent	one year	1
MUNOX SR®	Bioremediation Agent	over one year when stored at temperatures from 35°F to 95°F	1
OILCLEAN w/ACTIVATOR (see PRO-ACT)	Bioremediation Agent	one year	1
PRISTINE SEA II	Bioremediation Agent	As a dry bacterial blend, the shelf life is 1 year, and as a liquid bacterial mixture, the shelf life is 6 months	1
PRO-ACT	Bioremediation Agent	One year	1
SPILLREMED (INDUSTRIAL)	Bioremediation Agent	one year	1
VAPORREMED (see SPILLREMED (MARINE)®)	Bioremediation Agent	one year	1
BILGE CLEAR (see S-200)	Bioremediation Agent	1½ years if kept in the unopened original container	1.5
NANOBITE (see S-200)	Bioremediation Agent	1½ years	1.5
OIL GONE EASY (see S-200)	Bioremediation Agent	1½ years if kept in the unopened original container	1.5
S-200	Bioremediation Agent	1½ years	1.5
S-200C (see S-200)	Bioremediation Agent	1½ years	1.5

[71] Information compiled from individual products listed on schedule as of March, 2015. http://www2.epa.gov/emergency-response/alphabetical-list-ncp-product-schedule-products-available-use-during-oil-spill.

S-200 OIL CLEAN (see S-200)	Bioremediation Agent	1½ years	1.5
S-200 OIL GONE (see S-200)	Bioremediation Agent	1½ years	1.5
SHEENCLEAN (see S-200)	Bioremediation Agent	1½ years	1.5
Z-11 (see S-200)	Bioremediation Agent	1½ years	1.5
BIO-REGEN HYDROCARBON (see SOIL RX)	Bioremediation Agent	Shelf life exceeds 2 years when properly stored in the unopened original container	2
BIOREM-2000 OIL DIGESTER™	Bioremediation Agent	Two years when stored within the storage temperature range in the original container	2
BIOREM-2000 SC (see BIOREM-2000 OIL DIGESTER™)	Bioremediation Agent	Two years when stored within the storage temperature range in the original container	2
JE1058BS	Bioremediation Agent	2 years if stored in a cool dry area	2
REMEDIADE™	Bioremediation Agent	unopened is 2 years	2
SOIL RX	Bioremediation Agent	two years	2
SP 7010 (see REMEDIADE™)	Bioremediation Agent	two years	2
SUMP SAFE BIO-RECLAIM	Bioremediation Agent	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	2
SYSTEM E.T. 20 (formerly MCW.B 20)	Bioremediation Agent	2 years if maintained at 4ºC (39ºF)	2
WASTE AWAY®	Bioremediation Agent	Two years	2
WMI-2000	Bioremediation Agent	2 years if stored at ambient temperatures	2
B&S INDUSTRIAL (see STEP ONE)	Bioremediation Agent	Over 3 years	3
BET BIOPETRO (formerly BET BIOPETRO HEAVY)	Bioremediation Agent	More than 3 years in unopened original shipping container, stored in cool dry area	3
BIOWORLD BIOREMEDIATION HYDROCARBON TREATMENT PRODUCTS	Bioremediation Agent	exceeds 3 years when stored properly in cool, dry place out of direct sun light	3
SHAMANTRA BIO (see SHAMANTRA GREEN)	Bioremediation Agent	3 years when stored in sealed silos, polydrums, poly bags or totes	3
SHAMANTRA GREEN	Bioremediation Agent	3 years when stored in sealed silos, polydrums, poly bags or totes	3
STEP ONE	Bioremediation Agent	Over 3 years	3

VB591™, VB997™, BINUTRIX®	Bioremediation Agent	three years	3
ACT TERRA FIRMA	Bioremediation Agent	If kept in a sealed container with desiccant bag the shelf life is 5 years	5
ACT-TF (see ACT TERRA FIRMA)	Bioremediation Agent	If kept in a sealed container with desiccant bag the shelf life is 5 years	5
DRYLET™ MB BIOREMEDIATION	Bioremediation Agent	Minimum 5 years, with proper storage, in original packaging. Freezingdoes not harm shelf life; however, extreme heat (over 180°F) for long periods of time can shorten shelf life	5
DUALZORB®	Bioremediation Agent	unopened product is 5 years if not exposed toweather or direct sunlight	5
ERGOFIT MICRO MIX AQUA	Bioremediation Agent	5 years	5
LAND AND SEA RESTORATION	Bioremediation Agent	More than 5 years in unopened original shipping container, store in a cool, dry place	5
MICROSORB SC (see OPPENHEIMER FORMULA)	Bioremediation Agent	5 years	5
OIL SPILL EATER II	Bioremediation Agent	5 years	5
OPPENHEIMER FORMULA	Bioremediation Agent	5 years	5
The OPPENHEIMER FORMULA I (see OPPENHEIMER FORMULA)	Bioremediation Agent	5 year	5
TRAILZORB (see DUALZORB®)	Bioremediation Agent	5 years if not exposed to weather or direct sunlight	5
WHITZORB (see DUALZORB®)	Bioremediation Agent	unopened product is 5 years if not exposed to weather ordirect sunlight	5
MICRO-BLAZE®	Bioremediation Agent	Minimum 10 years	10
SUPERSPERSE™ WAO2500	Dispersant	one year	1
MARINE D-BLUE CLEAN™	Dispersant	2 years, if unopened	2
NOKOMIS 3-AA	Dispersant	two years	2
FFT-SOLUTION™	Dispersant	5 years	5
NEOS AB3000	Dispersant	five years	5
MARE CLEAN 200 (formerly MARE CLEAN 505)	Dispersant	10 years when stored indoors	10
NOKOMIS 3-F4	Dispersant	15 years or more if stored correctly in plastic drums	15
ACCELL CLEAN® DWD	Dispersant	unopened drums of ACCELL CLEAN® DWD is unlimited	20

BIODISPERS (formerly PETROBIODISPERS)	Dispersant	unlimited	20
COREXIT® EC9500A (formerly COREXIT 9500)	Dispersant	The shelf life of unopened drums of COREXIT® EC9500A is unlimited	20
COREXIT® EC9500B	Dispersant	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	20
COREXIT® EC9527A (formerly COREXIT 9527)	Dispersant	The shelf life of unopened drums of COREXIT® EC9580A is unlimited	20
DISPERSIT SPC 1000™	Dispersant	The shelf life of Dispersit SPC 1000™ is unlimited in unopened containers	20
FINASOL® OSR 52	Dispersant	unlimited when the containers remain capped and sealed	20
JD-109	Dispersant	unlimited	20
JD-2000™	Dispersant	unlimited	20
SAF-RON GOLD	Dispersant	unlimited in unopened containers	20
SEA BRAT #4	Dispersant	Indefinite when stored properly	20
SEACARE ECOSPERSE 52 (see FINASOL® OSR 52)	Dispersant	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	20
SEACARE E.P.A. (see DISPERSIT SPC 1000™)	Dispersant	unlimited in unopened containers	20
SF-GOLD DISPERSANT (see SAF-RON GOLD)	Dispersant	unlimited	20
ZI-400	Dispersant	Unlimited in sealed polydrums of totes	20
ZI-400 OIL SPILL DISPERSANT (see ZI-400)	Dispersant	Unlimited in sealed polydrums of totes	20
MARI-ZYME (see ZYME-FLOW)	Miscellaneous Oil Spill Control Agent – MOSCA	1 year minimum	1
UNITED 658 PETRO-ZYME (see ZYME-FLOW)	Miscellaneous Oil Spill Control Agent – MOSCA	1 year minimum	1
ZYME-FLOW	Miscellaneous Oil Spill Control Agent – MOSCA	1 year minimum	1
ZYME-TREAT (see ZYME-FLOW)	Miscellaneous Oil Spill Control Agent – MOSCA	1 year minimum	1
PX 700™	Miscellaneous Oil Spill Control Agent – MOSCA	Two years	2

NORSOREX® APX	Miscellaneous Oil Spill Control Agent – MOSCA	3 years from date of production	3
ALSOCUP	Miscellaneous Oil Spill Control Agent – MOSCA	five years	5
CIAGENT (formerly CI AGENT, CHEAP INSURANCE, and PETRO-CAPTURE)	Miscellaneous Oil Spill Control Agent – MOSCA	5 years, if stored in cool dry area, away from direct sunlight	5
ELASTOL	Miscellaneous Oil Spill Control Agent – MOSCA	5 years when stored at temperatures below 150ºF	5
LIQUID ELASTOL (see ELASTOL)	Miscellaneous Oil Spill Control Agent – MOSCA	5 years when stored at temperatures below 150ºF	5
OIL BOND®	Miscellaneous Oil Spill Control Agent – MOSCA	5 years	5
OPFLEX®	Miscellaneous Oil Spill Control Agent – MOSCA	5 years	5
SEPARATE (see ELASTOL)	Miscellaneous Oil Spill Control Agent – MOSCA	5 years	5
PES-51	Miscellaneous Oil Spill Control Agent – MOSCA	6 years (unopened drum), 1 year (opened drum)	6
GELCO 200	Miscellaneous Oil Spill Control Agent – MOSCA	10 years when stored in dry, cool area out of sunlight	10
AQUA N-CAP™ POLYMER (see OIL SOLUTIONS POWDER)	Miscellaneous Oil Spill Control Agent – MOSCA	Not Limited	20
OIL SOLUTIONS POWDER	Miscellaneous Oil Spill Control Agent – MOSCA	Not limited	20
RAPIDGRAB 2000™	Miscellaneous Oil Spill Control Agent – MOSCA	unlimited	20
WASTE-SET #3200®	Miscellaneous Oil Spill Control Agent – MOSCA	unlimited	20
WASTE-SET #3400®	Miscellaneous Oil Spill Control Agent – MOSCA	unlimited	20
SILTECH OP-40	Surface Collecting Agent	three years	3
THICKSLICK 6535	Surface Collecting Agent	three years	3
CLEAN SPLIT (see SPLIT DECISION SC)	Surface Washing Agent	one year	1

DUO-SPLIT (see SPLIT DECISION SC)	Surface Washing Agent	one year	1
GREEN TECHNOLOGIES SOLUTIONS-OIL RECOVERY (GTS-OR)	Surface Washing Agent	One year minimum when stored between 50°F and 100°F	1
SPLIT DECISION SC (formerly SPLIT DECISION)	Surface Washing Agent	one year	1
TXCHEM HE-1000™	Surface Washing Agent	One year in a sealed container	1
AQUACLEAN	Surface Washing Agent	18 months if stored between 50ºF and 104ºF, and away from acids	1.5
BIOGRASS® EXTRA	Surface Washing Agent	Two years minimum	2
CN-110	Surface Washing Agent	2 years	2
CORIBA 700 ER (see CORIBA 700 SR)	Surface Washing Agent	Two years unopened minimum	2
CORIBA 700 OS (see CORIBA 700 SR)	Surface Washing Agent	Two years unopened minimum	2
CORIBA 700 SR	Surface Washing Agent	Two years unopened minimum	2
CORIBA 713 ER (see CORIBA 713 SR)	Surface Washing Agent	Two years unopened minimum	2
CORIBA 713 OS (see CORIBA 713 SR)	Surface Washing Agent	Two years unopened minimum	2
CORIBA 713 SR	Surface Washing Agent	Two years unopened minimum	2
DE-SOLV-IT CLEAN AWAY APC SUPER CONCENTRATE	Surface Washing Agent	Two years in sealed drums or totes	2
DE-SOLV-IT INDUSTRIAL FORMULA	Surface Washing Agent	Two years in sealed polydrums or totes	2
DO-ALL #18	Surface Washing Agent	at least two years	2
ECOVOOM-MARINE (see JEP-MARINE CLEAN)	Surface Washing Agent	minimum 2 years	2
ETHOS CLEAN	Surface Washing Agent	2 years in a sealed (unopened) container (tote, drum, pail) as delivered. 1 year in an opened container).	2
JEP-MARINE CLEAN	Surface Washing Agent	minimum 2 years	2
MARINE GREEN CLEAN™	Surface Washing Agent	2 years	2
MARINE GREEN CLEAN PLUS™	Surface Washing Agent	2 years	2

NONTOX™	Surface Washing Agent	minimum of two years	2
OSR-10	Surface Washing Agent	2 years in a sealed (unopened) container (tote, drum, pail)	2
PROCLEANS	Surface Washing Agent	2 years at recommended temperatures if unopened	2
SOC 10	Surface Washing Agent	two years	2
SUPERALL #38 (see TOPSALL #30)	Surface Washing Agent	two years	2
TOPSALL #30	Surface Washing Agent	two years	2
TULXA	Surface Washing Agent	Two years if stored in dry, fresh environment	2
EO ALL PURPOSE SOAP-LAVENDER	Surface Washing Agent	Three years	3
FIREMAN'S BRAND SPILLCLEAN (see SPILLCLEAN)	Surface Washing Agent	3 years. Avoid extreme heat and store in a dry, cool area	3
SPILLCLEAN or SPILLCLEAN ["Concentrate"]	Surface Washing Agent	three years	3
CLEAN GREEN	Surface Washing Agent	5 years in sealed polydrums or totes	5
CLEANGREEN® PLANET WASH (see CLEAN GREEN)	Surface Washing Agent	5 years in sealed polydrums or totes	5
MICRO CLEAN (see NATURE'S WAY HS)	Surface Washing Agent	five years	5
NATURE'S WAY HS	Surface Washing Agent	five years	5
NATURE'S WAY PC (see NATURE'S WAY HS)	Surface Washing Agent	five years	5
POWERCLEAN (see NATURE'S WAY HS)	Surface Washing Agent	five years	5
PREMIER 99	Surface Washing Agent	5 years	5
SAFE KLEEN	Surface Washing Agent	Five years if stored in tightly closed containers under dry conditions within temperature range	5
SC-1000™	Surface Washing Agent	Minimum of 5 years	5
SIMPLE GREEN®2013 Reformulation	Surface Washing Agent	five years	5
G-CLEAN OSC-1809	Surface Washing Agent	Five to ten years in sealed polydrums or totes	7.5
OIL SPILL CLEANUP (see G-CLEAN OSC-1809)	Surface Washing Agent	Five to ten years in sealed polydrums or totes	7.5
DYNAMIC GREEN™	Surface Washing Agent	6-10 years in sealed poly drums or totes	8

BIOSOLVE® HYDROCARBON MITIGATION™ AGENT	Surface Washing Agent	10+ year shelf life if unopened	10
CYTOSOL	Surface Washing Agent	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 wil grow bacteria if water condensation accumulates in the container.	10
F-500	Surface Washing Agent	15 years when stored between 35ºF - 130ºF in unopened containers	15
NOKOMIS 5-W	Surface Washing Agent	15 years or more if stored correctly in plastic drums	15
ACCELL CLEAN® SWA	Surface Washing Agent	unopened drums of ACCELL CLEAN® SWA is unlimited	20
ALL PURPOSE CLEANER & REMEDIATOR (see GREEN BEAST™ OIL SPILL & ODOR REMEDIATOR)	Surface Washing Agent	Unlimited in sealed polydrums or totes	20
AWAN PRA OIL FIELD SOLUTION™ (see EPA OIL FIELD SOLUTION™)	Surface Washing Agent	Unlimited in sealed polydrums or totes (as delivered). Avoid direct sunlight.	20
BG-CLEAN™ 401	Surface Washing Agent	unlimited	20
COREXIT® EC9580A (formerly COREXIT 9580 SHORELINE CLEANER)	Surface Washing Agent	unlimited	20
ENVIROCLEAN (formerly ENVIRO CLEAN 165)	Surface Washing Agent	Unlimited if unopened	20
ENVIRONMENTAL 1 CRUDE OIL CLEANER	Surface Washing Agent	Unlimited in sealed polydrums or totes	20
ENVIRONMENTAL 1 WASHING AGENT (see ENVIRONMENTAL 1 CRUDE OIL CLEANER)	Surface Washing Agent	Unlimited in sealed polydrums or totes	20
EPA OIL FIELD SOLUTION™	Surface Washing Agent	Unlimited in sealed polydrums or totes (as delivered). Avoid direct sunlight.	20
E-SAFE©	Surface Washing Agent	Unlimited if left in unopened containers stored at 40º - 110ºF and away from direct sunlight	20
GLOBAL ENVIRONMENTAL CLEANER™ (see EPA OIL FIELD SOLUTION™)	Surface Washing Agent	Unlimited in sealed polydrums or totes	20
GOLD CREW SW	Surface Washing Agent	20 years (unopened)	20

GREEN BEAST OIL SPILL & ODOR REMEDIATOR	Surface Washing Agent	Unlimited in sealed polydrums or totes	20
GREEN BEAST WASHING AGENT (see GREEN BEAST OIL SPILL & ODOR REMEDIATOR	Surface Washing Agent	Unlimited in sealed polydrums or totes	20
HYDRO-CLEAN™ (see EPA OIL FIELD SOLUTION™)	Surface Washing Agent	Unlimited in sealed polydrums or totes	20
NALE-IT	Surface Washing Agent	Indefinite	20
NATURAMA G3 A-5	Surface Washing Agent	unlimited	20
PETRO-CLEAN	Surface Washing Agent	Indefinite when stored properly	20
PETRO-GREEN ADP-7	Surface Washing Agent	indefinite	20
PETROMAX PSC 3	Surface Washing Agent	Unlimited when stored in unopened, sealed 5 gallon containers, 55 gallon drums, polydrums, and totes	20
PETROMAX SOIL CLEANING AND WASHING AGENT (see PETROMAX PSC 3)	Surface Washing Agent	Unlimited when stored in unopened, sealed 5 gallon containers, 55 gallon drums, polydrums, and totes	20
PETROTECH 25	Surface Washing Agent	unlimited shelf-life when maintained in the factory sealed containers and stored within the prescribed temperature limits	20
SANDKLENE 950	Surface Washing Agent	Unlimited in sealed drums or totes	20
SHEEN-MAGIC©	Surface Washing Agent	Unlimited if left in unopened containers stored at 40º - 110ºF and away from direct sunlight	20
SIMPLE GREEN®	Surface Washing Agent	unlimited	20
VERU-SOLVE™ MARINE 200 HP	Surface Washing Agent	Indefinite, product will not degrade over time	20

To: Matthiessen, Craig[Matthiessen.Craig@epa.gov]
From: Cohen, Nancy
Sent: Fri 1/9/2015 10:46:16 PM
Subject: FW: Subpart J Product Manufacturers - a few contacts for outreach

Craig: I called a few folks to get their email addresses and the updates and a correction follow so you'll have for future use. Mathy wanted to leave the call at this and if they or OEM feel a broader call for a larger group is necessary we should do so on Tuesday.

Thanks, nancy

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

Email: peter.egan@total.com
Web Site: www.totalspecialfluids.com
(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: jim.lynn@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: stephenosei@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

E-mail: cchapin@simplegreen.com
(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: Deitz, Randy[Deitz.Randy@epa.gov]; Hull, George[Hull.George@epa.gov]
Cc: Perry, Dale[Perry.Dale@epa.gov]; Cohen, Nancy[Cohen.Nancy@epa.gov]; Bassler, Rachel[Bassler.Rachel@epa.gov]; Matthiessen, Craig[Matthiessen.Craig@epa.gov]; Sonich-Mullin, Cynthia[Sonich-Mullin.Cynthia@epa.gov]
From: Tulis, Dana
Sent: Mon 4/20/2015 3:32:56 PM
Subject: RE: Inquiry on Use of Corexit in BP Oil Spill

I really think we need to use the NRDA statement, but this was really irresponsible reporting.

From: Deitz, Randy
Sent: Monday, April 20, 2015 11:28 AM
To: Hull, George; Tulis, Dana
Cc: Perry, Dale; Cohen, Nancy; Bassler, Rachel; Matthiessen, Craig; Sonich-Mullin, Cynthia
Subject: RE: Inquiry on Use of Corexit in BP Oil Spill

Pretty shameful saying certain studies have "suggested" that dispersant use "may" have been more harmful than the oil. I suspect that there are a whole bunch of studies that indicate that the use of dispersants has not resulted in the wholesale damage to the Gulf or to response personnel predicted by activists. It would be great if we could reference findings like that if we have them.

Randy Deitz

Attorney Advisor

Office of Solid Waste and Emergency Response

(202) 566-0197

From: Hull, George
Sent: Monday, April 20, 2015 11:02 AM
To: Tulis, Dana
Cc: Perry, Dale; Cohen, Nancy; Deitz, Randy; Bassler, Rachel; Matthiessen, Craig; Sonich-

Mullin, Cynthia
Subject: RE: Inquiry on Use of Corexit in BP Oil Spill

I was hoping to respond by essentially taking excerpts from some of these Q+A, but I think I need to enlist OEM's help with a statement. Here is an LA Times article that ran today. Note the fourth paragraph from the end. – George

The L.A. Times on the Deepwater Horizon anniversary. Note the reference to EPA, fourth paragraph from the bottom.

http://www.latimes.com/opinion/op-ed/la-oe-0420-smith-bp-20150420-story.html

Another oil rig caught fire in the Gulf of Mexico early this month. Orange flames shot high into the night sky; the local news reported that multiple workers were missing; and residents of the beleaguered Gulf Coast waited for the other shoe to drop.

On that occasion, our worst environmental fears were not realized. The deadly April 1 explosion on a rig belonging to Mexico's state-run Pemex oil company did not lead to a massive oil spill. But it served as a reminder that, five years after the April 20, 2010, Deepwater Horizon rig explosion, the government has done far too little to prevent another disaster.

In the months and days after the accident, which killed 11 workers and triggered a spill of more than 4 million barrels of crude oil, President Obama said all the right things. In June 2010, he addressed the nation on the BP spill and said his administration would take steps to "ensure that a disaster like this does not happen again."

But Congress — controlled by Republican lawmakers indebted to their Big Oil campaign contributors — still has not enacted the offshore-drilling safety measures recommended by the president's Oil Spill Commission. It has not given strong regulatory powers to the agency that replaced the scandal-scarred Minerals Management Service. And it has not raised the ridiculously low cap of $75 million for corporate liability on major spills.

Congress has also failed to make money available for an oil-spill research fund. A proposed "safety institute" hasn't materialized. Neither has the new training center for federal regulators, meant to help them carry out more rigorous inspections of offshore rigs.

The Obama administration, for its part, has been a lot more aggressive about awarding new leases than developing stricter regulations for blowout preventers similar to the one that failed aboard the Deepwater Horizon.

New rules weren't proposed until this month, and although they are clearly a step in the right direction, they don't change the bigger picture. Indeed, the rules, which aim to upgrade oil-rig technology, took so long that some environmentalists worry they'll soon be out of date. On balance, the culture of safety for offshore drilling has not substantially improved since April 2010.

Lax government standards for highly toxic dispersants are yet another problem. In 2010, BP sprayed 1.8 million pounds of Corexit onto the surface of the gulf to make the oil slicks disappear. Since then, a string of scientific studies has suggested that exposure to Corexit may have been more damaging to the health of cleanup workers and marine life than the initial exposure to spilled oil.

Despite these damning reports, the U.S. Environmental Protection Agency refuses to follow the lead of Britain, which banned use of the dispersant because of the risks to workers. That means the next time a large spill occurs in the gulf — or other areas where the Obama administration has proposed expanded offshore drilling, including a large swath of the Atlantic coastline — cleanup crews could make the same toxic, avoidable mistake.

But the truth is that the next time officials have to consider spraying Corexit, it will already be too late to save the gulf, which has not fully recovered from the BP disaster. A second spill probably would ruin the ecology of this precious national resource for good.

On the fifth anniversary of the Deepwater Horizon accident, workers continue to clean up tar balls and giant tar mats of weathered BP oil along beaches from Louisiana to Florida. Black crude still clogs the edges of our ever-shrinking wetlands. A recent report by the National Wildlife Federation chronicled significant health damage to some 20 species of marine plants and birds, while people who took part in 2010 cleanup efforts struggle with headaches, nausea and other symptoms.

Can you imagine what would happen if an additional 4 million or 5 million barrels were dumped on top of this environmental catastrophe? The BP spill should have inspired Congress and the Obama administration to more rapidly enact the strictest offshore drilling regulations in the world, and to freeze new exploration until new technologies came online. Instead, five years later, the Gulf of Mexico is as vulnerable to accident as ever.

Stuart H. Smith is a New Orleans-based environmental attorney and author of "Crude Justice" and "What You Should Know About the New Environmental Attack on America."

From: Tulis, Dana
Sent: Monday, April 20, 2015 10:23 AM
To: Hull, George
Cc: Perry, Dale; Cohen, Nancy; Deitz, Randy; Bassler, Rachel; Matthiessen, Craig; Sonich-Mullin, Cynthia
Subject: Re: Inquiry on Use of Corexit in BP Oil Spill

Yup, just like I said :)

Dana S. Tulis

Deputy Office Director

Office of Emergency Management

US EPA

202-564-7938

On Apr 20, 2015, at 10:21 AM, "Hull, George" <Hull.George@epa.gov> wrote:

Just found this in the Q+A on Phase II toxicity testing on 8 dispersants:

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 no more or less toxic than the other available alternatives.

From: Tulis, Dana
Sent: Monday, April 20, 2015 10:19 AM
To: Hull, George
Cc: Perry, Dale; Cohen, Nancy; Deitz, Randy; Bassler, Rachel; Matthiessen, Craig; Sonich-Mullin, Cynthia
Subject: Re: Inquiry on Use of Corexit in BP Oil Spill

We should have the results of EPA's study on the BP site. ORD's NHSRC was the lead. The reporters statement is not true there were all found to be about the same in toxicity.

Dana S. Tulis

Deputy Office Director

Office of Emergency Management

US EPA

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On Apr 20, 2015, at 10:15 AM, "Hull, George" <Hull.George@epa.gov> wrote:

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From: Perry, Dale
Sent: Thursday, April 16, 2015 10:39 AM
To: Hull, George; Tulis, Dana
Cc: Cohen, Nancy; Deitz, Randy; Bassler, Rachel
Subject: RE: Inquiry on Use of Corexit in BP Oil Spill

You might also point them to this page as well that details all of the directives we issues to BP.

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

Basically, EPA and the Coast Guard approved the use of Corexit and then monitored BP's activities and amended them as necessary.

The EPA and the U.S. Coast Guard have authorized BP to use dispersants underwater, at the source of the Deepwater Horizon leak. Subsea dispersant application has been in use since May 15, 2010. While BP pursues the use of subsurface dispersants, the federal government reviews its effectiveness and

impact on the environment daily; EPA specifically monitors the water and air for dispersant and its potential impacts through a rigorous monitoring program. Below is EPA's directive to BP, including the monitoring plan that the company must adhere to in order to ensure the protection of the environment. The Federal Government reserves the right to discontinue the use of this dispersant method if negative impacts on the environment outweigh the benefits, and the Coast Guard's Federal On-Scene Coordinator has the authority to make daily decisions regarding any request by BP to adjust the use of dispersant.

Dale H. Perry, Ph.D.

Science Advisor to the Office of Public Affairs

1200 Pennsylvania Ave. N.W., Mail Code 1701A

Washington, D.C., 20460

Office: 202-564-7338

Cell: 202-380-6517

From: Hull, George
Sent: Thursday, April 16, 2015 10:31 AM
To: Tulis, Dana
Cc: Perry, Dale; Cohen, Nancy; Deitz, Randy; Bassler, Rachel
Subject: Inquiry on Use of Corexit in BP Oil Spill

I have an inquiry from a reporter writing for the New Orleans Environmental News Examiner, which is a web based publication. Here are her questions: 1)How did BP work together with the US EPA in dispersing the Corexit? 2) If BP did work with EPA, who approved and at what point was it agreed that we would work together? She would like a response this week. Thanks,

George Hull

Office of Media Relations

U.S. EPA

Tel. 202-564-0790

To: Hull, George[Hull.George@epa.gov]
Cc: Perry, Dale[Perry.Dale@epa.gov]; Cohen, Nancy[Cohen.Nancy@epa.gov]; Deitz, Randy[Deitz.Randy@epa.gov]; Bassler, Rachel[Bassler.Rachel@epa.gov]; Matthiessen, Craig[Matthiessen.Craig@epa.gov]; Sonich-Mullin, Cynthia[Sonich-Mullin.Cynthia@epa.gov]
From: Tulis, Dana
Sent: Mon 4/20/2015 2:22:52 PM
Subject: Re: Inquiry on Use of Corexit in BP Oil Spill

Yup, just like I said :)

Dana S. Tulis
Deputy Office Director
Office of Emergency Management
US EPA
202-564-7938

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George Hull

Office of Media Relations

U.S. EPA

Tel. 202-564-0790

To: Conmy, Robyn[Conmy.Robyn@epa.gov]; Wilson, Gregory[Wilson.Gregory@epa.gov]; Matthiessen, Craig[Matthiessen.Craig@epa.gov]; Principe, Vanessa[Principe.Vanessa@epa.gov]
From: Barron, Mace
Sent: Tue 4/14/2015 1:10:09 PM
Subject: RE: FYI - : BP dispersant toxic

Robyn, thank you for the paper!

I just scanned the paper and did not think much of it (ie, I would have rejected it after a more thorough review if provided to me as part of the journal for peer review process):

*The dispersant concentrations were very high and the coral did not exhibit a clear dose-response.

*The lack of oil toxicity may be due to their exposure methods: rather than the typical approach of high oil loading then testing the WAF, they appeared to do a higher energy WAF and then test that, possibly resulting in the oil re-coalescing at the surface.

*They also added dispersant after the oil WAF was prepared, which is not standard practice.

*I also wondered about the relevancy of their shipboard exposures of coral from a cold, dark, high pressure environment.

But this was just initial impressions. My guess is they were deep water biologists playing toxicologist for their first time.

If you guys need a comprehensive review, just let me know and I will go through it carefully.

Mace

From: Conmy, Robyn
Sent: Monday, April 13, 2015 1:20 PM
To: Wilson, Gregory; Matthiessen, Craig; Barron, Mace; Principe, Vanessa
Subject: RE: FYI - : BP dispersant toxic

Here's the paper. Keep in mind that it was just accepted online and there is a disclaimer that edits still may occur prior to the print release.

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Robyn N. Conmy, Ph.D.

Research Ecologist

USEPA/NRMRL/LRPCD

26 West MLK Drive

Cincinnati, Ohio 45268

513-569-7090 (office)

727-692-5333 (mobile)

conmy.robyn@epa.gov

From: Wilson, Gregory
Sent: Monday, April 13, 2015 1:55 PM
To: Conmy, Robyn; Matthiessen, Craig; Barron, Mace; Principe, Vanessa
Subject: RE: FYI - : BP dispersant toxic

Just for everyone's reference, this is the EPA website I use to request articles:
http://intranet.epa.gov/hqchem/forms/article.html

Usually takes a couple of days....

From: Conmy, Robyn
Sent: Monday, April 13, 2015 1:51 PM
To: Matthiessen, Craig; Barron, Mace; Wilson, Gregory; Principe, Vanessa
Subject: RE: FYI - : BP dispersant toxic

If you hold off for an hour, I am getting the paper from some academic connections....

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26 West MLK Drive

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conmy.robyn@epa.gov

From: Matthiessen, Craig
Sent: Monday, April 13, 2015 1:46 PM
To: Barron, Mace; Wilson, Gregory; Principe, Vanessa; Conmy, Robyn
Subject: RE: FYI - : BP dispersant toxic

Hi, Mace;

Here is a link to the Oceans article: http://www.eenews.net/stories/1060016566

And a link to the study paper:
http://www.sciencedirect.com/science/article/pii/S0967064515000740

Looks like you'd have to purchase it. However, the EPA library system may be able to get it.

And I forgot Michael retired. Thanks - Craig

From: Barron, Mace
Sent: Monday, April 13, 2015 1:38 PM
To: Matthiessen, Craig; Wilson, Gregory; Principe, Vanessa; Conmy, Robyn
Subject: Re: FYI - : BP dispersant toxic

Hi Craig: I read the summary below and the abstract, but don't have access to the paper.

Should I request through interlibrary loan from our librarian, or do you have a copy?

PS: Michael is retired, so I took him off this email.

Mace

From: Matthiessen, Craig
Sent: Monday, April 13, 2015 12:31 PM
To: Wilson, Gregory; Principe, Vanessa; Conmy, Robyn; Barron, Mace; Hemmer, Michael
Subject: FW: FYI - : BP dispersant toxic

Any thoughts? Thanks - Craig

From: Nichols, Nick
Sent: Monday, April 13, 2015 10:16 AM
To: Matthiessen, Craig; Oliveira, Beatriz; DeHaven, Leigh; Gioffre, Patricia; Howard, MarkW; Swackhammer, J-Troy
Subject: FYI - : BP dispersant toxic

FYI

OCEANS:

Gulf spill cleanup dispersant more toxic to coral than oil -- study

Katherine Ling, E&E reporter

Published: Friday, April 10, 2015

The chemical dispersant used to break down the oil spilled in the 2010 Deepwater Horizon accident in the Gulf of Mexico is more toxic to coral than the oil, according to a study released on the eve of the fifth anniversary of the disaster.

The accident marked the first time that a dispersant was used below the ocean surface during an oil spill in addition to the traditional surface use. Almost 2 million gallons of the dispersant Corexit 9500A -- with slightly less than half released underwater -- was used to emulsify the around 5 million barrels of crude oil that poured out due to the rig explosion.

When exposed to the chemical dispersant, three species of cold-water coral showed "more severe health declines" at lower concentrations than the same species exposed to a mixture of oil and dispersant and to just oil, according to findings by scientists from Temple University and Pennsylvania State University. The oil-dispersant mixture was also more toxic than just oil, the team found.

Its **study** was published online in the journal *Deep-Sea Research II*.

The scientists became interested in the experiment after observing post-spill that several damaged Gulf coral populations were coated with a dark-colored wool-like slime that was found to contain oil from the spill and residues from the dispersants.

"We wanted to know if the damages that had been witnessed could have been caused by the oil, the dispersant itself, or a combination of both," Danielle DeLeo, a Temple doctoral student who was the study's lead author, said in a statement.

"We know that the corals in the Gulf were exposed to all of these different combinations, so we have been trying to determine the toxicity of the oil and the dispersants, and see what their impact would be on the corals," she said.

The corals may have a higher tolerance for the oil because they have adapted to natural seeps of oil over time in their environment, the team noted. The study also said that despite the results, "it is unclear whether short-term exposures to oil and dispersant have long-term effects," that the matter would require further study, and that long-term oil exposure could have significant sub-lethal impacts.

"Applying the dispersants at depth was a grand experiment being conducted in real-time," Erik Cordes, an associate professor of biology at Temple, said in a statement. He has been studying Gulf of Mexico coral communities for more than a decade.

He added: "It was a desire to immediately do something about the oil coming out of the well, but they really didn't know what was going to happen as a result."

The team concluded that to improve future oil spill response efforts, "alternative methods of oil cleanup are needed and caution should be used when applying oil dispersants at depth, as it may induce further stress and damage to deep-sea ecosystems."

The study was funded by the Gulf of Mexico Research Initiative, an independent agency BP PLC funded at $500 million for 10 years in the wake of the Deepwater Horizon disaster that explores the impacts of oil spills and dispersants on local ecosystems, as well as developing improved spill mitigation, oil and gas detection, and other technologies.

Another recent study from the University of Alabama, Birmingham, found that the Corexit 9500A dispersant can damage respiratory cells of humans and animals. But a study by U.S. EPA in 2010 found the dispersant-oil combination isn't worse for shrimp, fish and other sea creatures than oil alone already is.

EPA announced a proposal to update regulations for the use of dispersants earlier this year. The plan would provide a new, well-tested and peer-reviewed laboratory method for gauging the effectiveness of products in different environments and an aquatic toxicity threshold to ensure qualifying products offer "greater performance at less environmental impact" (***Greenwire***, Jan. 13).

To: Conmy, Robyn[Conmy.Robyn@epa.gov]; Matthiessen, Craig[Matthiessen.Craig@epa.gov]; Barron, Mace[Barron.Mace@epa.gov]; Principe, Vanessa[Principe.Vanessa@epa.gov]
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Sent: Mon 4/13/2015 5:55:28 PM
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To: Wilson, Gregory; Principe, Vanessa; Conmy, Robyn; Barron, Mace; Hemmer, Michael
Subject: FW: FYI - : BP dispersant toxic

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From: Nichols, Nick
Sent: Monday, April 13, 2015 10:16 AM
To: Matthiessen, Craig; Oliveira, Beatriz; DeHaven, Leigh; Gioffre, Patricia; Howard, MarkW; Swackhammer, J-Troy
Subject: FYI - : BP dispersant toxic

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Its study was published online in the journal *Deep-Sea Research II*.

The scientists became interested in the experiment after observing post-spill that several damaged Gulf coral populations were coated with a dark-colored wool-like slime that was found to contain oil from the spill and residues from the dispersants.

"We wanted to know if the damages that had been witnessed could have been caused by the oil, the dispersant itself, or a combination of both," Danielle DeLeo, a Temple doctoral student who was the study's lead author, said in a statement.

"We know that the corals in the Gulf were exposed to all of these different combinations, so we have been trying to determine the toxicity of the oil and the dispersants, and see what their impact would be on the corals," she said.

The corals may have a higher tolerance for the oil because they have adapted to natural seeps of oil over time in their environment, the team noted. The study also said that despite the results, "it is unclear whether short-term exposures to oil and dispersant have long-term effects," that the matter would require further study, and that long-term oil exposure could have significant sub-lethal impacts.

"Applying the dispersants at depth was a grand experiment being conducted in real-time," Erik Cordes, an associate professor of biology at Temple, said in a statement. He has been studying Gulf of Mexico coral communities for more than a decade.

He added: "It was a desire to immediately do something about the oil coming out of the well, but they really didn't know what was going to happen as a result."

The team concluded that to improve future oil spill response efforts, "alternative methods of oil cleanup are needed and caution should be used when applying oil dispersants at depth, as it may induce further stress and damage to deep-sea ecosystems."

The study was funded by the Gulf of Mexico Research Initiative, an independent agency BP PLC funded at $500 million for 10 years in the wake of the Deepwater Horizon disaster that explores the impacts of oil spills and dispersants on local ecosystems, as well as developing improved spill mitigation, oil and gas detection, and other technologies.

Another recent study from the University of Alabama, Birmingham, found that the Corexit 9500A dispersant can damage respiratory cells of humans and animals. But a study by U.S. EPA in 2010 found the dispersant-oil combination isn't worse for shrimp, fish and other sea creatures than oil alone already is.

EPA announced a proposal to update regulations for the use of dispersants earlier this year. The plan would provide a new, well-tested and peer-reviewed laboratory method for gauging the effectiveness of products in different environments and an aquatic toxicity threshold to ensure qualifying products offer "greater performance at less environmental impact" (***Greenwire***, Jan. 13).

To: Matthiessen, Craig[Matthiessen.Craig@epa.gov]; Barron, Mace[Barron.Mace@epa.gov]; Wilson, Gregory[Wilson.Gregory@epa.gov]; Principe, Vanessa[Principe.Vanessa@epa.gov]
From: Conmy, Robyn
Sent: Mon 4/13/2015 5:51:19 PM
Subject: RE: FYI - : BP dispersant toxic

If you hold off for an hour, I am getting the paper from some academic connections....

<>/<>/<>/<>/<>/<>/<>/<>/<>/<>/<>/<>/<>/<>/<>/<>

Robyn N. Conmy, Ph.D.

Research Ecologist

USEPA/NRMRL/LRPCD

26 West MLK Drive

Cincinnati, Ohio 45268

513-569-7090 (office)

727-692-5333 (mobile)

conmy.robyn@epa.gov

From: Matthiessen, Craig
Sent: Monday, April 13, 2015 1:46 PM
To: Barron, Mace; Wilson, Gregory; Principe, Vanessa; Conmy, Robyn
Subject: RE: FYI - : BP dispersant toxic

Hi, Mace;

Here is a link to the Oceans article: http://www.eenews.net/stories/1060016566

And a link to the study paper:
http://www.sciencedirect.com/science/article/pii/S0967064515000740

Looks like you'd have to purchase it. However, the EPA library system may be able to get it.

And I forgot Michael retired. Thanks - Craig

From: Barron, Mace
Sent: Monday, April 13, 2015 1:38 PM
To: Matthiessen, Craig; Wilson, Gregory; Principe, Vanessa; Conmy, Robyn
Subject: Re: FYI - : BP dispersant toxic

Hi Craig: I read the summary below and the abstract, but don't have access to the paper.

Should I request through interlibrary loan from our librarian, or do you have a copy?

PS: Michael is retired, so I took him off this email.

Mace

From: Matthiessen, Craig
Sent: Monday, April 13, 2015 12:31 PM
To: Wilson, Gregory; Principe, Vanessa; Conmy, Robyn; Barron, Mace; Hemmer, Michael
Subject: FW: FYI - : BP dispersant toxic

Any thoughts? Thanks - Craig

From: Nichols, Nick
Sent: Monday, April 13, 2015 10:16 AM
To: Matthiessen, Craig; Oliveira, Beatriz; DeHaven, Leigh; Gioffre, Patricia; Howard, MarkW; Swackhammer, J-Troy
Subject: FYI - : BP dispersant toxic

FYI

OCEANS:

Gulf spill cleanup dispersant more toxic to coral than oil -- study

Katherine Ling, E&E reporter

Published: Friday, April 10, 2015

The chemical dispersant used to break down the oil spilled in the 2010 Deepwater Horizon accident in the Gulf of Mexico is more toxic to coral than the oil, according to a study released on the eve of the fifth anniversary of the disaster.

The accident marked the first time that a dispersant was used below the ocean surface during an oil spill in addition to the traditional surface use. Almost 2 million gallons of the dispersant Corexit 9500A -- with slightly less than half released underwater -- was used to emulsify the around 5 million barrels of crude oil that poured out due to the rig explosion.

When exposed to the chemical dispersant, three species of cold-water coral showed "more severe health declines" at lower concentrations than the same species exposed to a mixture of oil and dispersant and to just oil, according to findings by scientists from Temple University and Pennsylvania State University. The oil-dispersant mixture was also more toxic than just oil, the team found.

Its study was published online in the journal *Deep-Sea Research II*.

The scientists became interested in the experiment after observing post-spill that several damaged Gulf coral populations were coated with a dark-colored wool-like slime that was found to contain oil from the spill and residues from the dispersants.

"We wanted to know if the damages that had been witnessed could have been caused by the oil, the dispersant itself, or a combination of both," Danielle DeLeo, a Temple doctoral student who was the study's lead author, said in a statement.

"We know that the corals in the Gulf were exposed to all of these different combinations, so we have been trying to determine the toxicity of the oil and the dispersants, and see what their impact would be on the corals," she said.

The corals may have a higher tolerance for the oil because they have adapted to natural seeps of oil over time in their environment, the team noted. The study also said that despite the results, "it is unclear whether short-term exposures to oil and dispersant have long-term effects," that the matter would require further study, and that long-term

oil exposure could have significant sub-lethal impacts.

"Applying the dispersants at depth was a grand experiment being conducted in real-time," Erik Cordes, an associate professor of biology at Temple, said in a statement. He has been studying Gulf of Mexico coral communities for more than a decade.

He added: "It was a desire to immediately do something about the oil coming out of the well, but they really didn't know what was going to happen as a result."

The team concluded that to improve future oil spill response efforts, "alternative methods of oil cleanup are needed and caution should be used when applying oil dispersants at depth, as it may induce further stress and damage to deep-sea ecosystems."

The study was funded by the Gulf of Mexico Research Initiative, an independent agency BP PLC funded at $500 million for 10 years in the wake of the Deepwater Horizon disaster that explores the impacts of oil spills and dispersants on local ecosystems, as well as developing improved spill mitigation, oil and gas detection, and other technologies.

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EPA announced a proposal to update regulations for the use of dispersants earlier this year. The plan would provide a new, well-tested and peer-reviewed laboratory method for gauging the effectiveness of products in different environments and an aquatic toxicity threshold to ensure qualifying products offer "greater performance at less environmental impact" (***Greenwire***, Jan. 13).

To: Cheatham, Reggie[cheatham.reggie@epa.gov]; Tulis, Dana[Tulis.Dana@epa.gov]; Matthiessen, Craig[Matthiessen.Craig@epa.gov]
From: Brooks, Becky
Sent: Thur 10/1/2015 12:03:47 PM
Subject: FW: SCG is formally requesting a meeting with Mathy Stanislaus in Washington
EPA failure to communicate EPA's path of direct action to eliminate direct threat to GOM coastal region as well as correction of human error incidence within EPA policy.
Two direct items requiring direct action: (1) Compliance with SCG 9/4/2014 FOIA request and (2) request for face to face meeting between SCG and EPA Administrator

Please see the meeting request below from Mr. David Fakouri. He called the front office yesterday regarding the status of his request. What is OEM's recommendation regarding this request for a meeting? Thanks. Becky

Becky Brooks

Special Assistant

Office of Solid Waste and Emergency Response

U.S. Environmental Protection Agency

ph. 202-566-2762

From: David Fakouri
Sent: Tuesday, September 15, 2015 9:47 AM
To: 'stanislaus.mathy@epa.gov' <stanislaus.mathy@epa.gov>
Cc: 'mccarthy.gina@epa.gov' <mccarthy.gina@epa.gov>; 'elkins.arthur@EPA.gov' <elkins.arthur@EPA.gov>; 'williamcassidy@gmail.com' <williamcassidy@gmail.com>; 'kyle_ruckert@vitter.senate.gov' <kyle_ruckert@vitter.senate.gov>; 'david_doss@vitter.senate.gov' <david_doss@vitter.senate.gov>; 'luke.letlow@mail.house.gov' <luke.letlow@mail.house.gov>; 'terri.fish@mail.house.gov' <terri.fish@mail.house.gov>; 'dana.gartzke@mail.house.gov' <dana.gartzke@mail.house.gov>; 'Paul.sawyer@mail.house.gov' <Paul.sawyer@mail.house.gov>; Robreno, Andrew (Andrew.Robreno@mail.house.gov) <Andrew.Robreno@mail.house.gov>; 'virgil.miller@mail.house.gov' <virgil.miller@mail.house.gov>; 'charles.henry@mail.house.gov' <charles.henry@mail.house.gov>
Subject: SCG is formally requesting a meeting with Mathy Stanislaus in Washington

9/15/15

Mr. Mathy Stanislaus

US EPA Assistant Administrator

Office of Solid Waste and Emergency Response (OSWER)

Dear Assistant Administrator Stanislaus,

SCG's (Strategic Consulting Group, LLC) strategic economist, David Fakouri would like to secure a direct meeting with you in Washington DC, anytime within the next 10 days. This meeting would of course be predicated both by your schedule and Mr. Fakouri's travel arrangements from Baton Rouge to DC. Once this meeting is established, SCG would like to invite members of the Louisiana Federal delegation (as allowed by EPA) to sit in SCGs meeting with EPA Assistant Administrator Stanislaus (who is officially recognized to be in charge of EPA Superfund site clean ups (OSWER)).

•□□□□□□□□ Understanding that SCG's sent historical letters to EPA thru congressional mail (two in 2010) requiring transparent accurate answers from US EPA regarding the perceived risk or threat to human health which SCG initial consequential damage research revealed to possibly exist resulting from any human allowed exposure to chemically dispersed crude oil environmental contamination involving the chemical presence of 2butoxyethanol. Understanding that the 2010 DWH incident response resulted in EPA allowing 2butoxyethanol conscious introduction into the water environment of the GOM (3203 tons) to specifically interface with crude oil as component of the utilized chemical dispersants by BP. SCG historical questions and concerns reflected in the attached letter were appropriate requiring a transparent scientifically accurate response from EPA to specifically answer SCG direct questions. **(SCG LEF letter to the Administration and cabinet secretaries via congressional channels 12/10/10, of which you personally responded to behalf of EPA on 4/14/11.**

•□□□□□□□□ EPA subsequent response failures to provide SCG with best available scientific information that was known to exist to EPA, in accordance with the clearly defined purpose; forced SCG to perform extensive micro research to transparently explain how it was possible for coastal zone resident's blood become contaminated from environmental exposure to the dispersed crude oil contamination. Two direct letters from SCG sent to federal authority (EPA) resulted in two EPA responses; one from Dana Tulis in 2010 and one from you Mr. Stanislaus in 2011. Both of these EPA initial responses regarding SCGs toxicity concerns specific to 2butoxythenaol exposure to humans, directed SCG to review EPA monitor data for answers. At a time when EPA officials knew fully that EPA monitors were intentionally not allowed to sample for the increased environmental presence of 2butoxyethanol during the 2010 DWH incidence response according to Mr. Matthiessen 2012 disclosure to SCG. Moreover, SCG had to prove to Mr. Matthiessen in 2012 that indeed 2butoxyethanol was carcinogenic to human. Of which was very disturbing understanding the NIOSH authored ICHEM CICADS 10 document for 2butoxyethanal confirming 2botoxyethanol is toxic to humans**. See page item D; on page 3, of the attached SCG 3/1/15 (Confidential data) Adverse Human Health Realities Resulting from Indirect and Direct Allowed Human Exposure Chemically Dispersed Crude Oil Contamination.**

•□□□□□□□□ EPA's response failures and subsequent direct dialog with EPA officially appointed liaison contact to SCG justifiably established the precedence which compelled SCG to require to research and prove to EPA that

indeed the 2010 DWH dispersed crude oil contaminations exposure to humans directly impacted human health and threatened human depilation for the region over time as human persistent exposure would result in adverse human health and shortened life. Of which validated the warning of Dr. Mike Harbut to SCG depicted in the 3/1/15 attached document **(see item F, page 10).**

o The unexplained indifferent behavior exhibited by EPA to this issue is also showcased in SCG's most recent 23.5 months of dialog with SCG, regarding SCG threat assessment presentment on 9/20/2013 with confirmation on 11/7/2013 directly presented to Gina McCarthy. Subsequent direct dialog with EPA administrators office regarding the dispersed crude oil contamination situation requiring detoxification mitigation in order to prevent greater incidence of adverse human health from resulting from the public prolonged persistent allowed re exposure to the chemically dispersed crude oil contamination resulting from the 2010 DWH incident response involving the use of NCP listed Corexit dispersant technologies both containing the synthetic solvent 2butoxyethanol and DOSS components. If indeed SCG efforts with EPA resulted SCG mistakenly communicating to the administrator rather than the assistant administrator, this letter request is attempting to rectify SCG honest mistake.

Mr. Stanislaus, as you are officially the EPA assistant Administrator in charge of all US EPA superfund clean-up sites (OWSER), specifically the 2010 DWH accident discharge site. SCG feels that a direct meeting is required for human health reasons as well as the GOM's region's economic survivability and future. Understanding the 2010 subsea fissuring which has now become a subsea crater; delivering methane and crude oil into the GOM waters in significant uncontrollable volumes. (As this issue has been officially classified as natural seeps this explanation is not logical as the discharge occurred at the time of the accident (subsea explosion), if it been a natural seep occurring prior to the accident. DOI would not have issued drilling permits in the region, due to the regions instability.) SCG sole reason for bringing this issue to the discussion is the increased contamination threat to the regions civilian population. Of which magnifies justifying SCG persistent efforts with legal federal and state authority on the dispersed crude oil contamination issue threat to human health.

•□□□□□□□□ The health and safety of the GOM coastal zone communities must be discussed and addressed. SCG's presented research to EPA explains fully how dispersed crude oil contamination exposure to humans is not the same as natural crude oil exposure to humans. Due to the introduction and presence of the man-made synthetic solvent 2butoxyethanol (as a component of the dispersant technology, which EPA allowed to be introduced into the GOM environment).

SCG's recent discovery of OSWER directives require a 5 year review of EPA superfund sites to determine if the superfund sites pose any threat to public health. **AS we are presently in the 5 year window, understanding what SCG's officially presented research to EPA confirmed in 2013. Therefore it is advisable for both SCG and EPA to constructively meet and openly discuss the dispersed crude oil contamination threat issue SCG's research confirmed.** It is clearly documented that SCG has made similar meeting request with EPA administrator McCarthy without success. The only possible logical reason for SCG not receiving the meetings SCG requested, could possibly be due the fact that SCG should have requested the meeting with you (Mr. Stanislaus) directly instead of Ms. McCarthy. If indeed this has been the problem, Mr. Stanislaus, please allow the requested meeting to timely occur between the EPA and SCG, directly resulting with EPA approving immediate direct affirmative action to do what is necessary to protect public health by making sure the GOM coastal zone region is detoxified. This action will allow SCG to suspend SCG's present efforts having to make public presentment in conjunction with final presentment to congressional oversight. SCG sincerely hopes that the outcome of this meeting will result in EPA doing what EPA is responsible to do with respect to EPA's mission.

The urgency of the situation in the GOM coastal zone is best represented in SCG 3/1/2015 attached document **(SCG/LEF confidential data) Adverse human health realities resulting from indirect and direct allowed human exposure to chemically dispersed crude oil contamination).** This document inserts the disclosure reality that EPA intentionally did not allow EPA monitors to sample for the increased environmental presence of 2butoxyethanaol as a component of the utilized chemical dispersants. Whereas the vapors containing micelles of dispersed crude oil directly passed from the GOM environment via Gulf breezes inland exposing all inland civilian populations recognized conservatively living, working and recreating with the first inland 75 miles from the GOM coastline.

•□□□□□□□□ During our meeting I would like for us to collectively engage in direct discussions regarding the direct removal of the environmentally trapped toxic dispersed crude oil confirmed direct threat to human public health proven to EPA by SCG in 2013. Where SCG over the last 23.5 months has confirmed to EPA Administrator how dispersed crude oil directly passes from the environment thru human skin directly into human blood and circulatory systems medically and scientifically to be a confirmed threat to human public health in the GOM coastal zone region.

•□□□□□□□□ SCG would also be making formal request for settlement of SCG's 9/20/2013 initial presentment billing to EPA, and will also be delivering SCG's final close out billing invoice for post presentment communication efforts for the dispersed crude oil contamination threat situation to US EPA Administrator(legal federal authority), EPA OIG, State of Louisiana legal governing authority officials, State of Mississippi Officials and Louisiana coastal Zone Parish leadership officials including EPA OIG and preparation for presentment to congressional oversight officials as necessary predicated on the outcome of the forthcoming requested meeting with OSWER leadership officials.

•□□□□□□□□ Attached and listed below in order are actual copies of SCG email to EPA regarding the dispersed crude oil confirmed threat to human health and how to remove the threat in order to prevent greater incidence of human collateral damage from occurring in the GOM coastal zone from persistent re exposure to the dispersed crude oil hydrocarbon based environmental contamination.

- SCG's 9/25/2013 threat assessment presentment to EPA and White House Senior Policy officials represented by the 9/20/2013 email copy of SCG direct letter to Bob Perciasepe

- SCG's 10/15/2013 letter to Gina McCarthy

- SCG's 11/7/2013 letter to Gina McCarthy

- SCG's 12/2/2013 letter to Gina McCarthy (EPA failure to communicate to EPA's path of direct action to eliminate direct threat to GOM coastal zone region)

- SCG's 12/2/2014 letter to Gina McCarthy, Two direct items requiring direct action

Understandings from these letters and the subject matter they represent. Understanding the sensitivity of this issue, SCG only wishes to have the dispersed crude oil contaminating to be safely and timely removed from the GOM coastal zone region and have SCG's past due and forthcoming billing to EPA be paid with SCG being appointed independent oversight over the clean up to insure transparency. In an effort to get legal federal authority to take the blinders off to the threat to human health human allowed exposure to dispersed crude oil represents as reflected accurately in SCG confirmed accurate threat assessment and decision modeling.

1. Please review: attached peer reviewed published essays confirming human blood contamination from incidental exposure to the 2010 DWH environmentally trapped dispersed crude oil contamination.

•□□□□□□□□ **See human blood published essay, Sammarco PDF**.

•□□□□□□□□ **See chemical mixture published essay, Carpenter PDF**

2. Please review published essays confirming GOM ongoing contamination from MC 252

•□□□□□□□□ **Essays confirming MC 252 still discharging into GOM, Sammarco PDF;**

•□□□□□□□□ **Supplement to Peer review Essay PDF**

SCG threat assessment and letter to Gina McCarthy were indeed accurate and fully supported by Peer reviewed science and medical essays. SCG persistent efforts with EPA on this issue have been justified and warranted for human health and economic preservation purposes required to help manage human health threats and environmental risk in a desperate attempt to insure a diverse, sustainability and economically productive GOM coastal zone region.

SCG does not want to allow this ignored chemical poisoning threat to human health issue to become a public football. EPA officials hopefully will allow SCG meeting request, allow the recommended next phase of clean-up for the GOM coastal zone region to protect human health, recognize the service SCG has provided to US EPA, the Administration and the American people on this issue and pay SCG's billing invoices to EPA. All of which will allow SCG to suspend SCG persistent effort on this subject matter. the decision if this issue becomes a public football is totally up to EPA and the Administration, public health of the residents of the GOM must be protected and the region afforded the ability to have a future. With this said, SCG is writing this letter with great hope that SCG efforts with EPA OSWER officials will result in expedited mitigation action to preserve human health and economic survivability of the GOM coastal zone region with EPA and SCG working together to managing human health and environmental risks in accordance with EPA mission. Thereby allowing this extremely sensitive and problematic situation to be amicably resolved and mitigated timely.

Mr. Stanislaus I look forward to hearing back from you directly.

Respectfully,

David Fakouri, Strategic Economist

Strategic Consulting Group, LLC

La Economic Foundation, Inc

Corporate members of:

David Fakouri and Associates

Email: Dfakouri@dfaa.us

225 921 9735

Cc:

Ms. Gina McCarthy, (Administrator) US EPA:

Mr. Author Elkins, (Inspector General) US EPA OIG:

Louisiana US Senators (William Cassidy and David Vitter)

Louisiana US Congressman: (S. Scalise, C. Richmond, C. Boustany, R. Abraham, J. Fleming, G. Graves)

To: Mccarthy, Gina[McCarthy.Gina@epa.gov]; Perciasepe.bob@Epa.gov[Perciasepe.bob@Epa.gov]
Subject: EPA failure to communicate EPA's path of direct action to eliminate direct threat to GOM coastal region as well as correction of human error incidence within EPA policy.
image001.png
SCG email letter 11-7-13, EPA office of Administrator and White House advisors.docx
Scgllc 10-15-2013 letter to Gina McCarthy US EPA Administrator.docx
Direct letter to Bob Percaippe EPA deputy Administrator sent via congressional channels 9-20-13.docx

;;
12/2/2013

Ms. Gina McCarthy, Administrator

Mr. Bob Perciasepe, Deputy Administrator

Environmental Protection Agency

United States of America

Dear Office of the Administrator,

Sixty nine days ago (9/25/13) your office received a letter containing notice of human error within EPA policy as well a direct threat assessment letter from , Strategic Consulting Group, LLC (SCGLLC) and its strategic economist, David Fakouri. On October 15, 2013, Ms. McCarthy received a copy directly with our firms apology for neglecting her in our initial correspondence. Contained in this letter was our request for the office of the administrator to notify both CDC and the Office of the US Surgeon General, as the threat assessment identified that our US civilian population's health is adversely being impacted from the dispersed crude oil that represents environmental contamination that has been identified as problematic to our coastal zone residents human health.

Initially, requested in the 9/25/2013 letter, our firm required EPA to respond back to SCG their decisions to remove the dispersed crude oil threat timely after reviewing the research data we supplied justifying the direct threat assessment. This was not honored.

Realizing the volumes of research data we forwarded to US EPA, time was factor. Despite the fact that our research data was known by some, if not all, within EPA as our research confirmed EPA was aware. Our office realized that with the passing of time, greater incidence of human adverse health and cancer could be realized by EPA failures to move quickly on the data we supplied. Conversely to remove the time component, our office transparently created and presented the 11/7/2013 executive summary of our peer review research data and delivered it to EPA office of the administrator and EPA policy on 11/7/2013 and represented it to all again on 11/12/13; requesting confirmation that the executive summary was indeed received.

∀ Please understand that SCG is not looking for confirmation of its research data as being accurate supporting the direct threat that is present from the dispersed crude oil that is impacting the health of our US coastal zone residents.

∀ SCG' is requiring a timely response back from US EPA Administrator's office regarding the administration's decision to either remove the direct threat or not.

SCG appreciates the 54 minutes of recent phone time that Mr. Craig Matthiessen allowed reviewing the peer review data that was contained in the executive summary. His personal phone call advising confirming of his receipt of the executive summary allowed a lengthy review of the peer review data. As we have stated, the threat is valid, our firms needs to understand if US EPA and the Office of the President is going to allow EPA to full fill its mission by removing the threat because it is possible.

The OSEII EA bioremediation technology represents the sole sourced US EPA NCP technology that is capable of quickly removing the threat from the coastal zone region timely as documented.

∀ Presently, the only applicable decision is to remove the identified threat or not remove the threat!

Our firm requested 47 days ago (10/15/2013), for EPA Administrator to officially contact the CDC and the Office of the Surgeon General, because human health is being impacted as the dispersed crude oil components is uploading into the human systems of the general public who are being exposed to environmental contamination.

SCG with the intention of preserving human life and economic survivability of the region presented transparent research data in confidence to US EPA; as a partner showcasing the problem, the solution, the human health consequence as well as the economic justification for removing the direct threat with SCG's decision modeling that was contained in the 9/20/2013 letter.

Upon receipt of this, please have someone from the Office of the Administrator contact our office back directly to communicate EPA's decision by noon on (12/6/2013) or before to advise SCG directly what path of action EPA has taken to address and correct:

∀ the incidence of human error within EPA policy regarding the bioremediation fact sheet with RRT-NRT.

∀ Removal of the dispersed crude oil environmental problematic contamination from the GOM coastal zone and GOM region, as it is trapped and directly impacts negatively the human health of our US population.

SCG's 44 months of persistent effort have been justified and has accurately allowed US EPA a clear path to heroically fulfill EPA's goals of addressing and removing environmental pollution that represents a direct threat to our civilian population as well as protecting our nations natural resources. SCG as mentioned in the 9/20/2013 direct threat letter, that evidence of dichotomous interests have been noticed within US EPA as their historical actions are not consistent with their agency mission. Our firm, has afforded all with its 9/20/2013 letter containing the incidence of

human error and the direct threat assessment, a clear path for EPA to move forward and full fill EPA's agency duties in full compliance with the US clean water act of 1990 with the utilization of the EA bioremediation OSEII NCP technology.

Please keep in mind, our firms handling of this GOM contamination issue has been with great discretion, affording federal oversight the ability to move swiftly to remove the threat as it is possible. However, because human health is involved and direct economic loss of the region is realized to occur if no decision to remove the threat is timely achieved. Our firm will be compelled to transition its present efforts with the hopes of achieving SCG's goal of a realizing a detoxified GOM coastal zone that is safe for our civilian population to live, work and play as it was prior to the DWH incident.

Please understand historically, the issue of dispersed crude oil adversely impacting human health is known from the Valdez incident and others globally. The indirect historical introduction of the synthetic solvent 2butoxyethanol to treat crude oil from coastal regions has historically resulted in incidence of adverse human health, cancer and shortened life spans as reported during the 1989 Valdez. Realizing that the medical records were federally sealed from public review our firm was compelled to research the present reality of the DWH contamination during our consequential damage assessment efforts. Conversely, SCG's collective research efforts has resulted with SCG's presentment of their threat assessment and executive summary to EPA. SCG has confirmed with its research exactly how human health is being impacted by the dispersed crude oil environmental contamination relative to the modes of exposure, the mechanisms present facilitating transdermal absorption/penetration with the rates of uptake from the direct and indirect contact including vapor exposures thru human skin resulting in crude oil components including carcinogens direct entry into human blood and circulatory systems.

With respect to all parties interested, SCG regrets for being so direct with its communications to each of you as the responsibility for allowing the problematic situation to persist rest solely with Office of the Administrator of US EPA and or The Office of the President. Our firm has communicated our research and offered our decision modeling to both EPA and the Administration clearly and respectfully. We pray that our sincere and transparent efforts regarding this sensitive issue is accepted as it has been presented.

In summation:

∀ SCG is not requiring concurrence from US EPA regarding the data SCG has provided. The data is peer review and as it relates to the dispersed crude oil is accurate with respect to being problematic to the environment as well as human health. Because it can be removed, it must. As US EPA is compelled to authorize its removal. As human health is being impacted, the timely removal of the contamination is a must in order to minimize the consequential human collateral damage potential from the direct threat. Time is a critically short.

∀ Please be advised that SCG, is requiring direct follow-up communication back from the Office of the Administrator regarding:

A. The erroneous 2000 Bioremediation fact sheet; If it has been corrected? Yes/No, Whereas

EPA will supply a copy of the corrected fact sheet or EPA explains why it has not been corrected and affords a detailed time line for its correction. SCG seeks confirmation that this error has been corrected. Whereas EPA will furnish our office with a copy of the corrected fact sheet advising RRT-NRT that three types of bioremediation exist, clarifying to the rank and file RRT-NRT command structure including USCG.

B. SCG seeks confirmation of the timeline for Concurrence of the OSEII by EPA as a co-chair of the RRT-NRT command structure. Authorizing this technology to be granted emergency use status with the RRT-NRT so that it can be in utilized in US waters. Historically, this technology has been erroneously denied equal access of use in US waters in equivalent fashion as the EPA has allowed the Corexit dispersants.

C. EPA's decision to authorize the use of the Oil Spill Eater II NCP technology to be directly applied in the Waters of the US so that the direct threat can be removed as represented as the next phase of clean up activity that is required.

D. EPA's provide notice that the problematic dispersants are no longer being allowed to be applied in the US waters.

E. EPA to advises SCGLLC when SCGLLC can expect direct payment from EPA for (Invoice: **10-13dwhEPA92013)** which was received by US EPA on 9/25/2013.

In closing, please have someone of authority from the Office of the Administrator directly communicate back to our office and advise us accordingly. Please note, earlier today, our firm again called the office of the administrator trying to receive the courtesy of a response since early November. As we appreciate calls back from Mr. Craig Matthiessen (EPA senior policy official), our correspondence has been directed to the Office of EPA Administrator regarding incidence of historical errors within EPA policy. The issue that SCG has elevated to the Office of Administrator; such as human error occurrence within EPA policy requires those possessing greater authority to confirm that the errors have indeed been corrected. The second focus is the direct threat that was caused by allowing the use of the dispersants containing the synthetic solvent and the DOSS which were the components of the dispersants. Of which the introduction of the dispersants allowed the indirect introduction of the synthetic solvent in the GOM environment. Conversely, it is clear that our communication attempts are appropriate with EPA Office of the Administrator. Please allow our firm the courtesy of receiving a response depicting the decisions by EPA regarding the issues addressed.

Respectfully,

David Fakouri, Strategic Economist

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SCGLLC direct letter to EPA Deputy Administrator sent via congressional correspondence with CC copies as noted.

9/20/2013

Mr. Bob Perciasepe
US EPA Deputy Administrator

RE: **Identified erroneous RRT-NRT fact sheet/ Identified direct environmental threat to the general public** (*Correcting the historical human error (realized by SCGLLC) in the 2000 RRT-NRT bioremediation fact sheet; allowing the realized toxic problematic dispersed crude oil contamination (direct threat) to be resolved timely, allowing the administration and EPA directly to be credited with preserving public health, environmental safety and economic survivability of the GOM region of the 5 coastal zone states impacted by the DWH incident.)*

Dear Mr. Perciasepe,

I am David Fakouri, a Louisiana citizen; father with 3 children who vacations on our Gulf of Mexico (GOM) beaches, just as millions of others do each year. In addition, I am also the strategic economist with Strategic Consulting Group, LLC of Louisiana and La Economic Foundation.

As we do not know each other personally, some at your agency in particular, Mr. Craig Matthiessen of EPA policy section is aware of me directly and my firm's sincere persistent efforts regarding our directly expressed concerns regarding the trapped toxic problematic dispersed crude oil contamination that has been allowed to remain in our Gulf of Mexico region since the DWH accident to present.

Our firms collective efforts are contained in a file at EPA please contact Craig Matthiessen and request a copy of his office's file denoting my firms persistently expressed concerns over the last 41 months. A review of which will afford you the direct understanding that our firms consequential damage assessment research is very accurate which has required us to transparently present our firms research findings only to those with authority on such issues as all is very sensitive. Our firm's compelled documented efforts are only as a direct result of the appearance of federal oversights indifference and dis concern to the human health and environmental issues that have not been able to be properly addressed because of the erroneous fact sheet resulting in severe economic loss to the region.

> **Disclaimer:** SCG's staff and its strategic economist David Fakouri are not medical professionals, scientist but instead strategic economist. Conversely, all of our firm's collective references to adverse human health are based on our firm's observations and conclusions derived from our research from peer review science and medical essays from Pub Med and E Med with respect to the synthetic solvent 2butoxyethanol effects on human skin. Behavior characteristics the combination of the synthetic solvent (2bte) when it is mixed with crude oil in water (wet environments) with humans exposures possibilities is of great interest to our firm as Louisiana and the entire GOM region is able to be directly impacted as a direct health threat and economic threat of which has been our focus as a strategic economist Such studies regarding this type of situation asserts human health realities as noted by Science Corps 2010 Crude Oil Hazards reports; Valdez related historical research. Direct discovery research with CDC organic chemist 2010 during the DWH incident and direct observations during the DWH incident. As we sincerely hope that we have made a mistake with our observations, however we feel that our firm's objective directly expressed concerns are unfortunately correct and accurate; this has resulted in our responsible transparent efforts.

The reason why I am addressing this letter directly to you instead of Mr. Matthiessen whom I have been in direct contact with is that we have discovered errors within EPA. Discovery of such an error once confirmed must be corrected rather than overlooked conversely this is why we have contacted you directly because of your position as deputy administrator.

We realize that your vision is total within your agency as well as you have direct access to senior white house advisors as well as the President if such is needed for direct approval when issues of significance arise as described in this letter. For these reasons, our firm felt compelled to contact you directly and share our firm's research and observations that reveal that within EPA human error has occurred also express our understanding of the direct threat we have realized to be present from the chemically dispersed crude oil trapped contamination that represents problematic situation for all collectively if the threat is not allowed to be removed.

We feel this issue was created by human error perhaps. Conversely, when properly corrected such will allow EPA and the RRT-NRT a direct path to remove or mitigate the identified threat we have recognized and expressed responsibly to be present and exist.

Conversely SCG realizes that within any organization big or small, involving the human element, human errors or omissions are always possible. Once identification errors, the next course of action is proper correction of the error or omission. Such we feel is the case today.

Our firm respectfully request your personal attention to the following items covered in this letter:

- The GOM presently has a problematic dispersed crude oil contamination challenge that must be resolved timely as such is possible in order to preserve the human health and economic survivability of the GOM 5 coastal states economies that impact our nation's economy directly which our office considers a direct threat.
- Addressing the fact that human error or omission has occurred during the creation of the 2000 RRT-NRT fact sheet as SCG's research

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has confirmed that indeed three types of bioremediation exist on the NCP list instead of the two. Please review erroneous RRT-NRT bioremediation fact sheet authored in 2000 by Al Venosa (83 and 84). Erroneous as it failed to include EA class of bioremediation as a rebuttal letter (85) clearly confirmed at the time that indeed there are 3types of bioremediation existing on the NCP list of technologies. Conversely in 2012 the three types of bioremediation (86) have been published clearly affording a complete understanding. EPA's proper clarification and complete understanding of the OIL SPILL EATER II (OSEII) Enzyme Additive bioremediation class and its only NCP listed technology would afford EPA and RRT-NRT to effectively clean up and remove present toxic hydrocarbon based contamination from our US environment. Providing the EPA and the administration desires to remain in compliance with the US clean water act. Utilization of the Oil Spill Eater II (87) US EPA NCP EA technology affords compliance with the US clean water act.

Today, the proper correction of the historical error that we have identified would allow your agency and present RRT-NRT leadership to reevaluate the EA bioremediation NCP technology (OSEII) as a mitigation solution that can properly address the toxicity issues and remove the problematic dispersed crude oil contamination that is steadily growing in the GOM region from the dispersed crude oil from both the DWH accident and subsequent natural seeps from the cracked fissure discharges that collectively is problematic for all parties. **In doing so, EPA can take direct action today on behalf of the administration to be the true protectors of the US natural resources and guardians of the US environment.**

With great hope Mr. Perciasepe , your agency will be able to correct the identified human error on the 2000 fact sheet and officially recognize and concur swiftly on the OSE II EA bioremediation technologies ability to remove the toxic hydrocarbon based contamination the our firm considers presently a direct threat to the GOM region. Conversely, failure to correct the human error; failure to officially recognize and concur on the OSEII technology will only confirm what a complete review of the data suggest as a possible dichotomy of interest being present at EPA with respect to EPA intentionally not using proven NCP technologies that actually meet and comply with the guidelines of the US clean water act. Objectively with a comprehensive review of our research data, our firm believes such is not the case as the contents of this letter reflect strongly that our firm feels that the identified occurrence of human error will be corrected presently so that the environmental challenges reflected can be resolved timely.

Restating, it our sincere hope that this direct letter affords EPA justification to correct the direct error and move towards the next phase of clean up and removal of the problematic dispersed crude oil contamination that our firm has understood since June 2010.

- Our review of the past facts has afforded SCGLLC an early understanding of the future fate of the GOM as the dispersants were utilized in lieu of the EA bioremediation technology that our firm attempted to have utilized following our objective vetting of the NCP list of technologies available for direct use. At the time our efforts as well as the technology was ignored despite the fact that the OSEII technology which we delivered was indeed correct and appropriate for use; nevertheless our firms sincere efforts failed get federal oversight to take appropriate direct action as will full blindness by those in direct oversight has failed over the last 42 months to recognize the fact that the GOM situation is problematic and the OSE II technology is the sole source mitigation solution that solely is capable of resolving the challenges created by the crude oil discharge and the dispersants that were administered allowing for compliance with the US clean water act guidelines.
- Historical record review affords confirmation of the fact that long term environmental damage has been known to be realized at both the Mexican IXTOC and Valdez spills. As little is known from the Mexican spill other than the long term environmental damage is known to have occurred as the Corexit dispersant (Corexit 9527) was applied just as it was applied in 2010 to the DWH incident. The same is also known as long term environmental damage has occurred at the Valdez spill as well with known toxicity issues existing as the crude oil cannot experience microbial degradation.
- Greater understandings have been known about the Valdez incident as it occurred in US Waters.
- Clearly with respect to the Valdez incident similar long term environmental damage as best described by NOAA scientist Stanly Jeep Rice published report: Persistence, Toxicity and Long Term Environmental Impact of the Exxon Valdez Oil Spill (1). It is clear that both oil spill events are different; both incidents afforded our firm the realization that accidents involving crude oil discharges are long term problems greater than 25 years as known toxicity issues have blocked the natural microbial degradation process from occurring. Utilization of the OSEII technology will eliminate the toxicity issues known and allow the GOM not to experience the same destiny as the previously mentioned environmental disasters that were extremely minor compared to the DWH incident.
- The Corexit 9527 dispersant was used during the Mexican IXTOC oil spill accident clean up. The Corexit 9527 dispersant contained 30-60% by weight of the synthetic solvent 2bte as noted on the chemical manufactures MSDS sheet.
- As the Valdez response involved some dispersant use, with a great deal of the French bioremediation product INIPOL 22 was applied to the shoreline of the region by clean-up workers during the Valdez incident as a storm had broadcasted the discharge inland along a rocky shoreline. (*Our 2013 research affirmed that adverse human health issues were known to occur directly because of the ability of the 2bte treated crude oil being able to penetrate human skin and directly impact human health as references to the Johansson studies were cited in the recently researched OSHA report (3); However our initial research failed to official confirm but suspect such in 2010 as it was not possible because medical records from the incident were sealed by federal officials. All of which allowed our firm the reality that human health was known to be problematic when the 2bte solvent is administered to the crude oil in wet conditions as human skin affords no protection from the dispersed crude oil contamination.*)

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- The utilized INIPOL 22 technology contained 12% by weight of 2bte. (2)(72), conversely long term environmental damage has been recorded with both incidents. Just as the Valdez incident and DWH incident were both of the accidental discharge events that were different they were similar with respect to the fact that both incidents realized the intentional indirect introduction of the synthetic solvent 2bte directly into the environment as it has been applied to the crude oil directly by attempted clean-up efforts following the accidental discharge.
- Our research has confirmed that allowing crude oil contamination to be treated with the synthetic solvent 2butoxyethanal yields long term environmental damage as well as it is directly harmful to human health as historical records reveal. Clearly supporting the fact that the synthetic solvent 2butoxyethanol (2bte) is problematic to the US environment when it is applied to crude oil contamination in wet conditions. Such is clearly realized by understanding the implications of June 2010 publication by the Science corps articles (4)-(5). These understandings compelled our efforts to persist as it has been apparent that human collateral damage probabilities existed for the DWH incident.
- Please understand that visual proof exist as the dispersed crude oil contamination does impact human health directly is directly visible using ultraviolet light coupled with blood sampling of the subjects as they come in direct or indirect contact with the tar balls from the DWH incident that is present in the GOM. Our firm reviewed the published findings of the Geologist James Kirby his research confirmed by accident the issue. (See PDF attachment).
- Further confirmation in late 2012, proved not only that the Rip Kirby data is accurate as it supports the peer review Science Corp science data from 2010 that the solvent facilitates transmission of the carcinogenic crude oil components directly in the human system; our firm secured the direct understanding as to the efficiency of upload of the synthetic solvents ability to leave the environment and directly enter the human circulatory system in moist environments. Confirmation of this can be realized with both blood data sampling by the James Kirby paper that is attached as Metamatrix labs confirmed the fact that human blood was contaminated. Secondly the recently published papers by Dr. Paul Sammarco originally contained blood sampling data that our firm is aware of, but did not include in this report. As the publisher required the blood sampling data to be taken out of which the blood sampling data is directly being published as well.
- Please understand that consistently with our research it is known that human blood is impacted when the dispersed crude oil either directly or indirectly is exposed to human skin as the vapors are also problematic. This data our firm has viewed as being very sensitive and thus has not publically made our research available, conversely our earlier attempts to secure a direct confidential meeting to convey our firms data was denied by EPA of which has resulted in this direct letter. Please review all related articles our firm has researched in PUB MED and E MED on **percutaneous absorption/penetration of 2butoxyethanol in man** (43-78). The problematic issue is very sensitive and required our review of multiple essays to confirm what was suspected, that the GOM has a dispersed crude oil contamination problem with toxicity issues that is problematic requiring immediate removal. We have extensively researched this issue of which we have listed many essays from public health sources to confirm that the 2bte solvent (a carcinogen) allows crude oil components (carcinogens from the crude oil) to directly enter the human blood stream and deposit the carcinogens in the organs of humans.
- Persistent prolonged exposures to the contamination creates chemical sensitivities
- Our firm is not addressing the extent of human adverse health exposure as we are not qualified to properly address such. Conversely we have included approximately 50 sources from public health to published public accounts of direct adverse human ill health. Please review them and you will realize that our GOM toxic dispersed crude oil contamination is problematic and as it is capable of being removed from the environment it must be in order to make sure public health and economic survivability is preserved in the region.

Dispersant utilization containing synthetic solvent (2butxotyethanol) during the DWH incident

- The same solvent has also been introduced directly into the GOM environment with the Corexit dispersants (as 2bte was present in both Corexit dispersants formula's for 9527 and 9500 (as noted in the 1999 EPA NCP notebook, table 14) which were extensively used during the DWH incident as both dispersants were applied on the surface and on the subsurface. (**see attachment**)
- Both applications are problematic according to our understanding from our research as the subsurface application was not authorized fully by EPA until testing proved its application was first effective as it was clearly noted by Administrator Jackson as in 2010. (*This issue is not the focus of our firms interest or efforts only confirms the fact that the dispersant use was problematic*) At the time, 2/3 of the test proved the trial application to be in-effective. She discussed third party testing in the interview. Published findings by the WHOI report 1/26/11 on the subsea application confirmed that the subsea dispersant use was not effective. Unknown is if this independent test was the 3rd of 3 test mentioned by Ms. Jackson or 4th of 4 test, either way the subsurface application was most likely confirmed not effective thus the dispersants and the crude oil on the gulf floor is a concern as it has not degraded as WOHI report confirmed due to the toxicity issues. Clarification must be made with respect to effectiveness as it has different meanings relative to the dispersants in comparison to other NCP listed technologies.

- With respect to surface application, it is known that the dispersants transfer the crude from the surface to the subsurface as the EPA's swirling flask testing methods confirmed. Adverse tradeoffs associated with their direct use must be reevaluated as discovery that the 2000 RRT-NRT fact sheet was erroneous just as greater knowledge that the tradeoffs that were perceived acceptable may

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no longer be acceptable as they are problematic as identified in this letter with respect to the 2bte solvents impact human health and the fact that the dispersed oil does not degrade and is not removed from the environment per the Clean Water Act. Again, it is clear to our firm the cascading impact of identified faulty RRT-NRT bioremediation fact sheet.

A record of the 2butoxyethanol environmental exposures levels present in the GOM environment at the time of implementation is not important as the known fact that residual dispersed crude oils presence in the sediments, seafloor, tidal zones beeches and tar matts affirms the direct requirement for the next phase of clean up activity to initiate is allowing for the direct detoxification and complete removal of the problematic dispersed crude residuals via OSE II.

- Unknown is the actual exposure concentration levels of the solvents when they were first being introduced in the environment since there was great impact on the general population as was reported publically. Levels of 2bte are unknown as EPA monitors did not check for the presence of the synthetic solvent when the dispersants were being applied. Our firms initial review of the 2010 monitor data only depicted ND (non-detect) which did not make sense at the time and was misleading as it afforded the perception the 2bte was not present when indeed it was. Conversely we were informed that EPA made a conscious decision not to have its monitors detect for the solvents presence during the application of the dispersant therefore the actual concentration that was present at the time in our GOM coastal zone is unknown. This is a real concern as bioaccumulation is a characteristic of the solvent when it is mixed with crude oil in wet conditions.

From the research reviewed and presented it is clear that the dispersed crude oil remains present in the GOM environment. The trapped PAH dispersed crude oil components recognized by the University of Auburn Research Brief I & II (SEE Attached PDF) confirms such because the dispersed crude oil is trapped and bio accumulating. As residuals of the dispersed crude oil has been confirmed literally everywhere in our GOM environment the problematic situation does exist as it cannot degrade timely and therefore it must be removed as its presence is a direct threat to human health.

- Specifically because the OSE II NCP technology does exist which can remove the contamination directly when it is allowed to be administered so that the identified contamination can be removed therefore it must be removed.
- Please recall that the OSEII technology was officially requested by multiple parties including the responsible party during the DWH incident.
- Please recognize that the human error that SCGLLC has brought to the attention of US EPA has had a cascading negative consequential impact to decisions at EPA and RRT-NRT, all of which is correctable.

Historically, throughout the DWH incident, our firm persistently had hoped that federal or state oversight would responsibly take appropriate direct action to address the concerns we transparently have consistently raised was clearly noted by our March 8-9th 2011 trip to Washington.

- On that trip, we met with officials and delivered data packages from independent scientist affording congressional oversight the clear vision of the issues affording them justification to directly request a change in the federal response using the EA bioremediation technology in order to resolve the issues identified.
- This effort failed to generate any direct corrective action by federal oversight n 2011.
- Such is unfortunate as the independent scientific data was correct, was present and was ignored.

In review of the historical incident, it is safe to assume yet again that the cascading impact of the RRT-NRT erroneous 2000 bioremediation fact sheet most probably restricted consideration of the OSE II mitigation solution presented in the document set. At the time as to the reason why or how come the issues we raised did not received any direct federal corrective action from our direct efforts. Of which, only allowed our firm to make assumptions in trying to determine why no federal corrective action was taken.

- Clearly the valid concerns raised by SCGLLC have been confirmed as a direct concern.
- With the passing of time to represent what our firms considers our coastal environment presently a direct threat to public health! (As the historical Valdez incident research has afforded the understandings that a gestation period for realizing adverse human health occurrence becomes evident in the 36th to 60 month). Presently we are in the 42nd month of the realized gestation period. Removal of the contamination from the coastal zone will stop the human exposure and heightened chemical sensitivity which contributes directly to declines in human health as the persistent exposures possibilities are reduced or eliminated.
- On this issue our research could not confirm with absolute certainty as all health related records have been federally sealed not able to be publically researched. Conversely on this sensitive issue, our firm can only express our historically noted direct concerns which support our present direct threat assessment position.

Conversely, we feel strongly that the conveyance of our firm's research source data when verified will positively afford the administration and EPA, the vision that the direct threat potential exist; human error within EPA has denied direct use of NCP EA technology that our firm collectively has confirmed and presented clearly the viable solution that is available to the resolve the challenges that exist presently, allow for

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the next phase of clean up and decontamination to occur timely. Of which, this is collectively in the best interest of all; as it averts the prospect of greater human collateral damage potential occurrence and preserves the economic survivability of the region which is at direct risk for certain probability of direct loss.

Overview

Present environmental contamination identified with review of peer reviewed documents represents a direct threat to the health and safety of our general public in the 5 coastal states in the GOM region.

Direct Threat Potential Understood from problematic dispersed crude oil contamination

Directly, this letter respectfully request that US EPA recognize that our Gulf of Mexico has a toxic dispersed crude oil contamination problem that is problematic as confirmed by our firm's research. Also our firm's research has determined that it is completely possible to remove the toxicity issues of the contamination allowing for rapid microbial degradation process to occur so that the problematic trapped dispersed crude oil contamination can be safely removed from our GOM coastal zone environment. At present this trapped dispersed crude oil contamination is very problematic as it does not behave like normal crude oil because of the Corexit dispersants components like the DOSS and synthetic solvent 2butoxyethanol (2bte). This synthetic solvent mixed with the crude oil with moisture present is capable of negatively impacting human health by directly passing thru human skin and entering our human circulatory system according to the peer review data that our firm has researched. Unfortunately, such is the case at present in our GOM coastal region and as such is very problematic based on our research.

Removing threat versus not removing threat

Our strategic economics firm considers this to a direct threat to both public health and to our region's economic survivability.

If the known problematic contamination is allowed to remain in the environment: **not treated and not removed.**

- Changes in public perception will occur of which will directly impacts initially recreation use and tourism. The loss of such has been identified to be at minimum $122 billion for the 5 coastal states collectively. Whereas total loss of the region is possible of which the economic damages are easily in excess of many trillion dollars without inclusion of any values for human collateral losses. This simply must not be allowed to occur, **as it is totally avoidable!**
- Conversely any present changes in present public perception will result in direct losses we envision.
- Depopulation is the eventual reality, as families will realize that the region where they live, work and play are contaminated as their realized incidence of adverse human health is directly attributed to the environmental contamination from the dispersed crude oil. Such realizations will require them to move away from the contaminated environment.
- Acceptance of this threat is not an option, because South Louisiana in particular with its industrial river corridor and ports requires a skilled domestic work force for its operations in our coastal zone region. Similarly this is also true for the Texas coastal area as well as the Mississippi and Alabama coastal regions.
- Depopulation threat is very problematic for our national security as all of our industrial installations are of significance to the economic and security interest of our nation.

Presently great discussions are taking place regarding coastal restoration efforts in this region. Conversely our firm has conveyed to Louisiana officials that any future coastal restoration efforts must include decontamination in order to prevent greater incidence of additional human collateral damage from the trapped PAH contamination in our coastal zone environments.

- All of the above mentioned and non-mentioned exposures are possible if no positive direct federal action is realized allowing the detoxification of the dispersed crude oil contamination identified.
- Impacted states also have the constitutional right to act independently of federal oversight when deemed necessary according to our firms understandings.

Ability to Cure

We are very pleased to advise you that EPA and the RRT-NRT command structure has the direct ability to remove this direct threat from accessing the general public and stop it from further impacting human health, if EPA is willing to recognize and address the fact that apparent

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human error has caused the omission of key data from the 2000 RRT-NRT bioremediation fact sheet has occurred. Hopefully, this error is recognized and corrected by receipt of this letter; then EPA along with RRT-NRT command can concur on its use thus allowing the safe and effective application of OIL SPILL EATER II (OSEII) as the next phase of cleanup operations in the GOM region.

- OSEII is the sole source NCP listed EA bioremediation technology that possesses the proven capabilities for removing timely the problematic dispersed crude oil contamination from the environment.
- As the dispersants were added to the natural crude oil contamination its presence in the environment is known as problematic and must be removed as it is possible with the OSE II NCP technology being applied. Conversely it is clear that the dispersed crude oil contamination is hydrocarbon based with identified toxicity issues. As the OSE II technology when applied will interface with the toxic dispersed crude oil where it will be detoxified timely and safely removing the toxicity issues that are understood; Unlocking the blocked microbial degradation process; thus allowing the timely removal of the problematic contamination completely from the environment as its safe defined endpoint is confirmed to be co2 and water.
- If there are any questions, please contact Mr. Steven Pedigo directly as the CEO of OSEI Corporation or visit their official web site and view their online technical package as our firm has done regularly during our evaluation of the OSEII technology and understand its capabilities. Our firm has found the CEO to be very transparent and forthcoming with accessing all data contained on his web site pertaining to his Oil Spill Eater II technology during our initial vetting in April 2010 to present. His web site contains actual data from thousands of actual oil spill clean ups, federal testing, industry testing, actual accounts of successful field use. Specifically, his found on his web site is the technical package regarding his US EPA NCP listed EA bioremediation technology. His website is WWW.OSEI.US His personal contact point is 214 783 6992.

Our review found that the OIL SPILL EATER II is the sole source US EPA NCP EA bioremediation technology that is proven effective to totally and safely be able to detoxify and completely remove the problematic contamination timely from the environment. Our firm directly showcased this technology directly to Craig Matthiessen and Nick Nichols on 12/19/2012 in our 1:17 minute conference call. The focus of our efforts was to confirm the existence of a proven capable NCP solution which was ignored during the DWH incident wrongly as it represented the only transparently proven mitigation solution that could effectively, safely and quickly remove the toxicity issues that plague the dispersed crude oil contamination. A challenge that our firm has directly expressed with 41 months of directly raised concerns requiring mitigation and removal from the GOM Coastal region.

- When EPA corrects the erroneous 2000 RRT-NRT fact sheet, concurs on its use and application in the GOM it will be totally possible to clean up and remove the direct threat our firm has addressed with EPA from publically available data research.

Please view the following ULRS and watch the videos as they are very telling as you will witness crude oil being removed from sand and plastic in the Gulf of Arabia with the simple spray on application of the OSEII EA bioremediation technology as the applicator is not concerned with any toxicity issues as the OSE II technology is totally safe and nontoxic. This demonstration secured and vetting secured Saudi Aramco has issued a product code for its use within its company globally.

- (79) http://osei.us/archives/1135 See crude oil be removed from Sand in the Gulf of Arabia in Saudi Aramco demonstration and acceptance of the technology. The Saudi Aramco registration number for OSEII is 10050807 affirming approval from PME, NEMAC and ROPME.
- (80) http://osei.us/wp-content/uploads/Nigeria_Shell_testing_OSEII_on_Ogoniland_soil_Nov5-27-2012.pdfSee Shell Global actual clean up test results from the Nigerian delta as confirmed by Shells engineers report.
    - Significance of this report is because the clean-up results occurred in a delta region that is identical to our GOM Louisiana coastal zone region. As denoted by the Reuters news report (78) http://www.reuters.com/article/2011/08/04/us-nigeria-ogoniland-idUSTRE7734MQ20110804
- (81) http://osei.us/wp-content/uploads/ArgentinaGreencorheavyoilTank-201302.pdf See Argentine Greencor test result of OSEII removing heavy waste crude oil from Tanks

(Please do not mistake SCGLLC's motives with sending this letter and referencing the OSEII EA bioremediation technology)

1. We are not pushing a product; we are pushing for EPA and federal oversight to implement the legally available NCP solution that represents exist and is the only means possible to treat the dispersed crude oil contamination and remove it safely from the environment.
2. AS our research has determined such to be a direct threat to the health of our GOM residents as the dispersed crude oil that is trapped in the sediments and is present in the tar balls is collectively with direct or indirect contact capable of directly impacting human health.
3. All of which our firm considers a direct threat to the economic survivability of all the coastal 5 states of the GOM and directly impacts the economy of the nation.

Decision Modeling
(Cost to Cure versus Cost not to Cure)

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Cost to cure calculations are known(See attached SCG Decision modeling) to range from $ 13 to 31 billion with and the ongoing required mitigation application of the OSE II NCP EA technology to cost annually $ 3-7 billion as required maintenance due to the fact that the natural seeps will continue for at least 25 more years. (The accuracy of these values is subjective the actual volume of contamination realized from the DWH incident).

- Because detoxification is possible it simply must be authorized.
- The ability to quickly remove the direct threat swiftly and quietly averts a negative shift in public perception as it relates to the safety of the GOM region.

The cost not to cure is also known; as SCGLLC's strategic economic consequential damage assessment initially reflected the fact in 2010 and has been confirmed, thus driving the direct efforts of our firm to persistently express our direct concerns and our direct threat assessment to federal oversight.

- By continuing the path of not removing the identified direct threat represented by the identified dispersed crude oil contamination that has toxicity issue and is problematic. Such environmental contamination will ultimately result in discovery by the public that the GOM region is indeed not safe.
- Of which, will trigger a direct shift in public perception regarding the safety of the GOM.
- Federal authority will loss the trust of the general public
- The direct economic loss first realized will be either $72 or $122 billion annually. As our firm calculated the value of recreation use and tourism revenue; representing a best worst case loss exposure scenario for the nation and directly the impacted 5 coastal states collectively (Florida, Alabama, Mississippi, Louisiana and Texas).
- Because it is known that the dispersed crude oil contamination where the synthetic solvent has been introduced, long term environmental contamination is known. Conversely, as the DWH incident also has natural seeps which are expected to be discharging for at least 25 more years. It is then understood that the minimum best worst cast loss exposures are identified to range from$2.075 trillion to 3.05 trillion.
  - Conversely, 2-3 trillion in direct losses is identified as direct minimum losses for deciding not to clean up the GOM as such is possible. Long term losses are known collectively to be greater than we all can afford. Especially when considering the region will depopulate and the total loss of the region will be realized.

- It is known that our GOM coastal zone region faces persistently known natural threats such as hurricanes, sea level rise and subsidence. These natural threats exist and are fully known. Conversely these threats only pose direct threat to human life when events occur with frequency such as weather related incidents. Of which our region is accustom. Subsidence which is very real in as much as our land is sinking West of Mobile Bay to Texas is a problem over time dependent upon incidence of wetting from weather related activities. Surely in time depopulation will occur somewhat but not totally as was witnessed in the aftermath of Hurricane Katrina and Rita in 2005. All of which is totally different and completely different from the direct threat addressed in this letter. This threat is man made directly caused by the occurrence of an accident that resulted in crude oil contamination where as human error erroneously directed RRT-NRT decision makers not to use legally proven effective NCP technology despite contrary to being directly requested. Of which has resulted in the direct threat from dispersed crude oil contamination that is toxic and problematic which has been allowed to occur due to human error. Correction of the error and removal of the direct threat must be realized timely or the environmental contamination will remove the population permanently from the region. Unlike the natural threats the present manmade threat is correctable.

Decision policy

Remove the treat as it is possible. As the cost to cure is insignificant in relationship to the loss potential that exist.

- Implementing the next phase of clean-up activity is the only decision available. We must mitigate because it is possible in as much as we collectively cannot afford the cost of the loss.

Human Error realized in creation of 2000 Bioremediation fact sheet for the RRT- NRT

Discovery that apparent human error occurred by an EPA official back in 2000 when key fact sheet were created for the RRT-NRT by the author of the document Mr. Al Venosa (83-84).

- Error is cited as the referenced documents in the fact sheet failed to include any mention or reference in any manner to the 3rd known class that existed on the NCP list at the time of the creation of the document.

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- Moreover, when a rebuttal letter (85) was sent to EPA as a direct response to the apparent oversight, no corrective action has been published; such as an addendum report or mention of the rebuttal existed, none of which was afforded to the RRT-NRT according to our research. Despite the fact that the rebuttal letter was address to Mr. Al Venosa as well as others at EPA, the rebuttal never was officially included, referenced or supplied to the RRT-NRT command structure for consideration.
- Clearly, three types of bioremediation have existed since the Valdez incident in 1989. OSEII **(87)** has been listed on the US EPA NCP list prior to and since the creation of the 2000 bioremediation fact sheet.
- The rebuttal letter has existed since May 2000 as confirmed by the rebuttal letter of record (85) SCG researched during the 12/19/12 conference call discussions from our data files from 2010 as well as the OSE II website.
- Clarification was directly afforded in 2012 when the three types of bioremediation was published and presented to the RRT Area Committee meetings in October 2012. As the author Mr. Steven Pedigo as an invited participant of the RRT science subcommittee was requested to clarify the three types of bioremediation. Such was clearly confirmed in the 12/19/2012 conference call dialog between EPA policy officials and Mr. Pedigo which we monitored. Conversely since the 2000 guidance document this EA class of bioremediation has been present on the US EPA NCP list conversely not considered for direct use by RRT-NRT directly due to the erroneous bioremediation fact sheet authored by Al Venosa.
- At present officially on the US EPA NCP list, there exists only one source of EA bioremediation, (Oil Spill Eater II) (87) as noted on the US EPA NCP listing.

Obvious human error within EPA has apparently occurred with the creation of RRT-NRT bioremediation fact sheet in 2000. The impact of this error could have attributed to the use of the problematic dispersants; where by default, RRT-NRT officials were compelled to use this technology and accept the reality of the known direct adverse tradeoffs associated with its use. Conversely, this is entirely true with respect to RRT-NRT not considering the only proven effective, nontoxic, safe for responders, EA bioremediation NCP technology OSEII(87), which has been blocked from direct consideration despite its proven abilities being known by industry and EPA since 1989.

- Any direct questions or information that is needed regarding this sole source EA bioremediation technology (Oil Spill Eater II), the contact person is Mr. Steven Pedigo 214 783 6992 OSEI CEO. WWW.OSEI.us

- Historical human error / omission recognized by SCGLLC. Obviously has restricted RRT-NRT decision makers from using known safer-proven NCP technologies since 2000 to present. Today because of the 12/19/12 conference call focused on the OSE II technology allowed EPA policy officials complete understanding of the technology; EPA can easily correct their erroneous fact sheet of 2000. Update their historical views and properly recognize that the EA bioremediation technology (OSEII) is the immediate solution to the problematic dispersed crude oil contamination that is trapped in our GOM environment that is plaguing our GOM region.

Mr. Perciasepe, this letter is being sent to you instead of Mr. Matthiessen directly because of the human error issues that exist. Obviously your position has the ability to make sure that swift appropriate corrective action is realized for the inaccurate 2000 RRT-NRT bioremediation fact sheet. Such correction makes it completely possible for proper EPA concurrence to be realized with respect to the OSEII technology since our firm has already afforded EPA Senior Policy officials direct discovery of the attributes of the technology as noted by our 12/19/2012 conference call meeting with EPA Senior Policy officials and OSEI Corporation officials.

Hope for direct action.

We envision such action by federal oversight to be simply a next phase of their ongoing efforts in the region with the full knowledge that such action is directly removing the toxic dispersed crude oil contamination which conversely is directly removing the SCGLLC identified direct threat that the trapped environmental contamination represent to all humans living working and recreating in the region.

- Our firm decision modeling confirms that without such immediate direct activity by federal oversight the public's perception of the safety of the region will change and this will trigger direct economic losses identified initially to be at minimum of $122 billion annually;
- If such is realized without next phase as mentioned before; in time the region will depopulate as the public will realize that it is not safe for their families.
- **Simply put: Remove the threat from the public or the public will have to be removed from the threat!**
- The only question is if we collectively can afford the cost for not taking proper action, in terms of direct economic loss collectively from the region being totally lost economically as well the unknown value of human collateral damage cost.
- Of particular economic interest is Louisiana's coastal zone region as it is strategic to our national security and economy. Any realized or potential threat that could possibly adversely impact our skilled domestic labor force is a recognized direct threat to our national security, as our regions industries and ports must maintain access to our trained skilled domestic labor force. Disruptions short term or long term is a direct threat as witnessed when hurricanes disrupt normal operations.
- Conversely, any decision to not to remove the toxic hydrocarbon contamination from our coastal region is with direct consequence for weakening national security and nations economy.

Summary

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With respect to the present situation, Mr. Perciasepe, our firm clearly recognizes the great challenges that exist for EPA and our present administration to have the Gulf of Mexico's present dispersed crude oil contamination problematic issues resolved quickly and restore the GOM region back to pre-spill conditions.

We feel that our firm has provided a great service to EPA and the nation as SCGLLC strategic economic decision modeling research has identified that indeed human error is directly attributed to RRT-NRT historical decisions not to use the totally effective OSE II EA bioremediation technology initially during the DWH incident, despite the fact that it was officially requested by multiple RRT members as well as the responsible party BP twice during the DWH incident. Because of the noted human error, RRT-NRT was compelled by default, to use the known toxic dispersants with full acceptance of their adverse tradeoffs associated with their direct use; resulting in the identified problematic present situation denoted in this letter. Of which the recently published 60 minute new article (82) asserts similar environmental contamination concerns.

Please know that we are extremely grateful to Mr. Craig Matthiessen and staff for allowing direct discussion of the issues and allowing our firm to provide a forum for EPA's complete understanding of the solution during our conference call of record on 12/19/2012. Mutual agreement and understanding on the solution initially was our focus. As the independent 3rd party in the conference call, we moderated the exchange between OSEI and EPA officials affording clarity regarding the OSE II technology just as our firm could confirm a great deal of issues we suspected but could not prove. Of direct significance was the confirmed error in the bioremediation fact sheet which was afforded thru open dialog, which allowed us the vision of the apparent gross miss understandings of the OSEII technology by both EPA and RRT-NRT that exist wrongfully due to the erroneous 2000 bioremediation fact sheet authored by Al Venosa.

It is our sincere hope that EPA, the administration recognizes properly our firm for its objectively, research and persistence on this issue. As SCGLLC has responsibly and transparently worked thru the issues which has afforded federal oversight a clear path for resolution to this problematic situation

Our firm's strategic economic focus has not been intended to make policy but afford transparent accurate objective decision modeling to assist those with decision authority accurate data to make informed decisions.

Please keep in mind our firm did not create or cause this situation. We simply asked questions searched for solutions and presented solutions to address the problems and respectfully asked those possessing proper authority and the direct responsibility to take action to take proper action and remove the threat that has been present in our GOM region.

- We also trust that EPA and the administration recognize that our firm expended a great deal of direct billable time that was required in order to directly assist EPA and the federal administration in identifying and resolving the contamination issues that has been present over the last 42 months during the DWH incident to present. As a series of cascading events has been identified occurring that can be traced back to the occurrence of human error in the creation of the flawed 2000 bioremediation fact sheet that restricted the use of the EA bioremediation technology initially in 2010. Had this technology request been granted approval initially, then the situation would not be problematic as it is today and would not have required our firms direct unsolicited directly justified efforts. Conversely, our firms respectfully request direct reimbursement for our direct billable time and an expense on this extremely serious project, which is directly appropriate. Conversely, I have attached a log of our firm's direct efforts on this project. **(See attached cumulative efforts log of activities by D Fakouri of SCGLLC during the DWH incident May 2010 to present)**
- We have included our firms invoice for direct reimbursement representing our firm's direct total billable time and expenses on this project collectively for the benefit of the US EPA and the administration.
- Secondly, our firm would like to be officially recognized for our service as we are a small independent consulting firm where as when such time is appropriate we desire official recognition for our firm's efforts.
- In order to insure transparency going forward with the required next phase of clean-up activities in the GOM region, SCGLLC desires to be appointed by the federal oversight to independently monitor all future (next phases) cleanup activities in the GOM region as we have clearly championed the issue with our objective, transparent and diligent effort for preserving human health and economic survivability of the region as a clean and safe environment properly affords such.

In closing we optimistically look forward to hearing back from you directly if your schedule permits or from your senior staff at EPA regarding addressing fully the issues disclosed in this letter in the event additional data or further clarification is needed. Please accept our sincere appreciation for your time to review this letter and its contents.

Respectfully,

David Fakouri, Strategic Economist

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CC:
Ms. Nancy Sutley, (Environmental) Advisor to the White House
Mr. Jeffery D. Zients, (Economic) Advisor to the White House
Mr. William Cassidy, US Congressman from Louisiana's 6th District

Disclosure:

- Our firm must disclose that at present, we are initiating the process of directly arranging secured meetings with economic stakeholders in the 5 impacted states in order to apprise them of what the reality problematic dispersed crude oil contamination represents to the region. Specifically how it relates directly to their economic interest in the region as we consider such to be a direct threat if it is not removed as it relates to their long term economic interest in the region.
- Because of the serious issues addressed in this letter regarding the present conditions in the GOM, our firm is allowing 3 days for EPA to acknowledge direct receipt of this letter via phone or email correspondence back to our office letting SCG know that they have received the letter.
- Our firm expects to receive a direct answer back from EPA within 7 days advising SCGLLC, if EPA requires any additional clarification of the items that were addressed in the document as EPA is the guardian of our environment.
- SCGLLC also requires that EPA and the federal administration directly advise our firm when the error discovered in the 2000 fact sheet will be corrected; also advice SCGLLC within 14 days when exactly EPA is going to approve the OSE II technology for direct use in US Waters so that the direct threat identified can be removed.
- We are hopeful that this letter will result in the beginning of next phase of cleanup activities that benefits all parties.
- When such is confirmed, our firm will cease its activities with the stakeholders as their will no longer be any need for such activities.
- Conversely, in the event, that no direct federal action is realized occurring from this letter, then the stakeholders direct engagement is appropriate and is prudent as it will allow the states to directly take appropriate corrective action allowed by the US Constitution as each state possess the right to protect its own interest by invoking their 10th amendment rights.
- If such occurs then our firm will be considered at risk or possibly persecuted for attempting to preserve human health and economic survivability of the region. Conversely our firm has secured with others at least 25 copies of the data in the event our efforts result in realizing any adversity directly or indirectly.

SCGLLC's Strategic Economics focus with respect to researching issues outside of our historical education field of study.

SCGLLC and David Fakouri it strategic economist researches issue regularly that we have no prior knowledge of and conversely are required to self-fund our initial work on such projects in order to insure objectivity and accuracy of which as has resulted in our firm being extremely accurate with our research supporting our decision modeling recommendations to leaders of government, business and industry.
With respect to this letter and our direct efforts our firm has been compelled to remain diligent with our persistent efforts because of will full blindness as the situation consequential damage ramifications impact the future of the GOM region, the health of the residents in the coastal zone as well as the economic survivability of the five GOM coastal states and our US Economy. As our private firm is small and not known as we are located in Baton Rouge instead of Washington DC or New York; our firms work most often than not is not properly recognized, respected and is sometimes overlooked despite the fact that our firm has consistently has been on record for advising our elected officials and industry leaders accurately, correctly and in advance of the issues becoming widely known. Since 2006, our firm's research has been 100% accurate with respect to the issues we researched of which none of them were known to our firm prior to our research. Our firm research depends on independent scientist research or experts from the various disciplines to afford our firm with proper understandings of the issues so that we can work thru the data and deliver our accurate assessment of situation, where we create and deliver a decision model for leadership to utilize. Upon completion of our efforts as in the case of the DWH dispersed crude oil contamination with toxicity issues that is problematic to human health; our firm's efforts have been correct, justified and required as federal oversight has failed to act on direct concerns expressed of which conversely has been realized as direct threats. Conversely our firm is delivering our invoice for our direct billable hours required on this project as such is complete justified despite the fact that we were not formally engaged. This letter to EPA Deputy Administrator Bob Perciasepe has required our firms 42 months of direct efforts to accurate report the direct threat and our firms discovery of fact that human error that has allowed erroneous decisions by the RRT-NRT to indirectly impact the environment, human health, and caused industry as well as the public direct economic loss. Correction of the 2000 erroneous RRT-NRT fact sheet will allow EPA and federal oversight the ability to prevent further long term environmental contamination damage that will ultimately result in the region being economically totally lost as depopulation is certain to occur if proper action is not implemented.

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Referenced Material

Attached and numbered is a partial list of referenced data consisting of peer review scientific studies, official reporting from federal agencies, public accounts and news articles on the issue being discussed in this letter and is represented of the self-funded efforts by Strategic Consulting Group, LLL over the last 39 months of required direct research of the issues transparently addressed in this letter being conveyed via secured congressional mail to EPA deputy Administrator.

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80. * http://osei.us/wp-content/uploads/Nigeria_Shell_testing_OSEII_on_Ogoniland_soil_Nov5-27-2012.pdf Recent Shell Test results received in 2013 on oil spill cleanup in Nigeria Please note additional new cleanup photos of ongoing clean up activity is available upon request; since the date of this test, industry has moved forward to larger scale cleanup efforts utilizing this technology.
81. * http://osei.us/wp-content/uploads/ArgentinaGreencorheavyoilTank-201302.pdfRecent Argentine Greencor Company (2013) test results on tank cleanups of heavy oil

Recent 60 minute news item of direct significance

82. http://sixtyminutes.ninemsn.com.au/article.aspx?id=8706910

(Identified Erroneous) EPA authored RRT-NRT Bioremediation Fact sheet

83. http://www.nrt.org/production/NRT/NRTWeb.nsf/AllAttachmentsByTitle/A-78bioremedFS/$File/bioremed_FS.pdf?OpenElement
84. http://www.epa.gov/osweroe1/docs/oil/edu/biofact.pdf
85. http://osei.us/tech-library-pdfs/2011/OSEI%20Manual_FINAL-2011.pdf See pages 194 rebuttal letter from OSEI CEO 5/2000

Three types of bioremediation published in 2012 by S Pedigo appointed member of the RRT science subcommittee

86. http://www.environmental-expert.com/articles/types-of-bioremediation-and-their-modes-of-action-318600
87. http://www.epa.gov/osweroe1/content/ncp/products/oseater.htm

NOTE: (1) Not included is any reference to the EPA Whistleblower and NOAA deputy Director data regarding underreporting by federal oversight during the DWH incident. Our firm has reviewed them and has already realized that they are credible as the data contained in this report confirms. The fact that they have been evaluated and found accurate does not require our firm to further expand on the specific items directly. Conversely such items are directly attributed to the fact that human error occurred in 2000 as this letter has affirmed.
NOTE: (2) Not included is seafood safety concerns as our firm has engaged both state of Louisiana officials as well as FDA directly expressing direct concerns as noted in our 2/4/11 Email letter to Dr. Rotard of La DHH and our 4/11 response letter to FDA.
Note: (3) Not directly addressed is the mutagenic tendencies of the synthetic solvents behavior as documentation exist to confirm such, our firm realize then endocrine studies are need to fully understand the implications on humans. Researchers have discovered that aquatic species in the GOM have experienced mutagenic realities. As our consequential damage assessment understood such issues these issue only raised our levels of direct concern. Conversely, our efforts focused on addressing the fact that the problematic dispersed crude oil is fully capable of being detoxified and removed from the GOM region our efforts realized that accomplishment of this goal would eliminate the threat. With the threat removed the region could recover to per spill conditions.

List of attachments:

- 1999 EPA Notebook, table 14
- Rip Kirby Paper (black light reveals hydrocarbon contamination in GOM waters (directly exposes humans) to Corexit connection summary final
- Auburn University published Briefs I and II reflecting trapped PAH contamination not degrading in the coastal zone region of the GOM.
- SCGLLC, decision model worksheet for DWH project.
- SCGLLC Invoice 1012 DWH EPA 92013

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Strategic
Consulting
Group, LLC

Louisiana
Economic
Foundation, Inc

November 7, 2013

Ms. Gina McCarthy, Administrator
Mr. Bob Perciasepe, Deputy Administrator
Mr. Craig Matthiessen, Policy
United States Environmental Protection Agency

RE: Executive summary with citations from peer review sources justifying SCG direct threat assessment already presented requiring immediate direct action timeline. EPA office of the Administrators receipt of SCGLLC direct threat assessment on 9/25/2013 and 10/16/2013

Dear Office of the Administrator,

Recently SCGLLC sent a direct threat assessment to your office directly confirming the dispersed crude oil contamination problem-challenges that exist in our GOM coastal region impacting the 5 coastal states along our GOM region. SCG is respectfully requesting from EPA a specific timeline outlining direct action items that will be addressed by EPA and the federal oversight to remove the direct threat that is presently impacting human health. Also please confirm if the CDC and office of the Surgeon General have been notified. This was respectfully requested in the last email correspondence our office sent to Ms. McCarthy on 10/16/13.

Please excuse our direct concerns for public health, but our data confirms the presence of the direct threat.

Upon receipt of this letter and confirmation of the data detailed in this letter, please communicate to SCG timely, when EPA will do the following:

A. Take direct action with the next phase of clean up using the OSE II technology.
B. Advise the RRT-NRT that the identified problematic dispersants that have been allowed to be used in US waters possessing emergency use status with the RRT-NRT are no longer able to be used as they are proven to be problematic to human health and adversely impact our nation's natural resources.

The dispersed crude oil behaves differently than normal crude oil due to the introduction of the synthetic solvent representing the mechanism that allows direct entry thru human skin in wet conditions. The introduction of the DOSS contained in both dispersants introduced into the GOM region increases the toxicity of the contamination blocking microbial degradation process. Confirming the fact that the dispersed crude oil is problematic and trapped in the GOM coastal region where our civilian population is being exposed. The good news is this dispersed crude oil contamination can be removed quickly when allowed by federal oversight.

Presently we are entering the 43rd month of gestation exposure for coastal zone residents. Adverse human health issues are confirmed whereas the dispersed crude oil contamination represents a threat to human health. Conversely, time is critically short. Our firm is fearful that bureaucratic delays in addressing the GOM situation will result in the public realization that their GOM is contaminated and has been the root cause for their adverse health resulting from persistent exposure to carcinogens that are trapped in the sediments resulting from the use of the chemical dispersants that changed the behavior characteristics of the crude oil that was accidentally discharged during the DWH incident.

As earlier conveyed in the direct threat assessment total parts hydrocarbon threshold levels for adverse human health has been established by understanding the concentration levels and the duration of exposure, as well as the mode of transmission from the environment into the human system. See (

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http://www.atsdr.cdc.gov/toxprofiles/tp.asp?id=424&tid=75) this federal publication clearly depicts the human adverse health impacts of persistent exposure to crude oil components in our US environment.

- Section 5 of this paper clearly confirms that the synthetic solvent contained in the dispersants that were sanctioned for use during the DWH incident serves as a mechanism for direct uptake of the dispersed crude oil components directly into the human circulatory system in wet conditions.
- The DWH incident federal oversight directly allowed the implementation of dispersants containing this problematic solvent to be directly applied to the GOM region.
- Louisiana State Officials directly requested that the use of the dispersants be stopped in May 2010. This request was ignored by the RRT. However, this incident resulted in a shift from one dispersant to another as the responsible party switched from using the Corexit 9527a dispersant (http://inspectapedia.com/hazmat/Corexit_9527A.pdf) to the Corexit 9500 dispersant (http://inspectapedia.com/hazmat/Corexit_9500_UsCueg.539287.pdf).
- Alarming in 2010 was the fact that both utilized Corexit dispersants (9527a, 9500) were extensively utilized in a continuous manner during the DWH incident. As the Corexit 9527a dispersant possessing sole NCP emergency use status with federal oversight. Direct application of the dispersants to the surface and subsurface waters of the Gulf occurred despite the fact that both dispersants manufacturer's MSDS sheets clearly denoting in section 6 of their MSDS sheets (ENVIROMENTAL PRECAUTIONS: Do not contaminate surface water). During the DWH incident, sub surface application was implemented for the first time resulting in 3rd party confirmation that the application was not effective.
- As confirmation exist both ways with respect to whether or not the Corexit 9500 or 9500a had the synthetic solvent in its formula at the time while it was being introduced into the GOM environment is noted. Introduction of the synthetic solvent is problem. However, the fact that the contamination remains trapped in the GOM environment due to identified toxicity issues resulting from the DOSS components found in both formulas. Detoxifying the trapped dispersed crude oil is possible using the recognized NCP available technology, there for it must be removed.
- A direct threat to human health and economic survivability of the GOM coastal zone region exist as long as the toxic dispersed crude oil is allowed to remain present in our GOM region persistently capable of exposing carcinogenic crude oil components to our civilian population.
- Understanding that the very application of the dispersants changed the behavior characteristics of the light sweet crude oil (http://inspectapedia.com/hazmat/MSDS_Crude_Oil_Martin.pdf). This contamination is problematic to human health as well.
- Bio Accumulation threats exist to ground water resources in the region as bioaccumulation tendencies are known.

The dispersed crude oil contamination is problematic as long as it is allowed to remain in our GOM environment as its exposure to human skin tissue directly impacts human health.

Swift removal of this identified threat is possible if direct action is taken to allow it to be removed. SCGLLC's strategic economic focus with its research on this problem recommends directly applying the OSEII technology to detoxify and remove the contamination because it is possible, thereby preserving human life and economic survivability of the region.

- As the threat assessment clearly made the point: **EITHER REMOVE THE THREAT OR REMOVE THE PEOPLE!**

The purpose of this email letter is to clarify any lingering questions that either: US EPA or federal oversight might have, as to the accuracy of our firm's supplied research data. We are clarifying the data with this letter, so that EPA can take direct actions guiding federal oversight towards swift corrective action to remove the dispersed crude oil timely so that our Gulf of Mexico region environment can be detoxified with the dispersed crude oil being

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removed via microbial degradation. We have arranged the key data in bullet form so that the problem and solution is clearly understood so that the decision can be made.

- With respect to this issue, SCG desiring to make sure that no miss understandings are possible with respect to the research data that was previously presented to EPA and federal oversight. We do not want researched our data get spun or its focus be miss directed; clarification of the data is being presented in bullet form to clearly make federal oversight aware of the threat that is present.
  - **It is important for federal authorities take direct action to manage the direct threat or the direct threat manage all.**

This email includes peer review citations from published sources that confirm:

Clarification and confirmation of the environmental contamination is recognized by the PAH signatures in the GOM coastal zone.

1. This data is also confirmed by Dr. Paul Sammarco from LUMCON who also published reports confirming GOM contamination in the waters and sediments of the GOM. Distribution and concentrations of petroleum hydrocarbons associated with the BP/Deep-water Horizon Oil Spill, Gulf of Mexico http://www.sciencedirect.com/science/article/pii/S0025326X13002762
   (**CITATION of Abstract**) We examined the geographic extent of petroleum hydrocarbon contamination in sediment, seawater, biota, and seafood during/after the BP/Deepwater Horizon Oil Spill (April 20–July 15, 2010; 28.736667_N, _88.386944_W). TPH, PAHs, and 12 compound classes were examined, particularly C1- benzo(a)anthracenes/chrysenes, C-2-/C-4-phenanthrenes/anthracenes, and C3-naphthalenes. Sediment TPH, PAHs, and all classes peaked near Pensacola, Florida, and Galveston, Texas. Seawater TPH peaked off Pensacola; all of the above classes peaked off the Mississippi River, Louisiana and Galveston. Biota TPH and PAHs peaked near the Mississippi River; C-3 napthalenes peaked near the spill site. Seafood TPH peaked near the spill site, with PAHs and all classes peaking near Pensacola. We recommend that oil concentrations continued to be monitored in these media well after the spill has ceased to assist in defining re-opening dates for fisheries; closures should be maintained until hydrocarbon levels are deemed within appropriate limits.
   - Please note: Originally in the Sammarco group peer reviewed paper, the human blood sampling data that was collected was not included in this publication. Nevertheless the data exist confirming direct impact to human health is a result of the dispersed crude oil presence in the GOM region

2. Environmental contamination trapped in the GOM coastal zone region is confirmed whereas dispersed crude oil contamination is presently trapped in our environment not degrading.
   - Confirming the fact that Trapped PAH contamination are present in the GOM coastal zone region our firm has supplied from the peer review authors of the OSAT II official report from Auburn University. In their published research finding I and II, it is clearly obvious and known that the trapped dispersed crude oil contamination is not degrading in the sands of the beaches, sediments along the GOM coastal region and intertidal zones. These documents were included as attachments in the direct threat assessment.

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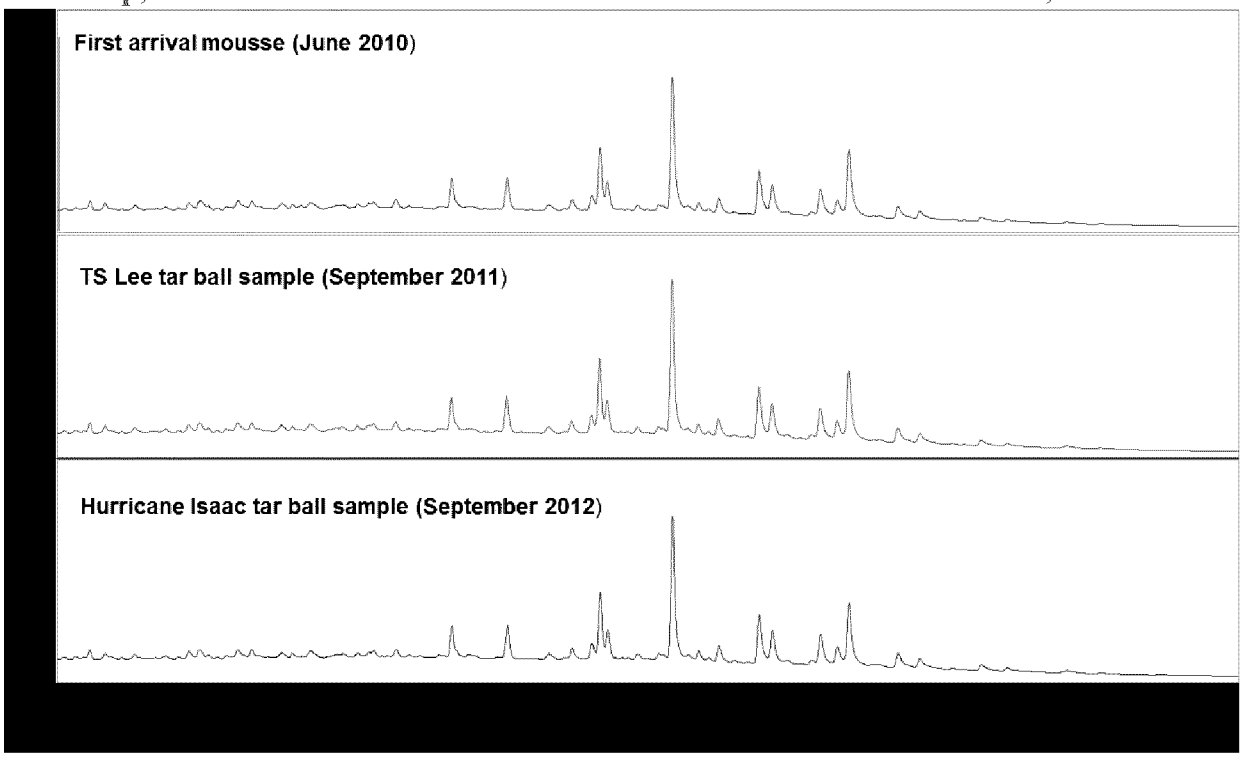

- The dispersant Coastal zone environmental dispersed crude oil contamination has been trapped due to toxicity issues from the dispersants components as well as the volume of the oil itself.
- The GOM coastal zone region supports recreation use and tourism where millions of America families live work and play year round as the GOM is the direct economic catalyst.
- The direct threat assessment identified that recreation use and tourism direct economic value to the to the five coastal states economies and well as our national economy is in excess of $122 billion annually based on a conservative coast line valuation method previously presented. Whereas public perception drives recreation use and tourism.

3. Visual confirmation of fact that dispersed crude oil present in the environment is impacting human health is clearly visible and documented. This is possible thanks to the research of James Rip Kirby in 2012, who stumbled across the fact that the tar ball which are everywhere in the GOM coastal zone represent a clear threat as they effervesce dispersed crude oil contamination directly impacting human skin tissue clearly visible using ultraviolet light. Confirmation of this is achieved with blood sampling data to confirm the hydrocarbon patterning clearly visible with the aid of ultra violet light. Our firm has previously supplied our firm's copy of the James RIP Kirby findings. The URL no longer is accessible via hyperlink. From our files we have included actual photos that were once available on line for EPA's direct review.
    a. Please note, the entire research paper was included in our research data received by EPA 9/25/2013
    b. See article and pictures with Peer review science supporting facts (from April 2012) In a report published by the Tampa Bay Times on the work of Geologist James Kirby whose research is being overseen by the University of South Florida, harmful quantities of Corexit dispersant and oil are still present and a threat to beachgoers in the Gulf of Mexico. Tiny globs of it, mingled with the chemical dispersant that was supposed to break it up, have settled into the shallows, mingling with the shells, he said. When Kirby shines his light across the legs of a grad student who'd been in the water and showered, it shows orange blotches where the globs still stick to his

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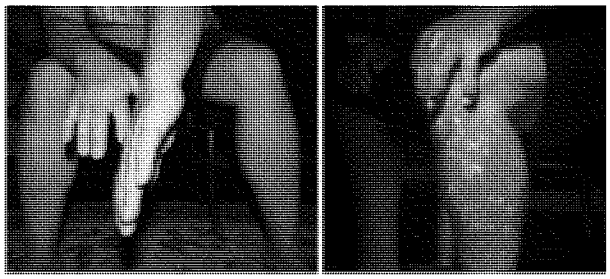
skin. Without the UV light, the skin just looks normal

c. Of which is of great concern because our US civilian population lives and recreates with their families in the GOM coastal zone region of the 5 impacted coastal states (Florida, Alabama, Mississippi, Louisiana and Texas). As this is a quote from the news article which featured Mr. Kirby's work "If I had grandkids playing in the surf, I wouldn't want them to come in contact with that," said Kirby, "



[Photos courtesy of James "Rip" Kirby

4. SCGLLC has included a few citations from peer reviewed essays regarding the fact that the synthetic solvent is the mechanism that allows the dispersed crude oil to pass directly thru human skin via micelles carcinogenic components of both the crude oil and the synthetic solvent plus any other chemical found in nature that might happen to be present in the environment when the dispersants are applied to the crude oil in moist environments. These essays afford the direct understanding of the rate of uptake with respect to duration of exposure thru human skin that impacts human blood.
   - Mechanism being voluntarily introduced into the environment with the full support of federal oversight responsible for the preserving the environment and protecting the health and safety of our American population is concerning. Especially when the synthetic solvent being introduced changes the behavior characteristics of natural crude oil into dispersed artificially weathered crude oil that facilitates or allows crude oil carcinogenic components to directly enter or pass thru human protect skin and directly enter the human circulatory system is problematic to human health.
   - Insight into the human exposures of such is recognized in the June 2010 peer review paper by Sciencecorps, Crude OIL Hazards.(http://www.sciencecorps.org/crudeoilhazards.htm)
   - Understanding the micelles that contain both the crude oil carcinogenic components as well as the synthetic solvent in molecular form in the environment. The trapped contamination in the sediments is of great concern as the problematic contamination is a direct threat to the humans when it is in the environment.
   - Understanding also the fact that the dispersed crude oil bio accumulates as it sinks into the sediments of direct concern is public water tables where coastal communities rely on drinking water in the coastal zone.

5. This letter has prepared in bullet form multiple Pub Med peer reviewed essays confirming the rate of uptake into the human system the 2butoxyethanol and the crude oil component that are carcinogenic to human health of which our firm has characterized as problematic requiring immediate direct action to remove from our GOM region.
   (Research data has already been supplied confirming the fact that the dispersed crude oil is problematic to human health.)
   1. Both dispersants used during the DWH incident (Corexit 9500 and 9527a) utilized the synthetic

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solvent 2butoxyethanol as cited in **PUB MED (PMC 3237364)** and EPA in the **1999 EPA NCP notebook table 19.** Moreover both dispersants contained the DOSS component as well in their formulas.

2. **Percutaneous absorption of 2butoxyethanol in man is proven and understood as noted by the pub med essays data detailed below which was supplied in the SCGLLC direct threat assessment that was received by US EPA as noted above**. (Keep in mind this solvent is realized as a mechanism that when present mixed with chemical allows the mixture of the chemicals to directly pass thru human skin efficiently and go directly into the human blood and organs of man depositing the molecules from the micelles that are formed when the crude oil and the dispersants are combined changing the behavior characteristics from normal crude oil to dispersed crude oil.)
   a. **Percutaneous absorption of 2buxtoxyethanol in man, PMID 3387958 (CITATION)** Uptake rates ranged from 7/96 nmol.min-1.cm-2. This indicates that persons exposing large portions of their skin to 2butoxyethanol are at risk of absorbing acutely toxic doses.
   b. **Percutaneous absorption of 2butoxyethanol vapour in human subjects, British Journal of Medicine 1991; 48:788-792. (CITATION)** The average concentration in blood and the calculated rate of uptake of BE were about three to four times higher during dermal exposure that during inhalation exposure. These experiments suggest that dermal uptake of BE accounts for about 75% (45-85% individual experiments) of the total uptake during whole body exposure to the BE vapour. Thus it appears that the use of the respiratory protection mask will not protect efficiently against exposure to BE vapours. A tendency towards increased percutaneous absorption rate was seen in raised temperature and humidity conditions.
   c. **Percutaneous absorption of neat and aqueous solutions of 2butoxyethanol in volunteers. Int Arch Occup Environ Health.2004 Pub Med1291543. (CITATION)**_Even water content as low as 10% led to an approximate fourfold increase in permeation rates. These findings are important for health risk assessments of occupational exposure to BE, since BE is commonly used in mixtures that contain water. Exposure to aqueous solutions of 50% and 90% of BE may result in substantial skin absorption: if a 60 min skin contact of 1,000 cm(2) is assumed, dermal uptake would be four times higher than pulmonary uptake in an 8-h occupational exposure to TLV of 100mg m(-3). This clearly justifies the skin notation for BE. For the purpose of biological monitoring, both BE in blood and BAA urine were shown reliable indicators of exposures.
   d. **The influence of water mixtures on dermal absorption of glycol ethers PUB MED 17173944 (CITATION)** This study assessed the influence of water mixtures on the dermal absorption of butoxyethanol and ethoxyelthanol in vitro thru human skin. Butoxyethanol penetrated human skin up to six fold more rapidly from aqueous solution (50%, 450 mg/m.). …. .. The mechanism for this phenomenon involves disruption of the stratum coreum lipid bilayer by desiccation by neat glycol ether micelles, hydration with water mixtures and physicochemical properties of glycol ether-water mixtures. Full elucidation of the profile of absorption of glycol ethers from mixtures is required from risk assessments of dermal exposure.
   e. **Percutaneous absorption of 5 glycol ethers through human skin vitro. PMID 15251185. (CITATION)** These experiments show a statistically significant (student's t-test, $P<0.05$) increase in permeation coefficients from neat to 50%water diluted glycol ethers and the same trend can be observed influences and lag times. These results confirm the good ability of these solvents of permeating the skin and show that they could represent a risk for potential dermal absorption of both workers and for occasional exposures since the average lag time is 1.57 hours.
   f. **Gas chromatographic determination of butoxyacetic acid in human blood after exposure to 2-butoxyethanol. PMID 1929861 (CITATION) Butoxyacetic** acid (BAA), a major metabolite of BE, was found in all samples except those collected prior to the exposure. This is the first time to our

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knowledge that analysis of BAA in human blood has been reported. Concentration of BAA in blood ranged from 22 to 60 micro M. These concentrations were about two orders of magnitude lower than those causing swelling and hemolysis of human erythrocytes in vitro. The BAA blood levels peaked after 2-4h. The decrease between 4-6h indicates and average half-time of BAA in blood of about 4h, which is in accordance with previously observed half-times in urine. The low renal clearance of BAA (22-39ml/min) indicates extensive binding to blood proteins and poor tabular secretions of the substance. Binding of the BAA to blood components is also indicated by the low apparent volume of distribution of approximately 15l.

g. **A human exposure study to investigate biological monitoring methods for 2butoxyethanol. PMID 14602521.**
h. **Physiological based pharmacokinetic modeling of human exposure to 2-butoxyethanol. PMID 16246510**
i. **Dermal exposure assessments in occupational medicine. PMID 12063360**
(CITATION) The importance of dermal exposure has increased during the last few years, mainly because of the reduction of respiratory exposures to toxicants. Pesticides, aromatic amines and polycyclic aromatic hydrocarbons are considered to be the chemicals at highest dermal risk. .... To predict the systemic risk associated within dermal exposure and to enable agencies to set safety standards, penetration data are needed. Moreover, there is a need for practical risk assessment model, particularly for small and medium sized enterprises.

SCGLLC must apologize for being so direct with our letters to US EPA addressing the direct threat as the agency is the guardian of our public's confidence with respect to the integrity of our environment and with specific focus on its potential to adversely impact human health. SCGLLC concerns are detailed in the recently received threat assessment presented by our firm to federal oversight.

The above sections **1, 2, 3, 4** and **5** confirm:

- What type of environmental contamination levels present in the GOM environment
- What contamination is presently trapped in the GOM coastal zone environment
- What concentrations levels exist; Visual confirmation that the contamination impacts human health
- Explanation of how it passes thru human skin tissue via micelles
- Pub med essays confirming the synthetic solvent 2bte allows rapid upload into the human system of the carcinogenic components of both the dispersants and the crude oil all of which impacts human health.

6. Confirms environmental contamination impacts on human health following a crude oil spill that have occurred globally results in human symptoms resulting from chemical exposures.
   - What is significant in the GOM coastal zone region is the fact that oil spill response workers and our civilian population both have been persistently exposed to the same problematic contamination that is trapped in our GOM region. As sections 1, 2 3, 4 and 5 clearly confirm that the dispersed crude oil is present in our coastal zone where our civilian population lives, works and enjoys recreational activities with their families. Just as tourist and snow birds migrate to our GOM beaches annually, exposure realties exist for these as well as our local folks. Our civilian population is at risk as persistent exposures create chemical sensitivities (TILT) and result in adverse human health.
     - TILT: The illness afflicting workers exposed to BP's oil disaster? http://www.southernstudies.org/2010/06/tilt-the-illness-afflicting-workers-exposed-to-bps-oil-disaster.html (Citation) Workers cleaning up the BP oil disaster in the Gulf of Mexico

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have reported suffering from flu-like symptoms that may be the consequence of exposure to chemicals in the oil as well as the petroleum-derived solvent being used to disperse the spill. The illness -- marked by headaches, fatigue, upset stomach, and problems with memory and concentration -- has been dubbed toxicant-induced loss of tolerance, or TILT. People suffering from TILT lose the ability to tolerate exposures to household chemical products, medication or even food, Dr. Claudia Miller of the University of Texas Health Science Center told WOAI TV: *"Things like diesel fuel, exposure to fragrances, cleaning agents that never bothered them before suddenly bother them," adds Dr. Miller.* Miller first described TILT in 1996, but it remains a controversial diagnosis among the medical community. The syndrome is also known as multiple chemical sensitivity and idiopathic environmental intolerance. The National Institute of Environmental Health Sciences, a division of the National Institutes of Health, has defined the illness as a "chronic, recurring disease caused by a person's inability to tolerate an environmental chemical or class of foreign chemicals

- Symptoms like this are also recognized in the peer review study reviewing historical oil spill incidents globally and assess the impact on the DWH incident. **American Journal of Medicine Published in 2013** Mark A D' Andrea and G K Reddy (**Citation)** Crude oil spills affect human health through exposure to inherent hazardous chemicals including para-phenols and volatile benzene.1-3 The major health consequences of crude oil spill exposure include the abnormalities in hematologic, hepatic, respiratory, renal, and neurologic functions.4,5 In addition, subjects exposed to oil spills often experience frequent asthmatic attacks, headache, diarrhea, dizziness, abdominal pain, back pain, and other symptoms.4,6-9 .....(**Conclusion)**The results of this study indicate that clean-up workers exposed to the oil spill and dispersant experienced significantly altered blood profiles, liver enzymes, and somatic symptoms.

Clinical Significance

- Human exposure to oil spill and dispersant use has a potential to alter both hematological and hepatic profiles.
- The hematological and hepatic alterations include decreased platelets and BUN, and increased creatinine, serum levels of ALP, AST, and ALT.
- The most reported somatic symptoms are headache, shortness of breath, skin rash, cough, fatigue, painful joints, and chest pain.

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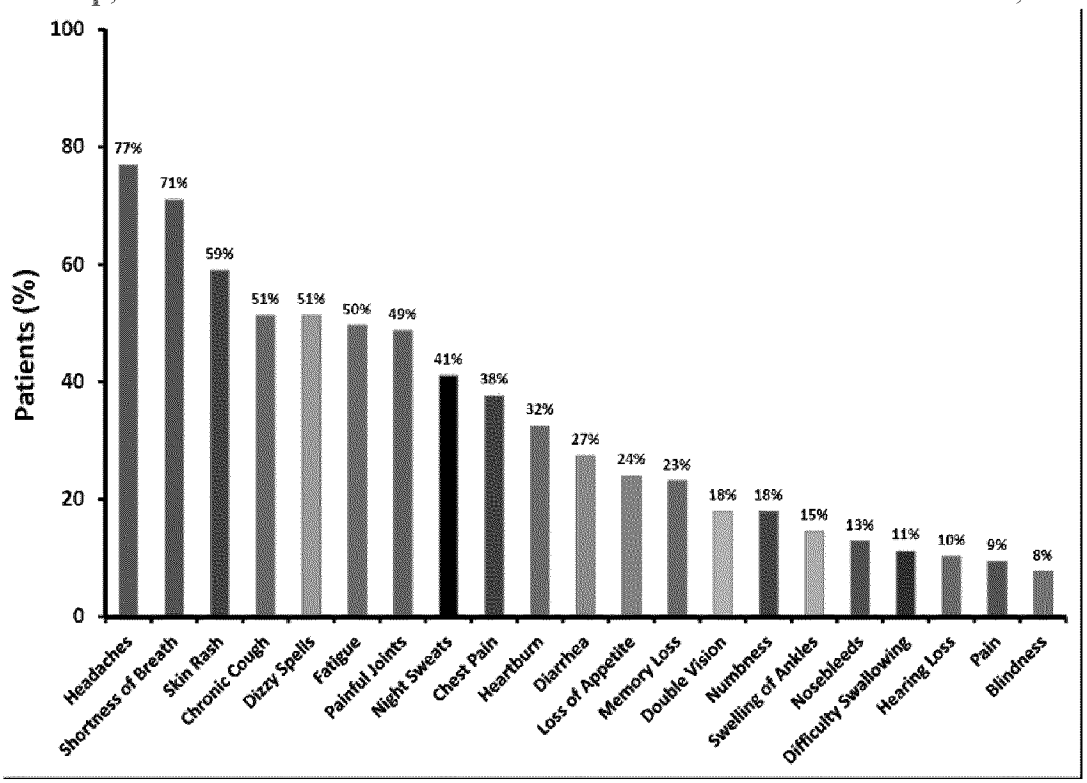

SCGLLC review of the human adverse health symptoms associated with the dispersed crude oil historically appears to be common for the most part as they might incidentally with our general population. However, such is not common when not these symptoms pattern and persist continuously with a population until these common symptoms results in various forms of cancer and ultimate death. All of which is consistent with dispersed crude oil contamination whereas the crude oil components are directly able to enter into the human system as clearly confirmed in section 5 of this letter.

- Public reporting of such human illness is collectively found on line as reported on http://www.floridaoilspilllaw.com/ a review of this web site is a cumulative log of human suffering, environmental damage, and public accounts of all related issue resulting from the DWH incident to present in the coastal zone of the GOM impacted area. Personal accounts of adverse health impacts to family members, activist groups, cancer institute's efforts, etc.. All of which has been ignored by the Washington and States officials due to economic and political pressures. As this is not peer review data, observation of human suffering is realized with review of the web sites contents.
- Over the course of the DWH incident to present, the on line publication of Florida Oil Spill Law has documented in new paper articles, testimonials and have done feature articles on human suffering with symptoms identified from the above mentioned chart. However no federal corrective action has taken place to address and remove the environmental contamination that has caused the human suffering. Adverse human health has been impacted and is being impacted daily as long as the dispersed crude oil is allowed by our federal oversight to remain trapped in our coastal zone sediments and remain present in GOM region.

History repeats itself;

- Historically, Alaska residents experienced the Valdez crude oil accident back in 1989. During our firms

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consequential damage research revealed great justification for direct concern regarding adverse human health as well as long term environmental contamination persisting as noted in the Persistence and Toxicity report authored by Stanley Jeep Rice with NOAA we researched. With respect to adverse human health, available on the internet is an abundance of public accounts of adverse human health, cancer and shortened life spans resulting from chemically treated crude exposures during the Valdez incident. SCG research could not obtain official confirmation of the incidence of adverse human health occurring. This was not possible because the medical records were officially sealed. The historically sealed medical records would have been useful today in helping medical professionals understand better the long term health impacts of such exposure.

- Today for the DWH incident, this is problematic because medical professionals are somewhat at a disadvantage as they are aware of the any adverse medical issues resulting from past incidents. Because of this today, they have been most likely miss diagnosing symptoms associated with DWH incident in the general population as federal under reporting has been noted.
- The ability to understand the root cause of a patient's illness is important so that adverse human suffering is minimized.
- As impact to human health is realized so to in the GOM region is economic harm to insurance companies obligated to pay for the cost of their insured adverse health. The environmental contamination that is presently impacting the region is increasing the cost of insuring the health of the population. If the contamination is allowed to continue, with respect to health insurance companies in the impacted 5 coastal states, these carriers will eventually go broke trying to insure what is uninsurable as the health of these people living in the impacted region's fate will ultimately result in cancer and shortened life of the insured. With respect to public accounts of adverse human health mentioned on the above mentioned web site; allot of these people were uninsured therefore not able to receive proper medical resources. Those who were insured were could have been miss- diagnosed for the reasons mentioned above. All of which magnifies the impact of the problematic dispersed crude oil contamination representing a direct threat that must be removed timely.
- The same synthetic solvent was introduced into both coastal environments: Alaska and the GOM coastal region.

SCG has researched that dispersants containing the synthetic solvent and DOSS in combination with the crude oil itself is trapped in our environment is the basis for our direct threat assessment. The clear conclusion from all of our research is that the:

- The dispersed crude oil present in the environment is problematic and must be removed.
- Failure to remove the threat is the realization of human loss of life as various cancers are realized resulting from the prolonged impact of the dispersed crude oil exposures by our coastal zone civilian population; vacationing in the region; and ingesting the GOM seafood that has been impacted.
- As our firm could go into each issue, there is no need as it is possible to remove the threat, so therefore federal oversight must the threat be removed as such is their duty in the positions they hold within the EPA and the federal authority.

Any time issues involving hydrocarbon based contamination, this issue is particularly sensitive issue, relative to South Louisiana in heart of chemical plants and our energy corridor.

- The DWH dispersed crude oil contamination is different from hydrocarbon contamination with respect to the synthetic solvent changing the behavior characteristics of the crude oil.
- Some would argue that nothing needs to be done along the GOM region because the region has experienced crude oil spills prior and will continue to experience them. This is somewhat true; however the introduction of the synthetic solvent from the dispersants that were confirmed to be utilized in the DWH incident changed the crude oil behavior characteristics with respect to human health as well as

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microbial degradation. Second the unprecedented amount of the dispersants that were used due to the ongoing increase in natural seeps that have been occurring since the DWH incident occurred is of great concern as the GOM loads with dispersed crude oil contamination that is not able to degrade due to toxicity issues that are confirmed.

- It is confirmed that the presence of the synthetic solvent is a mechanism that allows full uptake of the crude oil components directly thru human skin with indirect contact. This is not normal behavior with crude oil.
- Dispersants applied to crude oil blocks microbial degradation from occurring due to DOSS component as compared to not with crude oil alone in the GOM. Time however is the issue as well as bioaccumulation.

Dispersed crude oil contamination challenge that is problematic in the GOM coastal region as identified in SCGLLC direct threat assessment delivered to US EPA and the Administration.

Collectively thru our direct efforts throughout the entire process, our firm has identified as accurately as possible how the dispersed crude oil is problematic to human health as clarified in this letter with our strategic economic focus.

- Whereas all other issue regarding the GOM prior to this point, no longer matters; as the health and safety of our America public: residing, recreating, and working in the GOM coastal zone and must protected at all cost.
- Human life is precious in America. Our American public will not stand by and allow its citizens not to be protected by our governmental agencies or its leaders.
- Present perception regarding the environmental safety of this region, has been advertised as safe. Truth in advertising must be realized and confirmed with a next phase of clean up in order to maintain the public trust of our elected officials and our federal agencies engaged in direct oversight of our states and their residents.
- A change in public perception real or otherwise, direct impacts the regions recreation use and tourism.
  - The conservative annual value of this is at minimum $122 billion annually
  - If no clean up activity is realized the minimal losses long term exceed 3 trillion.
- Preserving the economic survivability of the region is critical as the coastal zone residents represent our skilled domestic work force. Depopulation is a real threat of which we cannot afford to allow to be realized in terms of potential loss of human life and the regions economics to the 5 coastal states and the nation.

Ability to cure timely as recommended as the next phase of clean up for the GOM region

- Transparent industrial test data supplied to our office by OSEI Corporation in the fall of 2012 revealed that Shell Global, successfully utilized the OSEII EA bioremediation technology in their field test demonstration confirming the effectiveness of the OSEII technology in removing hydrocarbon base contamination from the Niger river delta region of Nigeria.
- This region is identical to our Mississippi river deltaic coastal zone region. SCGLLC recommendation of the OSEII technology to EPA policy officials in December of 2012 was justified by the test as well as all of SCG's research from April 2010 thru December 2012 to present compelling our firm to recognize and push the OSE II mitigation solution as it has been confirmed to be the solution that has the ability to quickly detoxify and remove the direct threat from our GOM coastal zone residents. Because our firms initial blind vetting of all NCP technologies; resulted in selection and presentment of the OSE II technology to officials; our firm has known that more effective technologies have been available for direct use but not allowed for unknown reasons.
- Americans considers Nigeria to be a 3rd world country, yet with the help of Shell, the Nigerian people are

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having their environment effectively cleaned up using the OSEII technology which is proven capable of removing their known toxic hydrocarbon based contamination, which has been confirmed to be problematic to human health as it was a featured article in, TOXICOLOGY AND ENVIROMENTAL HEALTH SCIENCES, September 2012, volume 4, issue 3 PP 173-185. **Eco-toxicological and epidemiological assessment of Human exposure to polycyclic aromatic hydrocarbons in the Niger Delta, Nigeria** (CITATION) The eco toxicological assessments in this study indicate contamination of environmental media in the region high potential for acute toxicity of sufficient enough to induce carcinogenic effects and chronically affect human health of residents with prolonged exposures.

SCG having knowledge of developments with the OSE II technologies global success aided SCG research efforts in late 2012. At the time we were directly engaged in ongoing dialog with US EPA senior policy official Craig Matthiessen. The outcome of months of dialog resulted in the 12/19/2013 conference call where SCG justifiably showcased the OSEII technology to EPA policy officials as the only proven solution that was capable of removing the direct threat SCG research confirmed to be present in our GOM region. Possessing direct knowledge that Shell used this technology to safely and effectively remove hydrocarbon based contamination from the Niger delta coastal river region. Possessing knowledge of the Shell testing data supplied at the time by OSEI officials spurred our firm's efforts with US EPA.

Such understandings affords SCG direct 3rd party- transparent confirmation that our contaminated GOM coastal zone environment is totally able to be clean up where the dispersed crude oil problematic contamination can be safely and timely removed interfacing the identified US NCP listed EA bioremediation technology OSEII. Data supplied by OSEI Corporation noted by the hyperlink below:

- http://osei.us/wp- content/uploads/Nigeria_Shell_testing_OSEII_on_Ogoniland_soil_Nov5-27-2012.pdf**(Citation)**Nigeria Shell spill site, after the application of OSE II, the soil TPH remediated from the top of the soil 97.55% in 21 days, from the bottom of the soil the TPH remediated 95.4% in 21days, the PAH's from the top of the soil remediated 99.8% in 21 days and the PAH's from the bottom of the soil remediated 99.805% in 21 days, proving OSE II is the solution to clean up the Nigerian Shell Ogonieland spill.
- Significance of this data being confirmed recognized with signed industries engineer's reports substantiated SCG's affirmed position with the OSEII EA bioremediation NCP technology for the conference call as well as it aided our firm in creating the direct threat assessment identifying the challenges that are present with comfort that the challenges can be resolved.
    - Nigerian environmental contamination problems were known publically by the previously identified publication denoting the toxic threat in Nigeria requiring mitigation.
    - At present GOM dispersed crude oil contamination challenges **are not know publically** as great economic loss potential exists as the issues are regarding our GOM is very sensitive for many reasons.

Focusing on reality rather than perception SCG's efforts during the entire process has allowed our firm to objectively and persistently identify what is the direct threat and how best to eliminate it so that the full extent of the consequential damages understood likely; are never allowed to be fully realized. Out of SCG control is what others do such as federal and state direct oversight as they have the duty to protect life, property and our nation's natural resources.

For humanitarian purposes, it should be clearly obvious that if federal oversight does not want the potential for depopulation to occur in the GOM region resulting from the dispersed crude oil that is present, they will allow the direct threat to be removed timely.

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We recognize fully that our direct threat assessment has clearly confirmed that EPA and federal oversight will either act or not with the information SCG have provided.

- SCG has expressed concerns persistently regarding the toxicity issues with the dispersed crude oil in the GOM impacted environment of which have been overlooked for the most part due to will full blindness of the issues.

Hopefully SCG transparent efforts delivering the direct threat assessment in September and this detailed letter today clarifies the situation for the US EPA and federal oversight.

Our presentment of the peer review data previously supplied should make it clear to decision makers that they must be proactive and take direct positive measures to remove the direct threat timely. Affording all involved, confidence with their decision to move swiftly towards protecting the public health, preserving the public trust and doing their duty as directed by the US clean water act by authorizing the recommended next phase of clean up in the GOM region to happen.

With the following understood, SCG justified the respectful presentment of our direct threat assessment without prejudice directly hoping for the good of all that federal oversight moves swiftly to allow the next phase of clean-up which is achievable in a timely manner.

- Confirmed delivery of SCG's direct threat assessment has been noted as our firm received electronic receipt that our letters were directly received and read on the respective dates listed above by Mr. Matthiessen, Mr. Perciasepe and Ms. McCarthy.

Because our firm has not received any response back from EPA regarding our presentment of our direct threat assessment, SCG placed a call to EPA last week to the office of the administrator in order to determine when EPA was going to act on our letter and its contents. As the September letter identified the human error issue within EPA as well as the direct threat assessment SCG prepared for US EPA and the Administration. Requesting them to take direct action with as such is required due to the direct threat that is present in the GOM coastal zone region of the United States.

With full respect to all parties involved our firm requires a timely response to the following:

- Please be advised SCG needs to know if indeed EPA and the federal oversight is going to take direct action or not in response to the threat assessment and this letter clarifying the threat? If so when and in what detail and capacity?
- Presently under the RRT-NRT command structure states must yield to federal oversight until such time that federal oversight fails to act responsibly in the interest of the states. When possible clarification is needed in the event no action is authorized regarding removing the identified direct threat.
- The only thing that matters is that federal oversight refuses to address the issues and therefore states must consider their options in order to remove the direct threat.
- Also advise when SCG's invoice will be processed. SCG has invoiced EPA directly for our firm's self-funded efforts addressing the challenges from the DWH incident collectively. We have responsibly and transparently conveyed our data and with discretion to EPA remaining focused on identifying the problem and the solution. SCG purposely refrained from other issues that would have distracted from the process of timely removing the direct threat from our GOM environment.
- SCG has also afforded US EPA and the federal administration a great service by identifying the fact that human error and omission was responsible for compelling the RRT-NRT decision process to wrongfully not consider the historically available confirmed effective US NCP listed OIL SPILL EATER II EA bioremediation technology.

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- With respect to the data provided is it clearly justified for environmental safety and human health reasons, it is hoped that federal oversights present precarious position of legally allowing the application of the identified dispersants into wet environments with crude oil present direct human contact has been confirmed to be problematic. Clearly such future actions are not in compliance with the guidelines of the US clean water act.
- It is hoped that EPA will further clarify OSE II's effectiveness collectively within the rank and file of US EPA and the entire RRT-NRT command structure including USCG. Achievement of this will allow US EPA to be the true champion of our US environment; protecting the natural resources of our nation as entrusted to US EPA by the office of the President.

Future economic impact with allowing the use of the OSEII technology openly in US Waters will positively aid US EPA in protecting our nation's environment and preserving our natural resources. US Industry will also benefit greatly in many ways.

- US industry and their shareholders will benefit greatly as future clean-up cost for removing hydrocarbon based contamination will be reduced by 87%;
- Future penalties imposed by EPA will be reduced; reducing the workload of US EPA, representing a direct savings to US Industry which increases profitability of industry in the US.
- Long term environmental damage is no longer possible with application of the OSEII technology as it has a the defined endpoint of co2 and water when applied to accidently discharged crude oil thereby leaving no residual contamination in our US environment.
- Domestic energy interest regrowth in the US is achievable with respect to energy related industries desiring growth in is achievable. When our American public realizes that oil and gas drilling activities accidental discharge incidents are no longer a threat to our environment as they now are to cleaned up safely and completely.
- Re growth of our domestic energy industry is realized as 25% of the global market for energy related goods is here in the US where natural resources are available for extraction whereas production cost is reduced as environmental penalties and cleanup cost are reduced resulting in increased profits as cost savings and domestic growth is realized resulting in less transportation cost. Increased US domestic drilling will allow US to be a net exporter of energy rather than an importer. Present hydrocarbon fracking operations are benefited as well as the OSEII technology is capable of removing hydrocarbon based contamination from drinking water aquifers in the event they arise.

Disclosure: As was disclosed in our previous direct threat assessment letter received by EPA on 9/25/2013, it was clear disclosed that SCGLLC background is neither medical nor scientific with our formal training; we realize that our firm has made both scientific and medical assertions to EPA and federal oversight directly requiring their direct action in an effort to protect human health of our coastal zone residents. Conversely, the peer review science and medical essays researched we provided substantiate SCGLLC's basis for their strategic economic presentation of the direct threat assessment delivered to US EPA office of the Administrator 35 days ago. Because our firm practices strategic economics decision modeling; our firms threat assessment utilized decision modeling and supplied economic consequential damage estimates based on peer review research data presented to give decision makers the confidence to take direct action and preserve the economic survivability of our region.

In closing, this letter today respectfully makes it very clear that swift direct corrective action is required to remove the threat identified reaffirming our US EPA as the valiant champion of our US Environment as it charter prescribes.

Respectfully,

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cc: thru congressional mail as well as direct email transmission

Ms. Nancy Sutley, (Environmental) Advisor to the White House
Mr. Jeffery D. Zients, (Economic) Advisor to the White House
Ms. Valerie Jarrett (Senior Advisor to the President)
Mr. William Cassidy, US Congressman from Louisiana's 6th District

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Strategic
Consulting
Group, LLC

Louisiana
Economic
Foundation, Inc

October 15, 2013

Ms. Gina McCarthy
US EPA Administrator

Dear Ms. McCarthy,

Please allow me to introduce myself; I am David Fakouri, a strategic economist from a small private consulting firm in Louisiana.

For your direct review, I have attached a copy of my recent correspondence to Deputy Administrator Perciasepe as it became necessary to craft the letter earlier this year for delivery via mail instead of delivering the data personally in Washington, which is what I originally requested but was denied. With crafting the letter because your appointment was not confirmed at the time I focused my effort towards the acting administrator. Please forgive me for not including you in the email to Mr. Perciasepe initially.

My firm recent direct email letter to Mr. Bob Perciasepe Deputy Administrator was sent out on 9/24/2013. A copy was also sent to Mr. Craig Matthiessen at EPA Policy whom I had been in direct dialog with on the issues prior. AS it was noted in the disclosure section of our letter, we asked for a response back from EPA within 7 days of receipt of the letter. It appears that due to the federal shutdown, our firm has not received confirmation that all parties have received the email letter nor have we heard anything from EPA. We are aware that both he and Mr. Matthiessen received and open our directly sent emails on the24th and 25th of September as we were notified via email electronic notification they opened the emails. Please direct someone to advise our office whether or not if EPA is going to initiate direct corrective action or not on the issues we covered in the letter. As we feel such actions warrants the highest priority by EPA and the RRT-NRT. Moreover the need to direct CDC and the US Surgeon General to the issues as well as Homeland Security as the identified direct threat exist as confirmed with the data we provided affirms. Such must occur timely if the identified threat is not going to be allowed to be removed as prescribed as such is possible.

Because our firm is not medical or scientific, our firm must depend on those at EPA and others associated with federal oversight to act timely on the issues presented as they are responsible for such. Direct timely action is required. Conversely, the luxury of wasting addition time is not an option as we are in the 42nd month of the gestation period where it is our understanding that persistent exposures to problematic environmental contamination identified in the threat assessment transitions from adverse health issues to different and various forms of cancer as prolonged persistent exposures are probable understanding the mechanism present allowing direct passage thru skin where the solvent has mutagenic behaviors and is carcinogenic just as the BETX components of the crude oil is as well to the human health.

With respect to the subject matter identified in the letter as it relates to federal oversight. US EPA has the direct ability to approve historically known safe effective NCP technology for direct use; to expediently remove the confirmed direct threat from our GOM coastal zone region which removes the direct threat from our US civilian population. Such direct action should take immediate first priority regardless of budget issues. Secondly with understanding that the threat which we identified directly threatens the economic survivability of our coastal zone region; it would appear that our EPA and the federal administration would be very aggressive moving to cure and correct the problems created by the errors that occurred historically by EPA. Of which has resulted in EPA, allowing the use of the dispersants, despite historical data we researched confirming that the synthetic solvent represent a problematic situation when crude oil, water and the synthetic solvent was combined. As crude oil accidents occurring in the environment, especially wet environments is uncontrollable, what is controllable is the introduction of synthetic solvents into the environment that are known to be problematic.

I wish to apologize for being direct on this issue. Unfortunately I have no choice as my firm's research delivered to your agency confirms what your agency must have known that human health is being impacted presently by the dispersed crude oil contamination as the science we research confirms such. Your agency should have had direct access to the data as we did. Because your agency failed to respond to our direct concerns our firm has been compelled to direct address the issues.
We have refrained from directly contacting CDC and the US Surgeon General's Office regarding this threat as we feel that this is the direct responsibility of EPA. Please be advised that our firm will be forced to contact them directly and share the direct threat assessment we delivered as the supporting data confirms the threat and danger to the civilian population.

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Please realize that our firm recognizes the sensitivity of the data and the need to move swiftly to the next phase of clean up and removal of the challenges identified because such is achievable timely. We also recognize the need for maintaining public confidence with federal authority such as EPA and the RRT-NRT. Conversely, we have refrained from contacting CDC and US Surgeon General's office. We respectfully ask that your agency take the lead in contacting these agencies and copy our office in the official correspondence so that we can confirm that they are engaged on this threat.

With great respect to your office and what it represents, our firm has afforded your office the ability to resolve the issues that need resolution. Because we live in the impacted area, the adverse health and economic issue are very personal to our staff as this is where we live. Please take appropriate direct action on resolving the issues as if it threatened your community and family.

Personally, I wish to apologize for this letter being so direct and straight forward on the issues. In reviewing your bio MS McCarthy, you are known to be a straight shooter. Your desiring for EPA to have greater focus on being practical in finding cost effective ways to keep our air clean and our economy growing I feel a complete review of my firms letter to the deputy administrator clearly confirms that we have similar interest. My firm's strategic economic focus with decision modeling as represented in our direct threat assessment based on our firm's research and decision modeling presented proves that our interest is sincerely similar to yours.

Respectfully,

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To: Mccarthy, Gina[McCarthy.Gina@epa.gov]
Cc: David Fakouri[dfakouri@dfaa.us]
From: David Fakouri
Sent: Tue 12/2/2014 11:35:45 PM
Subject: Two direct items requiring direct action: (1) Compliance with SCG 9/4/2014 FOIA request and (2) request for face to face meeting between SCG and EPA Administrator

;;
12/2/2014 5:02 pm CST

Ms. Gina McCarthy,

Administrator, US EPA

Dear Ms. McCarthy,

Please review and respond to two items requiring (respectfully) your direct attention as Administrator of US EPA:

1. Please advise SCG when EPA will comply and submit to SCG, the FOIA requested internal EPA memo or agency directive reflecting the internal 2010 EPA decision not to sample for 2butoxyethanol in the GOM by the EPA monitors for the 2010 DWH incident response.

This issue has been bounced around, back and forth between your agency and SCG long enough. Today is 12/2/2014, the FOIA request was made on 9/4/2014, confirmed on 9/11/1014 officially.

∀ On 11/6/2014, SCG rejected documents EPA attempted to provide to SCG as they were not accurate with respect to the FOIA requested document.

∀ On 11/7/2014 SCG furnished an excerpt of the audio disclosure of Mr. Matthiessen. SCG has made copies of the full audio recording from the 12/19/12 conference call and will be mailing the audio record to EPA as a courtesy. Since 11/7/2014 SCG has been patient, waiting on EPA to comply with the FOIA request.

EPA is obligated to comply with the FOIA request made by SCG, therefore please have someone at EPA accurately comply and accurately supply the document to SCG in accordance the freedom of information act.

Please note, SCG will mail the audio recording as soon as SCG receives the FOIA requested document. As SCG supplying EPA with the audio recording is not a requirement but a courtesy afforded by SCG as SCG has been totally transparent with EPA regarding SCG sincere efforts with EPA.

2. Ms. McCarthy, SCG desires a face to face meeting with you when allowed. Please advise within 24 hours upon receipt of this email, if such a meeting is possible.

∀ The purpose of the meeting request is to talk confidentially about the reality of the GOM

situation:

∀ SCG understanding the sensitivity of the GOM situation, has intentionally afforded EPA and the Administration great discretion to the GOM dispersed crude oil contamination situation made worse by EPA decisions or non-decisions.

o Regarding the issue of EPA intentionally allowing GOM coastal zone civilian population to become human collateral damage victims as a result of EPA initially not restricting BP from using chemical dispersants in the GOM that contained 2butoxyethanol in its chemical formula. When indeed EPA knew such use would violate the mission of EPA and the US clean water act as well as EPA knowing that doing nothing would have resulted in less damages realized.

o EPA erroneously not allowing EA Bioremediation to be used also made worse this situation as compared to the utilized dispersants.

o The significance of the SCG FOIA requested document, as it represents the clear vision that EPA consciously under reported by not sampling for the increased presence of 2butoxyethanol while the chemical dispersants were being applied to the crude oil forcing the rapid gassing off of light end VOCs in the GOM and GOM coastal zone.

o The significance of EPA allowing the subsea experimental application of chemical dispersants that were never proven to be effective therefore never authorized by EPA, subsequently left by EPA to remain on the floor of the GOM, representing a problematic situation for EPA as the protector of the US environment and our countries natural resources.

∀ SCG never intended on bring all of the issues to the surface, and or having to become somewhat antagonistic to the Agency and the Administration.

o Today this email is a direct result of EPA stonewalling the issue with the hopes that SCG will suspend its efforts.

o Please know that SCG understands the endpoint of the present GOM situation means shortened life and ultimate pre mature death to our residents, with prolonged illness to others, as the GOM coastal zone environment allowed contamination represents a chemical poisoning direct to all with exposure and those being exposed persistently. Hydrocarbon poisoning has been made possible due to EPA allowing 2butoxyethanol to be voluntarily introduced into the GOM representing dispersed crude oil poisoning to humans. Please see the human biomarker data denoted in the 11/7/2013 executive summary.

∀ Please review the peer review science SCG supplied EPA on 11/7/2013, please re review the 9/20/2013 letter SCG sent you on 10/15/2013. Please review the 1998 NIOSH authored ICHEM CICADS 10 document on 2butoxyethanol. There is no question that the vapors from the dispersed crude oil afforded an acute toxic exposure to all with 1.57 hours of vapor exposure. Please consider the persistent exposure the dispersed crude oil presence trapped in our GOM coastal zone region.

Ms. McCarthy, please recall, that SCG supplied EPA and White House officials on 9/20/2013 an effective means to cure and move past all the issues discussed in this email. Affording interested parties with exposure the ability to cure and move past all the confirmed bad decision made by federal oversight officials. All of which could be safely and timely mitigated by simply following SCG strategic economic decision model recommended next phase of clean up to achieve rapid detoxification and decontamination of the GOM coastal zone region.

∀ When this is allowed, in a timely manner the coastal zone contamination would be mitigated and the threat to human health diminished. Eliminating the confirmed source of persistent re exposure to our already exposed civilian population. Moreover, once the region is allowed to be detoxified, the region can be accurately monitored and safely maintained in the event that any additional GOM sunken dispersed crude oil contamination migrates into the region. This includes the increased crude oil contamination present in the GOM from the ongoing natural seeps and abandoned subsea dispersed crude oil contamination experiment confirmed not effective and not authorized.

∀ Any such contamination that might migrate into the defined area (coastal zone region) where the US civilian population lives works and recreates can be safely and timely mitigated going forward. This is critically important as the subsea uncontrollable discharges are projected to continue for the next 25 years.

As of this date, this recommendation has not been allowed. Clearly this must be allowed.

∀ MIT application engineering coupled with the OSEII EA bioremediation technology has been poised and available since July 2010 to address this issue.

Ms. McCarthy, SCG is making a final appeal, directly to you as EPA administrator and thru you indirectly to the Administration to reconsider EPA's and the administrations positon for the GOM contamination situation.

∀ SCG positon remains resolute, that the region must be detoxified and the GOM coastal zone region must be decontaminated.

∀ If it is not, we collectively all lose as prescribed in the 9/20/2013 threat assessment SCG presented to Bob Perciasepe.

∀ SCG must be reimbursed for SCG's compelled research and presentment efforts as reflected by SCG 9/20/2013 invoice and final invoice that is forthcoming once SCG completes its presentment efforts.

∀ Of record, SCG has filed a complaint with EPA OIG in September of 2014 in accordance with SCG disclosures for reasons of preserving human health.

Please understand and recall that SCG is a resident of this region. Because SCG clearly understands that without approving the next phase of clean up for the region this region will become publically known as toxic to human health. This situation must be avoided. SCG will be

forced to stop afforded federal oversight discretion for this issue, if no agreement can be reached to resolve the issues.

∀ If SCG continues to be forced to press the issue further; sooner or later this issue will no longer be contained solely being between SCG, EPA the administration.

∀ This issue will become a public issue, something SCG tried to avoid as the American public does not need to lose faith in federal authority.

∀ SCG has expended great efforts to afford EPA and the administration ample opportunity to take appropriate corrective action. SCG understands how possible complicity to the situation might have compelled some to remain willfully blind to the GOM situation.

∀ SCG has furnished EPA (federal authority) with sound recommendations as reflected in SCG decision model which accompanied SCG threat assessment. This attest to the value and accuracy of SCG strategic economic consequential damage assessment research and decision modeling. SCG in good faith has been responsible to the both EPA and the Administration with SCG efforts of presentment as this situation could have been allowed to become a public issue in 2013. SCG maintained discretion allowing federal authority the opportunity to be heroic and depict true leadership.

As correspondence from EPA denoted that EPA did not ask for or request for SCG to perform the research SCG performed and presented to EPA. This is a correct statement. However what is also correct is that EPA would never contract or ask anyone or company to find fault with EPA decisions. SCG research confirming incidence of adverse human health occurring as a result of the dispersed crude oil contamination which EPA contended was not a risk or threat to human health, coupled with independent scientific data, compelled SCG for reasons stated(to preserve human live and economic survivability of the GOM coastal zone) warranted SCG efforts with EPA. EPA being the governing authority on the US environment, SCG on 12/10/2010 sought and did not receive transparent scientifically accurate answers from EPA. Of which justified SCG efforts when considering the course of events. As clearly reflected by all correspondence from SCG to EPA and vice versa from 2010 to present, SCG efforts were directly a consequence of EPA intentionally not supplying SCG with scientifically accurate information SCG requested. SCG was justified to persist with discovery in order to prove to EPA that errors were indeed made and that that such errors consequentially impacted human health and threatened the existence of millions of Americans as their health and economic way of life was at risk.

∀ SCG threat assessment presentment was justified. SCG presentment to EPA Administrator, showcasing incident or multiple incidence of error, was also appropriate.

In closing Ms. McCarthy, please accept my sincere apology if at times my direct communications were too direct. Please recognize that my efforts were sincere as reflected by the context of this email. SCG prays that you and the Administration will timely understand that what SCG has recommended can still afford EPA to be viewed as heroic with its efforts, providing a timely decision is communicated to SCG. Now that the midterm elections are over, the political fallout for this issue becoming public will solely reflect negatively on both the

agency and the Administration. With great hope, escalation of this issue becoming public and a political football can be avoided as such is desired by SCG as noted by requesting a timely response back from EPA, allowing SCG a direct meeting EPA Administrator, to work thru the issues with a focused timeline to allow the next phase of clean up for the GOM coastal zone region.

Respectfully,

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