FOSC DOCUMENTS

(DEEPWATER HORIZON MC-252 OIL SPILL – FPN: N10036)

HOV00009027

HOV00009027

USCG PHASE V

ADMIRAL NASH DOCS_

DISPERSANTS_

XXXXXXXX_

ARCHIVE MATERIALS

DO NOT REMOVE WITHOUT EXPRESSS

CONSENT OF CG-0945

UAC / Deepwater Response Participants

BOEMRE
British Petroleum
Bureau of Ocean Energy Management, Regulation and Enforcement
CDC
Dept of Defense
Dept of Homeland Security
EMSI
EPA
FL Fish and Wildlife Commission
LA Dept of Environmental Quality
LA Dept of Health and Hospitals
MS Dept of Marine Resources
MS Dept. of Environmental Quality
NASA
National Geospatial Intelligence Agency
National Incident Commander
National Park Service
National Science Foundation
NOAA
Office of Response and Restoration
OSHA
Sea Consulting
State of AL
State of TX
Swift Technical Services
Texas A & M University
Transocean
University of Southern Mississippi
US Dept of Interior
US Dept. of Agriculture
US Fish and Wildlife
US Health and Human Services
US Public Health Service
US State Department
USCG
Woods Hole Oceanographic Institution

Appendix I: Implementation Planning Participants

- CAPT Keith Cavanaugh, Planning Section Chief, Unified Area Command
- Charlie Henry, NOAA, Scientific Support Coordinator, Unified Area Command
- Steve Lehmann, NOAA, Scientific Support Coordinator, Unified Area Command
- Dr. Sam Walker, SMU NOAA, Unified Area Command
- Dr. Janet Baran, SMU NOAA, Unified Area Command
- Brian Tusa, LA Department of Environmental Quality, Unified Area Command
- John Martin, EPA, Unified Area Command
- Barbara Keeler, EPA, Unified Area Command
- Dr. Al Venosa, EPA and JAG (remote)
- Joe Dillon, NOAA Fisheries, Environmental Unit Leader, Unified Area Command
- Lisa Symons, NOAA, Environmental Unit Leader, Unified Area Command
- Ben Shorr, SMU NOAA, Seattle
- CDR Jim Crocker, SMU, NOAA, Houma
- Becky Shortland, SMU, NOAA, Houma
- Dr. Doug Helton, ORR, NOAA
- Dr. Amy Merten, ORR, NOAA
- Dr. Amy MacFadyen, ORR, NOAA
- Dr. Alan Mearns, ORR, NOAA
- Dr. Mary Baker, NRDA, ORR, NOAA
- Debbie Payton, ORR, NOAA
- Dr. Robert Pavia, JAG co-chair, NOAA
- Dr. Debbie French McCay, ASA, NRDA
- Marion Reed, USDA-NRCS, Unified Area Command
- Rick Bennette, FWS, Unified Area Command
- Holly Herod, FWS, Unified Area Command
- Dr. Susan Finger, USGS (remote)
- Dr. Pasquale Roscigno, BOEMRE
- Dr. Rebecca Green, BOEMRE
- Dr. Erin O'Reilly, BOEMRE
- CAPT David Callahan, HHS/USPHS, NIC
- Larry Malnor, EU Lead, BP, Unified Area Command
- Rich Kostecki, Deputy EU Lead, BP, Unified Area Command
- Tony Parkin, Marine Science Specialist, BP, Unified Area Command
- Ronnie Crossland, EPA, Unified Area Command
- Steve Backstrom, LA Dept. of Health and Hospitals, Unified Area Command
- Traci Floyd, MS Dept. of Marine Resources, Unified Area Command
- Doug Upton, MS Dept. of Environmental Quality, Unified Area Command
- Dr. David Palandro, FL-FWC, ICP-Houma/SMU
- Dr. Dawn Lavoie, USGS, Unified Area Command
- Patrick Breaux, LA Department of Environmental Quality, Unified Area Command
- Kari Sheets, NOAA, Unified Area Command

- Dr. Tim Davis, HHS, Unified Area Command
- Dr. Doug Levin, NOAA Unified Area Command
- Dr. Marc Greenberg, EPA-ERT, Unified Area Command
- Vic Kremesec, BP, Unified Area Command
- Dr. Don Rice, NSF, Unified Area Command
- Eric Delgado, EPA, Unified Area Command
- Martin McComb, EPA, Unified Area Command
- LT Joe Vermette, USCG, External Affairs, Unified Area Command
- LCDR Sonya Leibowitz, USCG, Environmental Unit, Unified Area Command
- MST2 Paul Burnett, USCG, Environmental Unit, Unified Area Command
- CDR Julia Hein, USCG, Planning Section Chief, Unified Area Command
- Ruth Yender, Scientific Support Coordinator, ICP-Houma
- Ann Hayward-Walker, Sea Consulting, ICP-Houma
- Frank Esposito, USCG, Environmental and Real Property Law
- CDR Monica Lombardi, USCG, National Incident Command
- CDR Shannon Gilreath, USCG, Prevention Law Group
- Dale Hoff, EPA, Unified Area Command
- Christina Durham, NOAA, Unified Area Command
- Jon Rauscher, EPA, Unified Area Command
- Philip Turner, EPA, Unified Area Command
- Jan Kurtz, EPA, Unified Area Command
- Donald Williams, EPA, Unified Area Command
- Valmichael Leos, EPA, Unified Area Command
- Dr. Robert Haddad, NOAA, Unified Area Command
- Dr. Christopher Reddy, Woods Hole Oceanographic Institution
- Dr. Ann Jochens, Texas A&M University
- Dr. Stephen Lohrenz, University of Southern Mississippi
- Dr. Matthew Howard, Texas A&M University
- Jen Maucher Fuquay, NOAA
- LT Stephen West, USCG, External Affairs, ICP-Mobile
- Sundee Warren, LA Department of Health and Hospitals
- Justin Kenney, NOAA, Director of Communications
- Mary Evans, NOAA, Seattle
- Dave Barry, EPA
- Dr. Peter Carragher, BP, Chief Scientist, Unified Area Command
- CAPT Barry Choy, SMU, NOAA, Houma
- Jeanne Zaiontz, Swift Technical Services
- Tim Tomastik, NOAA
- Dr. Jim Farr, ORR, NOAA
- Dr. Robert Jones, ORR, NOAA
- Dr. Carl Childs, ORR, NOAA
- Dr. Jerry Galt, ORR, NOAA
- John Nepywoda, EU Lead, BP, Unified Area Command

IMPLEMENTATION PLAN FOR SUB-SEA AND SUB-SURFACE OIL AND DISPERSANT DETECTION, SAMPLING AND MONITORING

- Jon Johnston, EU Deputy, BP, Unified Area Command
- Russell Putt, BP, Unified Area Command
- Dr. Andy Hill, BP, Unified Area Command
- Dr. Simon Lisiecki, Marine Science Specialist, BP, Unified Area Command

ADD NEW OSAT TEAM MEMBERS

LIST ACADEMICS WHO HAVE WEIGHED IN ON JAG

INTERAGENCY EXCOMM

Resourcing:
Need to define the federal presence on RP vessels
State representatives on vessels
Academic representatives on vessels

bp

Douglas J. Suttles
Chief Operating Officer

BP Exploration & Production Inc.
501 WestLake Park Boulevard
Houston, TX 77079
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Doug.Suttles@bp.com

July 7, 2010

RADML James Watson
Federal On-Scene Coordinator
United States Coast Guard

Subsea Dispersant Injection Request for Severe Weather Exemption
From Sampling Protocol for Wednesday, July 7th 2010

On Tuesday, July 6th, the Brooks McCall completed three casts in line with the daily requirements for subsurface sampling of the Directives for Subsea Dispersant Injection. Due to the deteriorating weather sampling ceased for the day in the early afternoon. There is a safety protocol (attached) which delegates the responsibility for operational safety on the vessel to the Captain, and in certain circumstances relating to the welfare of the science crew, to the Chief Scientist

The current weather shows SE winds of 22-25 knots with 7-9 ft seas, with forecasts showing this subsiding to 6 ft tonight. In view of the current weather it is unlikely that the Brooks McCall will be able to take any sample casts on Wednesday due to the safety protocol. For the wellbeing of the personnel onboard we request that the vessel depart the well site and proceed to Port Fouchon.

I am requesting an exemption from the requirement to sample the water column during the 24 hour period of July 7, 2010 in order to continue Subsea Dispersant Injection operations to ensure VOC management and safe operations.

The Ocean Veritas is being readied for its next cruise and will be on station on Thursday July 8th – when much milder sea states are forecast.

I trust that this request be favorably reviewed.

Yours sincerely,

Douglas J. Suttles

Approved Roy A. Nash
~~RADML James Watson~~ RDML ROY NASH
Deputy FOSC

Date 7/7/2010

NARA_0000010203

: Nash, Roy RDML; Jackson.LisaP@epamail.epa.gov; Tulis.Dana@epamail.epa.gov; Coleman.Sam@epamail.epa.gov; Mason.Steve@epamail.epa.gov
Subject: Followup to Yesterday's meeting.

Jim:

This is to followup yesterday's meeting to identify action items.

I. EPA has revised its process with respect to surface dispersant requests.

Specifically:

1) BP'S initial request every evening will provide sufficient details using the established protocol for prioritization of other tools (skimming/in situ burning), identifying suitable targets (with photos), and demonstrating specific basis for volumes requested.

2) Unified Command, including USCG, NOAA, EPA, and BP WILL prepare / review BP'S proposal for aerial dispersant application the evening before. BP'S original proposal package WILL INCLUDE A REQUEST only for initial spraying the next morning. EPA staff in UAC WILL consult with EPA staff in Houma regarding the request.

3) Concurrence / concerns will be conveyed back to EPA at Houma.

4) Proposal with concurrence of EPA and NOAA for only the initial volume would be sent to Admiral Watson for final signature.

5) Once morning flights are completed, deliberations at Houma would occur regarding whether the conditions for prior evenings request have changed, actual application of dispersant during morning flights, and whether need for volumes set forth by BP in prior evenings request have
been adequately demonstrated by BP. Process items 2 - 4 would be followed. NO!- this is when the SNO telcon would be used.

USCG, EPA AND NOAA WILL develop an audit process to look at effectiveness of application, process success, success in application of dispersant chemicals on regular basis.

All BP references and claims regarding relationship of government dispersant approval decisions to any shoreline impacts will be removed
from daily reports. All shoreline impacts are associated with BP's oil
and BO's failure to stop flow from its leaking well or BP's failure to physically capture its oil before reaching shore. BP's attempts to distort that fact have no place in operational reports.

II) BP to Develop ~~SOP~~ Plan for phasing out deepsea dispersant based on free standing riser becoming operational (currently projected for July 7th).
BP has ignored instructions to develop a plan for phase out of dispersants use for several weeks. BP needs to assign a high priority to this matter.

III) BP TO develop ~~SOP~~ Plan for application of surface dispersant post- hurricane (with acknowledgment that large volumes and quick concurrence my be necessary). This assumes SADI is not approved. This needs to be initiated by BP in consultation with FOSC, EPA and NOAA.

IV.) Work in UAC - particularly with NOAA and CG - regarding setting forth more explicitly those concerns of SADI to BP. Based on this -
FOSC will communicate to BP. Separately, EPA will close on its legal position on legal authorities and approvals for SADI.

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ENV

Dispersant Monitoring and Assessment Directive

I. Plume Monitoring and Assessment Plan for Subsurface Dispersant Application

BP shall implement the approved Dispersed Plume Characterization Plan for Subsurface Dispersant Application. Part 1 of the plan is a "Proof of Concept" to determine if subsurface dispersant operation is chemically dispersing the oil plume. Once the "Proof of Concept" test is complete, the results will be reviewed by the RRT for a decision to proceed or not proceed with Part 2 of the plan. Part 2 of the plan involves robust sampling to detect and delineate the dispersed plume Part 3, entitled "Subsurface Injection of Dispersant", outlines the operational procedures. Additional guidance will be provided by the RRT coordination group on specific implementation of this directive and that guidance will be considered an addendum to this directive.

At least 24 hours prior to the testing, use and/or application of any subsurface dispersants, BP shall provide a *Dispersant Application Plan* that identifies the dispersants to be used, describes the methods and equipment used to inject the dispersant, plume model to assure representative sampling, proposed method of visual observation, process for determining the effectiveness of subsurface injection, the specific injection rate (i.e., gallons/minute), the total amount to be used for the duration of the test, the total length of time that dispersant is injected, and the plan for sampling and monitoring, as approved by the Unified Command Environmental Unit. Dispersants must be on the approved product schedule and suitable for this use.

All data shall be provided to the United States Coast Guard (USCG) Federal On-Scene Coordinator, and the Environmental Protection Agency (EPA) Regional Response Team (RRT) representative within 24 hours of the information being received. This data includes real time monitoring, laboratory analysis, documented observations, photographs, video, and any other information related to subsurface dispersant application.

BP shall conduct Part 1 monitoring and collect the data outlined below to determine dispersed plume concentration and transport. BP shall conduct Part 2 monitoring and collect the data outlined below, which will be sustained and more comprehensive, to address plume fate and effects on aquatic life from the dispersed plume and chemical dispersants based on the results of Part 1 and iterative hydrodynamic modeling output.

* ROTIFER ONLY

Timing: BP shall commence Part 1 monitoring when subsurface application of dispersant is initiated. BP shall ensure that the R/V Brooks McCall or equivalent on location is outfitted, and manned before subsurface application commences.

RDC for SC

Part 1

BP shall design and implement a Part 1 monitoring plan to determine the factors needed to calculate dispersion effectiveness, namely, % oil, % water, % dispersant. This phase of

ORIGINAL

sampling should determine the factors to predict buoyancy; namely bubble sizes, density (or specific gravity) along the thermal gradient of the water column, and kinematic viscosity.

Part 2

BP shall design and implement a Part 2 monitoring plan to collect and report, on a daily basis, the data and information described below. BP shall submit this plan to the FOSC and EPA RRT Co Chair for approval and shall begin implementation upon notice from the Coast Guard and EPA. BP shall continue implementation of this plan until further notification from the Coast Guard and EPA. [1]

BP's monitoring plan shall include a more thorough oil analysis, to enable EPA to determine whether the dispersed plume is toxic to aquatic life. This plan shall be designed and implemented to determine whether the dispersed oil will hang in the water column and eventually come in contact with the benthos as it approaches land. BP has the option of conducting this particular monitoring and analysis as part of Part 1 if so desired.

PART 1 – Proof of Concept – Data Collection Requirement

- Towed Fluorometer at 1 meter
- LISST Particle Analysis at various intervals from surface to 550 meters
- Dissolved Oxygen at various intervals from surface to 550 meters
- CTD – Conductivity, Temperature, and Depth at various intervals from surface to 550 meters
- Water sampling from surface to 550 meters for PAH analysis
- Aerial Visual Observation

PART 2 – Characterization Plan – Data Collection Requirement

- Cast Fluorometer – surface to sea floor
- LISST Particle Analysis at various intervals from surface to sea floor
- Dissolved Oxygen at various intervals from surface to sea floor
- CTD – Conductivity, Temperature, and Depth at various intervals from surface to sea floor
- Water sampling from surface to 550 meters for PAH analysis
- Aerial Visual Observation
- Rototox toxicity testing
- UV-Fluorescence testing to meet objectives in Appendix A

PART 3 – Subsurface Injection of Dispersant – Parameter Requirements

- Type of dispersant to be used

[1] See Appendix A for further background

- Rate of dispersant injection
- Process for monitoring pumping rate
- Procedures for FOSC to start and stop injection

Evaluation Criteria to Determine Operational Shut-Down of Subsurface Sea Dispersant Application:

The Federal On-Scene Coordinator will immediately convene the Regional Response Team (RRT) when either of the following conditions is reported:

1. If there is a significant reduction in DO from background to below 2 mg/L; or

2. If EPA's interpretation of the toxicity test reveals excessive exertion of a toxic response. To determine a measurable toxic response, BP must first perform a rangefinder test since the collection of the sample will be directly from the toxic plume, and any sample from the plume will likely kill 100% of the test population. Therefore, the rangefinder must first be conducted to determine an order of magnitude dilution that gives a measurable response. Then, a more refined dilution procedure must be done to get the final LC50 answer. This result will be compared to a NOAA plume model that would predict when or where exertion of that toxic response would take place. EPA and NOAA will interpret the results of the toxicity tests to inform determination of a shutdown decision.

ONLY APPLIES TO PART 2 ALL MEL RDC for SC

The RRT will evaluate the conditions above, in addition to all relevant factors including shoreline, surface water, and other human health and ecological impacts, to determine whether subsurface dispersant application should be shut down.

Limitations to Address

BP shall include in its monitoring plan provisions to address and minimize the impact of the following challenges:

1. Timely transport of samples to labs where necessary, which may be subject to weather and/or operational delays.
2. Sampling in the deep sea environment may pose challenges due to equipment limitations and malfunctions.

Quality Assurance and Sampling Plan Requirements

BP's plan shall include sample collection methodology, handling, chain of custody and decontamination procedures to ensure the highest quality data will be collected. Discrete samples shall be tested at an approved lab(s). ~~Triplicate~~ samples shall be tested. All samples (or as practicably possible) shall be archived for potential future analysis. Where technically possible, all samples shall be at least 100 ml.

TRIPLICATE NOT POSSIBLE DUPLICATES ONLY MEL ALL RDC for SC

BP shall include the following components and criteria in its Sampling Plan:

1. An Introduction, to include project objective and project staff
2. A brief site description and background
3. A description of the Sampling Approach and Procedures, to encompass:
    a. A brief overview of sampling activities, data quality objectives, and health and safety implementation strategies (frequently, this references another specific document, but must be included).
    b. The actual sampling and/or monitoring approach, to ensure repeatability and consistent procedures. Describe sampling, monitoring, sampling and field QC procedures, spoil or waste disposal procedures resulting from this effort, as well as specimen/data handling issues.
    c. Sample management – how the sample will be procured, handled, and delivered
    d. Sample instructions- preservation, containers, and hold times

4. The analytical approach – what lab tests will be run, any special instructions, how the data will be verified, and how data will be reported.
5. Quality Assurance- custody procedures, field records including logs, chain of custody, qualitative data handling including photographs.

II. Special Monitoring of Applied Response Technologies ("SMART") Protocol for Surface Application of Dispersants

BP shall immediately implement the Special Monitoring of Applied Response Technologies ("SMART") Protocol (attached as Appendix B) at the Tier III level for surface application of dispersants. Results from Tier III monitoring must be shared with the Area Command Environmental Unit. If Tier III is not deemed to be sufficient, further direction will be provided.

Mary E Landry Date: 5/9/10

Mary E. Landry
Rear Admiral, USCG
Federal On-Scene Coordinator

Samuel Coleman Date: 5/9/10

Samuel Coleman, P.E.
Director
Superfund Division
U.S. EPA Region 6
Dallas, TX 75202

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Not Applicable to Subsea Dispersion MEL RDC for SC

Mary E Landry Date: 5/10/2010

Mary E. Landry
Rear Admiral, USCG
Federal On-Scene Coordinator

_____ Date: _____

Samuel Coleman, P.E.
Director
Superfund Division
U.S. EPA Region 6
Dallas, TX 75202

5-10-10

Appendix A –Background for Part 2 Methodology for Informational Purposes

The fact that many organic compounds fluoresce at specific excitation and emission wavelengths is the basis for identifying many of the components of crude oil in seawater. When subject to excitation at 245-280 nm, polycyclic aromatic hydrocarbons (PAH) fluoresce over wavelengths of 310 to > 400 nm, depending on the number of aromatic rings in the structure. Only one group has examined the 2D UV Fluorescence Spectroscopy (UVFS) spectra of oil treated with chemical dispersants, the Ken Lee group at Fisheries and Oceans Canada (DFO). They found that a fixed excitation wavelength of 280 nm works best for fluorescence of PAHs in crude oil, and two different emission wavelengths, one at 340 nm for 1-and 2-ring PAHs and the other at 445 nm for 3-ring and higher PAHS, provide an excellent fingerprint for differentiating chemically dispersed oil from non-dispersed oil. As oil gets dispersed due to the action of a chemical dispersant, the peak height at 445 nm becomes highly pronounced relative to the peak height at 340 nm. Thus, computing the ratio of peak height at 340 to the peak height at 445 gives a direct measurement of the degree of dispersion that has taken place as a result of applying a dispersant to an oil.

The effect of oil dispersion on UVFS spectra can be expressed in terms of an emission ratio, so that dispersion can be tracked without having to measure oil concentration. The spectral changes associated with the application of dispersant can also be calibrated to quantify increasing oil or oil plus dispersant. The fact that UVFS and UVA data are comparable at an emission intensity of 445 nm or over the whole spectrum of intensities (from 300 - 500 nm) indicates that the fate of higher molecular weight (> 3-ring) PAH fractions - the more "dispersible" fraction of an oil slick - will provide a good idea of the fate of the oil as a whole during the dispersion process. Given that higher molecular weight PAHs may be associated with many of the persistent (or chronic) toxic effects of crude oils on marine organisms, the ability of UVFS to track "dispersible" fractions would make it a particularly useful tool in studies of the long-term toxic effects of dispersed oil.

Dispersant Monitoring and Assessment Directive – Addendum 1

This is an addendum (Addendum 1) to the Dispersant Monitoring and Assessment Directive issued on May 10, 2010, by the U.S. Coast Guard (USCG) and the Environmental Protection Agency (EPA) to BP. The requirements in this Addendum 1 apply to Part 2 of the May 10, 2010 Directive and are in addition to the requirements of that Directive. BP shall commence Part 2 requirements before subsurface application of dispersant is initiated and continue the Part 2 requirements and this Addendum 1 until cancelled or modified by the USCG and EPA.

WAIVED FOR 10 HRS COMMENCING 0130 15 MAY 2010 (ME Landry)

Additional Requirements:

1. Sampling of dispersant/oil and oil-only waters must be continued per the Directive, and in addition, baseline data of waters without direct application of dispersant or oil shall also be collected by BP.
2. BP shall allow EPA/NOAA scientists flexibility within the sampling plan to direct the collection of additional data based on field observations (at times and locations of their choice). For example, EPA may request to recast the station if the CDOM fluorometer indicates a large increase in signal after data review. EPA/NOAA staff must be allowed to be in constant communication with staff on shore.
3. BP shall use Turner Designs C3 fluorometer (e.g., SMART protocol) to distinguish between oil impacted surface waters and those not impacted by oil.
4. BP shall use a CTD rosette package equipped with CDOM fluorometer and a 2-way communication wire to ensure that EPA/NOAA scientists can view profile data as the rosette package is deployed to 1500 meters. In addition, the CDT rosette package must be capable of collecting discrete samples in the water column using the live feed data stream. The requirement must be met within 7 days for the RV Brooks McCall. All other vessels must immediately meet this requirement.
5. BP shall deploy LISST from the vessel for continuous sampling of surface waters during transits, in order to provide particle size counts information which potentially distinguishes between dispersed and non-dispersed oil.
6. Discrete water samples shall be taken by BP at predetermined depths as specified or directed by EPA/NOAA scientists for UV fluorescences.
7. BP shall provide 48 hour advanced notice for departure and trip duration timelines to the FOSC and the EPA RRT Co-chair.
8. Data reporting shall be conducted by BP on a daily basis. This reporting shall include a sample tracking table. Data reporting shall be provided by BP to the FOSC and the EPA RRT Co-chair.

WAIVED MEL 0130 15 MAY 2010

Mary E Landry

Date: 5/14/2010

Mary E. Landry
Rear Admiral, USCG
Federal On-Scene Coordinator

Samuel Coleman

Date: 5/14/2010

Samuel Coleman, P.E.
Director
Superfund Division
U.S. EPA Region 6
Dallas, TX 75202

Dispersant Monitoring and Assessment Directive – Addendum 1

This is an addendum (Addendum 1) to the Dispersant Monitoring and Assessment Directive issued on May 10, 2010, by the U.S. Coast Guard (USCG) and the Environmental Protection Agency (EPA) to BP. The requirements in this Addendum 1 apply to Part 2 of the May 10, 2010 Directive and are in addition to the requirements of that Directive. BP shall commence Part 2 requirements before subsurface application of dispersant is initiated and continue the Part 2 requirements and this Addendum 1 until cancelled or modified by the USCG and EPA.

WAIVED FOR 10 HRS COMMENCING 0130 15 MAY 2010 LMcHale

Additional Requirements:

1. Sampling of dispersant/oil and oil-only waters must be continued per the Directive, and in addition, baseline data of waters without direct application of dispersant or oil shall also be collected by BP.
2. BP shall allow EPA/NOAA scientists flexibility within the sampling plan to direct the collection of additional data based on field observations (at times and locations of their choice). For example, EPA may request to recast the station if the CDOM fluorometer indicates a large increase in signal after data review. EPA/NOAA staff must be allowed to be in constant communication with staff on shore.
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5. BP shall deploy LISST from the vessel for continuous sampling of surface waters during transits, in order to provide particle size counts information which potentially distinguishes between dispersed and non-dispersed oil.
6. Discrete water samples shall be taken by BP at predetermined depths as specified or directed by EPA/NOAA scientists for UV fluorescences.
7. BP shall provide 48 hour advanced notice for departure and trip duration timelines to the FOSC and the EPA RRT Co-chair.
8. Data reporting shall be conducted by BP on a daily basis. This reporting shall include a sample tracking table. Data reporting shall be provided by BP to the FOSC and the EPA RRT Co-chair.

WAIVED MCL 0130 15 MAY 2010

Mary E Landry Date: 5/14/2010

Mary E. Landry
Rear Admiral, USCG
Federal On-Scene Coordinator

Samuel Coleman Date: 5/14/2010

Samuel Coleman, P.E.
Director
Superfund Division
U.S. EPA Region 6
Dallas, TX 75202

Dispersant Monitoring and Assessment Directive – Addendum

This is an addendum (Addendum 2) to the Dispersant Monitoring and Assessment Directive issued on May 10, 2010, and Addendum 1 issued on May 14, 2010 by the U.S. Coast Guard (USCG) and the Environmental Protection Agency (EPA) to BP. The requirements in this Addendum 2 apply to Parts 1 and 2 of the May 10, 2010 Directive and are in addition to the requirements of that Directive. BP shall commence Parts 1 and 2 requirements before subsurface application of dispersant is initiated and continues the Parts 1 and 2 requirements, Addendum 1, and this Addendum 2 until cancelled or modified by the USCG and EPA.

Alternative Dispersant additional Requirements:

1. Sampling of dispersant/oil and oil-only waters must be continued per the Directive, and in addition, baseline data of waters without direct application of dispersant or oil shall also be collected by BP. Monitoring of subsurface dispersant application by BP shall be performed from a vessel capable of performing all requirements of the May 10, 2010, Dispersant Monitoring and Assessment Directive and Addendum 1 on each day that dispersant is applied. As used in this Addendum 2, a "day" shall mean a calendar day.
2. Within 24 hours of the issuance of this Addendum 2, BP shall identify to the FOSC and the EPA RRT Co-chair for EPA's and the FOSC's approval, one or more approved dispersant products from the National Contingency Plan Product Schedule that are available in sufficient quantities, are as effective at dispersing the oil plume, and have a toxicity value less than or equal to 23.00 ppm LC50 toxicity value for Menidia or 18.00 ppm LC50 for Mysidopsis, as indicated on the NCP Product Schedule (http://www.epa.gov/oem/content/ncp/tox_tables.htm). The less toxic dispersant product(s) shall be used by BP for surface application and subsurface application as directed by the FOSC. Within 72 hours after submitting the list of alternatives, and after receiving EPA approval, BP shall immediately use only the approved alternative dispersant. Should BP not be able to identify alternative dispersant products, BP shall provide the FOSC and EPA RRT CO-Chair a detailed description of the products investigated, the reason the products did not meet the standards described above. Availability shall be based on new existing stockpiles of dispersants, the estimated time to begin and aerial and subsurface application, time for manufacturing, shipping, and warehousing.
3. The effectiveness of the dispersant in subsurface application shall be determined as specified in Directive 1 Part 1, and Part 2. Dispersant application can be applied subsurface if, and only if, daily monitoring is performed.
4. BP shall provide 48 hours advanced notice of departure and trip duration timelines of the monitoring vessel to the FOSC and the EPA RRT Co-chair.
5. Monitoring data on the use of the less toxic dispersant product(s) shall be reported by BP to the FOSC and the EPA RRT Co-chair on a daily basis. This reporting shall include a sample tracking table. Daily data reports shall thereafter be provided by BP to the FOSC and the EPA RRT Co-chair as soon as practicable on the day following use of the less toxic dispersant product(s) by BP, but in no event later than 24 hours after use.

Mary E Landry, RADM FOSC

Mary E. Landry
Rear Admiral, USCG
Federal On-Scene Coordinator

Date: 5/19/2010 2135

Samuel Coleman

Samuel Coleman, P.E.
Director, Superfund Division
U.S. EPA Region 6
Dallas, TX 75202

Date: 5/19/2010 9:35pm

Dispersant Monitoring and Assessment Directive – Addendum 3

Reduction in Use of Dispersants. BP shall implement measures to limit the total amount of surface and subsurface dispersant applied each day to the minimum amount possible. BP shall establish an overall goal of reducing dispersant application by 75% from the maximum daily amount used as follows:

a. Surface Application. BP shall eliminate the surface application of dispersants. In rare cases when there may have to be an exemption, BP must make a request in writing to the FOSC providing justification which will include the volume, weather conditions, mechanical or means for removal that were considered and the reason they were not used, and other relevant information to justify the use of surface application. The FOSC must approve the request and volume of dispersant prior to initiating surface application.

b. Subsurface Application. BP shall be limited to a maximum subsurface application of dispersant of not more than 15,000 gallons in a single calendar day.

Application of dispersant in amounts greater than specified in this Addendum 3 shall be in such amounts, on such day(s) and for such application (surface or subsurface) only as specifically approved in writing by the USCG Federal On-Scene Coordinator (FOSC).

Mary E Landry Date: 5/26/2010

Mary E. Landry
Rear Admiral, USCG
Federal On-Scene Coordinator

Sam Coleman Date: 5/26/2010

Samuel Coleman, P.E.
Director
Superfund Division
U.S. EPA Region 6
Dallas, TX 75202

Dispersant Monitoring and Assessment Directive – Addendum 4

Delegation of Aerial Dispersal Authority to Federal On-Scene Coordinator's Representatives (FOSCRs). BP shall continue to implement measures to limit the total amount of surface and subsurface dispersant applied each day to the minimum amount possible. Per Addendum 3 (dated 26 May 2010) of this directive, BP shall eliminate the surface application of dispersants except in rare cases when there may have to be an exemption. In order to ensure a timely dispersant application authorization decision is made on a daily basis, authority to approve an exemption for the aerial application of **(up to 10,000 gallons of (not clear if you want to include an amount)** dispersants is delegated to the USCG FOSCR at each of the Deepwater Horizon Response Incident Command Posts, providing the following requirements are met:

1. The NOAA Surface Oil Forecast shows extensive areas of heavy and medium oil that are or may adversely impact the shoreline, including sensitive resources.
2. Forecasted adverse winds, sea states, and wind directions dictate that the use of dispersants is the most viable means of response to reduce the risk of oil land fall and/or impacts to sensitive resources. Explicit justification is provided for why selected targets cannot be skimmed, addressed by other mechanical means or insitu burned.
3. The weather and forecasted weather is favorable to support both reconnaissance flights and dispersant spray missions.
4. Spotters aboard reconnaissance flights are able to identify oil slicks estimated to require a specific number of gallons of dispersants.
5. Within 6 hours of the dispersant spray operations, spotter aircraft must identify high value targeted slicks and a report is prepared specifying the location and dispersant volumes needed for each application.
6. Conditions under which dispersants will not be applied, such as in areas where dispersants have already been applied or where vessels and other on-water operations are on-going, are identified.
7. Additional rare conditions that cumulatively justify an exemption are specified.
8. Concurrent approval is attained from the cognizant State, EPA, and NOAA representative at the ICP.
9. Provisions to be put in place to apply SMART Protocols are specified.
10. Documentation is retained on file addressing each of the above requirements.

_____ Date:_____

James.A.Watson
Rear Admiral, USCG
Federal On-Scene Commander

_____ Date:_____

Mathy Stanislaus
Assistant Administrator
U.S. EPA
Office of Solid Waste and Emergency Response

ENV

NOTES from EPA-USCG Conference Call (22 JUN 2010)

Dispersants:

RADM Watson:

- The approval process regarding subsea and aerial dispersants is problematic.
- The 3d Addendum restricts all use of surface dispersant and limits subsurface dispersant to 15,000 gallons. BP may request an exemption to these thresholds in "rare" circumstances conditioned on weather, non-availability of mechanical methods. The reality of this spill is that a "rare" occasion occurs daily due to the magnitude and scope of this response, far beyond what we thought at time of protocol.
- Subsea limits need to be exceeded because of high measured VOCs at source; happens when, e.g., containment system loss, or when seas are very calm.
- USCG dedicated to cooperation and monitoring. Have consulted with local EPA representatives, Sam Coleman, and NOAA on requests. Exemption requests denied on occasions where monitoring or justifications were insufficient.
- BP requests we revise procedures. Designed at 19,000 barrels per day.
- Received a letter that was cosigned by CAPT Laferriere and Louisiana State On-Scene Coordinator requesting the RRT to develop updated dispersant protocol. Prepared to send an endorsement of the letter to the RRT for development of a new protocol which accounts for operational flexibility.

Administrator Jackson:

- Subsea is a concern; however, overall pleased with the 68% reduction in dispersant usage. Note Bloomberg report that dispersants are down.
- Idea of dispersants to lower VOCs reasonable.
- Administrative record developed through the exemption request process is beneficial for future understanding of current events.
- Public concern regarding potential clouds in the water column. Recognize that current circumstances are unprecedented yet concerns remain regarding the use of dispersants.
- Cannot support allowance for general use of 30,000 gallons subsea, not the right message nor consistent with President's message.
- Administrator Jackson stressed her respect for the U.S. Coast Guard and her desire to not hinder operational capabilities.

ADM Allen:

- We have fallen into ad hoc daily decisionmaking.
- The operational variables present in this spill were not considered in the original protocols.
- Proposed the following as a way forward

- Fate of the Oil Working Group (Jane Levchencko/Martha McNutt)
  - Tasked with examining dispersants in relation to other modes of oil recovery (e.g., skimming, insitu-burning) to determine efficiencies in relation to operational variables.
  - This would generate an understanding of successful response tactics
- Allow RRT/NRT to reexamine the dispersant protocol.

Administrator Jackson:

- EPA done its best to not second guess operational prerogatives.
- If moratorium ends tomorrow, how do we include what we have learned.
- Doesn't see strong correlation between VOCs and application of subsea dispersants, numbers are very up-and-down; not enough data.

ADM Allen:

Don't leave it to BP. We determine---FOSC and RRT will lock it down.

Air Quality Monitoring – Flaring on the Q4000:

- RADM Watson described Q4000 concern received from Sam Coleman on dioxin. Received information from ICP; consulted with BP regarding a balloon on/near Q4000 near insitu burns.
- ADM Allen highlighted the difference between flaring on the Q4000 and insitu-burning, noting that we should have consulted given the differences, but must now move forward.
- Administrator Jackson expressed that burning in a salt/chlorine environment was a concern; sampling is easily done, more concerned on particulates.
- Group consensus that this issue could be easily resolved by requiring BP to submit a robust air sampling and monitoring plan for the Q4000.

Kevin Costner – Water Discharge:

- AG of LA consult with EPA to evaluate Costner technology. EPA is willing to issue an opinion regarding this new technology. EPA supports the idea that the FOSC may make a determination that no Clean Water Act permit is needed and EPA will assist with letter if desired.

Waste Disposal

- States are concerned about the waste being developed; not a state prerogative, but state have role to play. Understand FOSC can do it but we are asked to review/develop together. Administrator Jackson expressed that EPA must engage this issue.

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  - Tasked with examining dispersants in relation to other modes of oil recovery (e.g., skimming, insitu-burning) to determine efficiencies in relation to operational variables.
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- Doesn't see strong correlation between VOCs and application of subsea dispersants, numbers are very up-and-down; not enough data.

ADM Allen:

Don't leave it to BP. We determine---FOSC and RRT will lock it down.

Air Quality Monitoring – Flaring on the Q4000:

- RADM Watson described Q4000 concern received from Sam Coleman on dioxin. Received information from ICP; consulted with BP regarding a balloon on/near Q4000 near insitu burns.
- ADM Allen highlighted the difference between flaring on the Q4000 and insitu-burning, noting that we should have consulted given the differences, but must now move forward.
- Administrator Jackson expressed that burning in a salt/chlorine environment was a concern; sampling is easily done, more concerned on particulates.
- Group consensus that this issue could be easily resolved by requiring BP to submit a robust air sampling and monitoring plan for the Q4000.

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Waste Disposal

- States are concerned about the waste being developed; not a state prerogative, but state have role to play. Understand FOSC can do it but we are asked to review/develop together. Administrator Jackson expressed that EPA must engage this issue.

- Suggestions included issuing a robust directive to BP.
- EPA is willing to aid in the drafting of this directive with robust sampling requirements.

The way forward:

- Coast Guard and EPA to work together to draft language for the Waste Disposal Directive
- Coast Guard to work with EPA on developing language exercising FOSC authority to state that no permit is required under the Clean Water Act for the Kevin Costner response apparatus.
- Coast Guard to work with EPA on developing letter to BP requiring submission of a robust air sampling and monitoring plan for the Q4000.
- RRT will be engaged concerning a new protocol for dispersant authorization.
- ADM Allen offered CG officer as liaison; Administrator Jackson to ask staff to consider.

ENV

Strategic Issue:

Generally, it is accepted that the impacts of dispersants are less than the impacts involved with shoreline oiling. Because of the unusual location for the dispersant application and the large quantities used, there has been a re-evaluation of the tradeoffs and possible impacts of dispersant use. The National Incident Commander would like to ensure that this technology is available for use while also ensuring that the potential impacts are understood. There are concerns regarding the process by which expedited exemptions can be made in a time critical manner at the Regional Response Team (RRT) level for an ongoing emergency response. Development of a dispersant use policy for this spill will allow for mitigation of larger quantities of fresh dispersible surface oil when weather precludes other mechanical or surface oil mitigation techniques. Given that the source of the Deepwater Horizon (DWH) MC252 spill remains unsecured, the response organization must continue aggressive measures to contain, capture, recover, and remove oil from the environment. Dispersant use is a key part of this effort.

Objective:

Determine a dispersant use policy that is acceptable to RRT VI within the context of the DWH oil spill.

Background:

No single response method is 100% effective, thereby establishing a need to consider the use of all available methods from the start of the spill response. Chemical dispersants, mechanical recovery and *in situ* burning are all components of an effective response to surface oil pollution. Mechanical recovery is the preferred method of on water oil spill response because it removes the oil from the environment, but is not always effective due to environmental conditions. The use of dispersants to mitigate offshore oil spills has become a proven and accepted technology and, under certain conditions, more effective than mechanical response. Decisions to use dispersants always involve trade-offs between impacts within the water column, on the water surface, or on the shore.

The Oil and Hazardous Substances Pollution Contingency Plan (40 CFR 300), commonly referred to as the National Contingency Plan (NCP), established a framework for the use of dispersants in an oil spill response. The NCP states that RRTs and Area Committees will address, as part of their planning activities, the desirability of using appropriate dispersants and oil spill control agents listed on the NCP's National Product Schedule. The NCP goes on to state that Area Contingency Plans (ACPs) will include applicable pre-authorization plans and address the specific contexts in which such products should and should not be used. If the RRT and trustees approve the pre-authorization plans, the Federal on Scene Coordinator (FOSC) may authorize the use of the products without obtaining the specific agency concurrence. The FOSC may also authorize the use of any dispersant, including products not listed on the NCP National Product Schedule, without obtaining the concurrence of RRT, when, in the judgment of the FOSC, the use of the product is necessary to prevent or substantially reduce a hazard to human life.

As per the NCP, the ACP called The One Gulf Plan further defined the use of dispersants for the region. In this plan, the FOSC must utilize the decision-making process as defined in the FOSC Pre-approved Dispersant Use Manual to determine the applicability of dispersants as a response option for a specific spill response. If the FOSC determines that dispersant use is warranted, he/she will notify the RRT within three hours after the approval has been given to the Responsible Party (RP). For all dispersant operations, the FOSC must activate the Special Monitoring of Applied Response Technologies Monitoring Program (SMART) monitoring team. The pre-approved area includes offshore waters "from the ten-meter isobath or three nautical miles", whichever is farthest from the shore, to 200 nautical miles offshore (Exclusive Economic Zone boundary), beginning from the Texas-Mexico border and extending through the states of Texas and Louisiana to the boundary between federal Regions IV and VI.

The objective of the RRT VI FOSC Dispersant Pre-approval Guidelines and Checklist is to provide guidance for ensuring an environmentally safe and effective dispersant operation. The programmed checklist approach allows the FOSC to quickly arrive at a logical "GO/NO GO" decision. This gives the dispersant operation the opportunity to begin in a timely manner that is consistent with attempting to maximize the effectiveness of dispersant use as a countermeasure to reduce the impact of oil spills.

Current Situation:

For the DWH response, the Unified Area Command (UAC) through the Incident Command Posts (ICP) is employing a layered approach to oil containment and recovery. The most effective response method is containment of the leak at the wellhead and the recovery and flaring of the captured oil and gas. Beyond this, a combination of subsurface dispersant use, in-situ burning, targeted surface dispersant application and skimming is employed to minimize shoreline impacts where oil does the most damage. No combination of response actions can fully contain the oil or mitigate the impacts from a spill the size and complexity of the DWH incident.

Dispersant use for the DWH spill was performed in accordance with ACP guidelines and with RRT approval. However, when dispersants were injected at the well head in deep water and in large quantities, concerns were raised about the potential ecological impacts.

There is general agreement, that the dispersants (Corexit 9500) was efficiently applied directly into the subsurface oil stream and oil was dispersed in the water column, minimizing the amount of free phase oil reaching the surface. There is also general agreement that subsurface dispersion may be an effective tool in the arsenal of oil spill mitigation alternatives. The use of this technique is a trade-off as the oil is not removed from the environment, but rather dispersed into the deep waters of the Gulf of Mexico.

Over time, a correlation has been observed between the usage of oil dispersant and the rise in volatile organic compounds (VOC) and hydrocarbon vapor amounts at the surface in the area of the source. Hydrocarbon vapor amounts have not exceeded the lower explosive limit (LEL) to date, but have been as high as 8-10%. Within 3-6 hours of discontinuation of subsea dispersant, the VOC concentrations at the surface have increased to >200 ppm and hydrocarbon vapors also increased. VOC and LEL issues have been resolved within a few hours when dispersant has been

applied at the wellhead in these instances allowing safe operations to continue in the area of the source.

In late May, it was agreed that (1) BP would endeavor to reduce the dispersant loading in the Gulf of Mexico by 75%; (2) BP will eliminate the use of surface dispersants entirely except by FOSC approval and (3) BP will cap the daily volume of subsurface dispersants to 15,000 gallons, unless by written exception by the FOSC. These restrictions, particularly the last, were predicated on the assumed release volume of approximately 5,000 barrels per day. Today, based on revised release data, we know the release volume to be substantially higher, approximately 35,000 – 60,000 barrels per day following the cutting of the riser pipe. The volume of oil released into the Gulf of Mexico has been reduced by the Lower Marine Riser Package (LMRP), the Enterprise and the Q4000. If the most recent estimates are accurate, BP is recovering as much as 25,000 barrels with these systems, the remaining oil, up to 35,000 barrels per day, are uncontrolled and releasing to the sea.

Given that the LMRP is not entirely successful in containing the oil and on water recovery solutions can similarly be less effective, having greater flexibility to use aerial and sub-surface dispersant applications as a response tool is important. They may act as a force-multiplier for mechanical recovery assets.

Currently, BP has leased, bought or otherwise obtained the services of the majority of skimming capacity in the country that can be released without violating US Coast Guard regulations. This includes the entire fleet of Marine Spill Response Corporation (MSRC) skimming vessels on the eastern seaboard and the Gulf of Mexico and every NOFI skimming system in use worldwide. Based on input from Incident Command Posts in both Houma, LA and Mobile, AL, without the additional support of aerial dispersant application, substantially more skimming assets will be required to reduce shoreline impacts.

Non Empirical Fate and Effects:

While numerous studies have been conducted on the fate and transport of oil dispersed on the surface, the fate and transport of oil dispersed at depth is not well understood. The proposed actions are not without potential risks and impacts of oil and dispersants on the surface waters, water column, and sea floor flora and fauna. There are information gaps that need to be filled to inform the overall trade-off discussion.

Dispersants act to reduce the surface tension between the oil and the water, which allows the oil to more easily break into smaller droplets. While the application of dispersants into a subsurface plume has never been studied, we expect the result to be similar to that of surface dispersant application, and thus result in even smaller droplets of oil in the plume. These very small droplets (100 microns) will rise extremely slowly while being mixed by background turbulence, so that they stay at depth, moving with the currents, until biodegraded, eaten by naturally occurring micro organisms, or adhered to falling sediment. Preliminary modeling suggests that average rise could increase from a few hours to several days with sub-surface dispersant application.

If the dispersant is 100% effective, water column concentrations are at levels of 1 ppm or greater for as little as 100s of meters to up to 40 kilometers depending on which model used. The difference depends on the level of vertical mixing that is assumed. We would not expect the dispersed oil to come to the surface at any appreciable concentrations in another location. We do not expect any increase in buoyancy and the longer and farther away the dispersed oil gets, the more diluted it becomes.

The small droplets are expected to have a larger total surface area, which should result in faster biodegradation. We also expect some fraction to sink because of adherence to falling sediments (marine snow or fecal matter) but we don't know how much. However, this could be a substantial removal mechanism from the water column.

Based on laboratory experiments with controlled concentrations, exposure, and duration, dispersed oil is toxic to surface dwelling marine life at concentrations in the range of 0.1 to 10 or more parts per million (ppm). Eggs and larvae are much more sensitive to dispersed oil toxicity than are adult animals. In the sea, the concentration of both dispersed oil and any free dispersant will decrease with time and distance as the plume widens and moves away from the source. There are no data on the toxicity of dispersants or dispersed oil to deep-sea biota at any life stage, so we have to extrapolate based on existing knowledge of near surface biota where a considerable amount of data does exist.

Proposed Way Ahead:

As the overall goal of the Unified Command is to reduce the amount of dispersants applied to the sea while protecting worker health and minimizing environmental and economic injury, it is important to balance the use of dispersants with other recovery methods and, therefore, we propose the following regarding dispersant use:

For the purpose of VOC control, increases in the application rate of sub-surface dispersants will be limited to conditions where winds are weak (<10 knots) and/or VOC readings indicate potential health concerns are observed. In addition, where worker safety is determined to be threatened due to increasing VOC levels, surface application of dispersants, deployed from boats/ships, will be allowed. While this authority is granted to the FOSC in the National Contingency Plan, all attempts will be made to maintain the 15,000 gallon per day cap outlined in Dispersant Monitoring and Assessment Directive Addendum 3.

Subsurface injection and aerial dispersant application will particularly be considered for use when sea state, weather or other factors limit or prohibit the use of other mitigation measures such as skimming or burning.

Surface application of dispersants will be limited to specific and individual high value targets that are problematic with regard to recovery from surface resources. Problematic situations may include tactical issues that require it, such as the target cannot be reached in time by skim/burn vessels before it weathers too much. These cases will be rare with regard to the overall area of operation, but nonetheless represent an important shoreline protection opportunity to the FOSC. Surface dispersants will be preferentially used when environmental factors such as seat state

makes in-situ burning and skimming less effective. Unless otherwise requested, the application rates for the surface dispersing will remain at 5 gallons per acre.

When and where conditions are suitable for in-situ burning, dispersants will be restricted in favor of burning.

Where on-water recovery is favorable and burning is not practical, dispersant operations will be limited in favor of and in coordination with skimming operations.

Aerial dispersants will be subject to a minimum of SMART Tier I, augmented by Surface Water Sampling Plan for Dispersant Application Monitoring plan.

The combined daily volume of dispersants applications, both surface and subsurface, would not exceed 1/40 of the maximum estimated volume of oil being released from the well, minus that volume being captured and pumped by the LMRP containment system. Currently the assumed volume from the MC252 release is 35,000 to 60,000 barrels per day.

Dispersant restrictions outlined in the *RRT-6 FOSC Dispersant Pre-Approval Guidelines and Checklist, version 4.0* will be observed.

This proposal would be reviewed and updated as more data are analyzed.

June 24, 2010

Strategic Issue:

It is widely accepted by the scientific community that the impacts of surface applied dispersants are less than the damage caused by shoreline oiling. Because of the large quantities of dispersant used and their application in the deep sea, there has been a re-evaluation of the tradeoffs and possible impacts of dispersant use particularly in the deep sea. The National Incident Commander would like to ensure that this technology is available for use while also ensuring that the potential impacts are understood. There are concerns regarding the process by which expedited exemptions can be made in a time critical manner at the Regional Response Team (RRT) level for an ongoing emergency response. Development of a dispersant use policy for this spill will allow for mitigation of larger quantities of fresh dispersible surface oil that escape mechanical recovery efforts and when weather precludes other mitigation techniques. Given that the source of the Deepwater Horizon (DWH) MC252 spill remains unsecured, the response organization must continue aggressive measures to contain, capture, recover, and remove oil from the environment. Dispersant use is a key part of this effort.

Objective:

Determine a dispersant use policy that is acceptable to RRT VI within the context of the DWH oil spill.

Background:

No single response method is 100% effective, thereby establishing a need to consider the use of all available methods from the start of the spill response. Chemical dispersants, mechanical recovery and *in situ* burning are all components of an effective response to surface oil pollution. Mechanical recovery is the preferred method of on water oil spill response because it removes the oil from the environment, but is not always effective due to environmental conditions. The use of dispersants to mitigate offshore oil spills has become a proven and accepted technology and, under certain conditions, more effective than mechanical response. Decisions to use dispersants always involve trade-offs between impacts within the water column, on the water surface, or on the shore.

The Oil and Hazardous Substances Pollution Contingency Plan (40 CFR 300), commonly referred to as the National Contingency Plan (NCP), established a framework for the use of dispersants in an oil spill response. The NCP states that RRTs and Area Committees will address, as part of their planning activities, the desirability of using appropriate dispersants and oil spill control agents listed on the NCP's National Product Schedule. The NCP goes on to state that Area Contingency Plans (ACPs) will include applicable pre-authorization plans and address the specific contexts in which such products should and should not be used. If the RRT and trustees approve the pre-authorization plans, the Federal on Scene Coordinator (FOSC) may authorize the use of the products without obtaining the specific agency concurrence. The FOSC may also authorize the use of any dispersant, including products not listed on the NCP National Product Schedule, without obtaining the concurrence of RRT, when, in the judgment of the FOSC, the use of the product is necessary to prevent or substantially reduce a hazard to human life.

As per the NCP, the ACP called The One Gulf Plan further defined the use of dispersants for the region. In this plan, the FOSC must utilize the decision-making process as defined in the FOSC Pre-approved Dispersant Use Manual to determine the applicability of dispersants as a response option for a specific spill response. If the FOSC determines that dispersant use is warranted, he/she will notify the RRT within three hours after the approval has been given to the Responsible Party (RP). For all dispersant operations, the FOSC must activate the Special Monitoring of Applied Response Technologies Monitoring Program (SMART) monitoring team. The pre-approved area includes offshore waters "from the ten-meter isobath or three nautical miles", whichever is farthest from the shore, to 200 nautical miles offshore (Exclusive Economic Zone boundary), beginning from the Texas-Mexico border and extending through the states of Texas and Louisiana to the boundary between federal Regions IV and VI.

The objective of the RRT VI FOSC Dispersant Pre-approval Guidelines and Checklist is to provide guidance for ensuring an environmentally safe and effective dispersant operation. The programmed checklist approach allows the FOSC to quickly arrive at a logical "GO/NO GO" decision. This gives the dispersant operation the opportunity to begin in a timely manner that is consistent with attempting to maximize the effectiveness of dispersant use as a countermeasure to reduce the impact of oil spills.

Current Situation:

For the DWH response, the Unified Area Command (UAC) through the Incident Command Posts (ICP) is employing a layered approach to oil containment and recovery. The most effective response method is containment of the leak at the wellhead and the recovery and flaring of the captured oil and gas. Beyond this, a combination of subsurface dispersant use, in-situ burning, targeted surface dispersant application and skimming is employed to minimize shoreline impacts where oil does the most damage. No combination of response actions can fully contain the oil or mitigate the impacts from a spill the size and complexity of the DWH incident.

Dispersant use for the DWH spill was performed in accordance with ACP guidelines and with RRT approval. However, when dispersants were injected at the well head in deep water and in large quantities, concerns were raised about the potential ecological impacts.

Responders have been successful in injecting dispersants into the largest source and observing an appreciable reduction in surface oil during testing of the procedure. There is general agreement that subsurface dispersion may be an effective tool in the arsenal of oil spill mitigation alternatives. The use of this technique is a trade-off as the oil is not removed from the environment, but rather dispersed into the deep waters of the Gulf of Mexico.

Over time, a correlation has been observed between the amount of dispersant injected subsea and the reduction of volatile organic compounds (VOC) and hydrocarbon vapor amounts at the surface in the area of the source. Hydrocarbon vapor amounts have not exceeded the lower explosive limit (LEL) to date, but have been as high as 8-10%. Within 3-6 hours of discontinuation of subsea dispersant, the VOC concentrations at the surface have increased to >200 ppm and hydrocarbon vapors also increased. VOC and LEL issues have been resolved within a few hours when dispersant has been applied at the wellhead in these instances allowing safe operations to continue in the area of the source.

In late May, it was agreed that (1) BP would endeavor to reduce the dispersant loading in the Gulf of Mexico by 75%; (2) BP will eliminate the use of surface dispersants entirely except by FOSC approval and (3) BP will cap the daily volume of subsurface dispersants to 15,000 gallons, unless by written exception by the FOSC. These restrictions, particularly the last, were predicated on the assumed release volume of approximately 5,000 barrels per day. Today, based on revised release data, we know the release volume to be substantially higher, approximately 35,000 – 60,000 barrels per day following the cutting of the riser pipe. The volume of oil released into the Gulf of Mexico has been reduced by the Lower Marine Riser Package (LMRP), the Enterprise and the Q4000. If the most recent estimates are accurate, BP is recovering as much as 25,000 barrels with these systems, the remaining oil, up to 35,000 barrels per day, are uncontrolled and releasing to the sea.

Given that the LMRP is not entirely successful in containing the oil and on water recovery solutions can similarly be less effective, having greater flexibility to use aerial and sub-surface dispersant applications as a response tool is important. They may act as a force-multiplier for mechanical recovery assets.

Currently, BP has leased, bought or otherwise obtained the services of the majority of skimming capacity in the country that can be released without violating US Coast Guard regulations. This includes the entire fleet of Marine Spill Response Corporation (MSRC) skimming vessels on the eastern seaboard and the Gulf of Mexico and every NOFI skimming system in use worldwide. Based on input from Incident Command Posts in both Houma, LA and Mobile, AL, without the additional support of aerial dispersant application, substantially more skimming assets will be required to reduce shoreline impacts.

Fate and Effects:

While numerous studies have been conducted on the fate and transport of oil dispersed on the surface, the fate and transport of oil dispersed at depth is not well understood. The pursuit of deepwater dispersion effort involves evaluating the tradeoffs between known surface water impacts and those that are unknown at depth. Deepwater dispersal of oil seems to have lower first order impacts than allowing all of the oil to surface, but there is great uncertainty about the fate and effects of deepwater dispersal.

Dispersants act to reduce the surface tension between the oil and the water, which allows the oil to more easily break into smaller droplets. While the application of dispersants into a subsurface plume has never been studied, we expect the result to be similar to that of surface dispersant application, and thus result in even smaller droplets of oil in the plume. These very small droplets (100 microns) will rise extremely slowly while being mixed by background turbulence, so that they stay at depth, moving with the currents, until biodegraded, eaten by naturally occurring micro organisms, or adhered to falling sediment. Preliminary modeling suggests that average rise could increase from a few hours to several days with sub-surface dispersant application. We also expect some fraction to sink because of adherence to falling sediments (marine snow or fecal matter) but we don't know how much. However, this could be a substantial removal mechanism from the water column.

If the dispersant is 100% effective, water column concentrations are at levels of 1 ppm or greater for as little as 100s of meters to up to 40 kilometers depending on which model used. The difference depends on the level of vertical mixing that is assumed. We would not expect the dispersed oil to come to the surface at any appreciable concentrations in another location. We do not expect any increase in buoyancy and the longer and farther away the dispersed oil gets, the more diluted it becomes.

Thus far, the impacts of the use of dispersants on deep water spills have not been examined. However, the Minerals Management Service and industry jointly funded and conducted an experiment off the Norwegian Coast where there was a controlled release of oil and natural gas in deep water. The oil was released in 864 m (~2600 feet) water depth. The oil reached the surface and was rapidly dispersed by prevailing winds and heavy seas. No damage to marine life was observed.

We have not yet pursued case histories where spills resulted in deep water dispersion and where studies have been made. However, there have been spills where naturally dispersed oil spread into deep water. Among these is the 40 million gallon spill of light crude from the tanker *Braer*, 1994, in the Shetland Islands. Oil was measured in water and sediments as deep as 500m but there was little measurable impact on the infauna.

Responders have been successful in injecting dispersants into the largest source and observing an appreciable reduction in surface oil during testing of the procedure. The dispersed oil is carried away from the source with the deep water currents, and dilutes in the water column. Samples collected down current from the release appear as clear sea water, but low concentrations of hydrocarbons have been measured. Much of the treated oil would be dispersed in deep water and not resurface, but rather biodegrade. Untreated oil will continue to surface and threaten surface resources and the coastal environment.

There has been no appreciable reduction in dissolved oxygen concentration as a result of the sea floor injection. Hydrocarbons have been detected down current from the release, and are general low in concentration (concentrations decrease with distance from the source). Monitoring is continuing and being expanded by the addition of a second BP vessel and a NOAA Research Vessel.

15 experts representing MMS, NOAA and EPA convened and discussed ecological implications of dispersing oil in deep water. Key points of that discussion:

There is no photosynthetic activity in the deep sea and the animal and microbial life is entirely different. Unlike the surface layer, food webs of the deep are almost entirely dependent on flux of organic material sinking from the surface. They may be adapted to organic carbon that includes small amounts of petroleum hydrocarbons. These processes may allow them deal with a small additional flux of petroleum.

Toothed whales, notably sperm whales, are among the animals that dive into the deep to feed on cold water squids. Tuna, including blue fin, may also "go deep" to feed and/or spawn and spawning can reach a depth of 300 m (984 ft). The majority of sperm whale feeding is at 400-600 m (1312-1969 ft). It is expected that the dispersed plume at depth would not rise past the

major density layer at around 800 m (2624 ft) depth, and thus not impact this activity. Similarly, sea turtles, of particular concern, the leatherback sea turtle, also dive relatively deep and feed on pelagic prey. However, this feeding activity would be far above 800 m (2625 ft).

One specific concern would be for the large plankton-feeding whale shark that dives and feeds to depths up to 1000 m (3280 ft). This diving depth could overlap the water column containing dispersed oil, but only at the extreme range of the diving depth.

The deepwater environment is not oil-free: naturally occurring oil seeps are estimated to discharge up to 40 million gallons (980,000 bbl) per year between a depth of 300-3000 m (984-9840 ft) in the entire Gulf of Mexico (NRC, 2003). The oil concentrations, types of hydrocarbons, and exposure durations to which the deep biota is naturally exposed are unknown.

Based on laboratory experiments with controlled concentrations, exposure, and duration, dispersed oil is toxic to surface dwelling marine life at concentrations in the range of 0.1 to 10 or more parts per million (ppm). Eggs and larvae are much more sensitive to dispersed oil toxicity than are adult animals. There are no data on the toxicity of dispersants or dispersed oil to deep-sea biota at any life stage.

Proposed Way Ahead:

The overall goal of the Unified Command is to reduce the environmental damage caused by the DWH oil spill. The overall response strategy to accomplish this goal is to maximize recovery and removal of the oil being released to ensure it doesn't impact the sensitive shoreline. Dispersants should be considered an effective tool in the response strategy. However, it is important to balance the use of dispersants with other recovery methods and, therefore, we propose the following regarding dispersant use:

First, the use of dispersants should be consistent with the National Contingency Plan, in which dispersant use is a response option that the FOSC controls guided by the pre-approval of Regional Response Teams in consultation with the National Response Team. Second, it should reflect the continued goal of minimizing dispersant use when operationally feasible. Third, it should in no way weaken the current monitoring and water sampling program currently in place. Fourth, it should empower incident commanders to make real-time decisions to use appropriate amounts of dispersants-we cannot afford the delay inherent in seeking approval from above when the window of opportunity is frequently short. Fifth, it should allow the use of dispersants to appropriately control volatile organic compounds-we must protect the health and safety of the workers at or near the source. Finally, the new Directive should in no way condition the use of dispersants on receipt of precise data regarding the capability of mechanical recovery methods. While recovery by mechanical methods does reduce the overall need to use dispersants, the success of those methods is subject to an enormous number of constantly shifting variables-variables that will only increase as hurricane season adds new challenges.

FOSCR's should consult with their Environmental Units and their Dispersant Operations Group to determine the efficacy of dispersant use. If dispersant use is a viable option, FOSCR will send the information to RRT VI for concurrence.

For the purpose of VOC control, increases in the application rate of sub-surface dispersants will be limited to conditions where winds are weak (<10 knots) and/or VOC readings indicate potential health concerns are observed. In addition, where worker safety is determined to be threatened due to increasing VOC levels, surface application of dispersants, deployed from boats/ships, will be allowed. While this authority is granted to the FOSC in the National Contingency Plan, all attempts will be made to maintain the 15,000 gallon per day cap outlined in Dispersant Monitoring and Assessment Directive Addendum 3.

Surface application of dispersants will be limited to targets that are problematic with regard to recovery from surface resources. Problematic situations may include tactical issues that require it, such as the target cannot be reached in time by skim/burn vessels before it weathers too much. Surface dispersants will be preferentially used when environmental factors such as sea state makes in-situ burning and skimming less effective. Unless otherwise requested, the application rates for the surface dispersing will remain at 5 gallons per acre.

Aerial dispersants will be subject to a minimum of SMART Tier I, augmented by Surface Water Sampling Plan for Dispersant Application Monitoring plan.

Sub sea dispersants will be subject to a minimum of SMART Tier 3.

The combined daily volume of dispersants applications, both surface and subsurface, would not exceed 1/40 of the maximum estimated volume of oil being released from the well, minus that volume being captured and pumped by the LMRP containment system. Currently the assumed volume from the MC252 release is 35,000 to 60,000 barrels per day.

Dispersant restrictions outlined in the *RRT-6 FOSC Dispersant Pre-Approval Guidelines and Checklist, version 4.0* will be observed.

This proposal would be reviewed and updated as more data are analyzed.

References:

National Contingency Plan

Area Contingency Plan

Regional Response Team VI Dispersant Guidelines

Special Monitoring of Applied Response Technologies (SMART) BP Gulf of Mexico Regional Response Plan

Review of *R/V Brooks McCall* Data to Examine Subsurface Oil

Deepwater Horizon Dispersant Use Meeting Report May 26-27, 2010

An Analysis of Historical Opportunities for Dispersant and In-situ Burning Use in the Coastal Waters of the Unites States, except Alaska, Technical Report Series 95-005

Technology Assessment of the Use of Dispersants on Spills from Drilling and Production Facilities in the Gulf of Mexico Outer Continental Shelf,

Dispersant monitoring and Assessment Directive with Addendums 2 and 3

Letter from Admiral Watson to RRT VI

NOAA Paper on Dispersant Modeling in the Deep Sea.

Turner, Lee LT

From: Nolan, John CDR
Sent: Saturday, June 26, 2010 8:16 PM
To: Turner, Lee LT; Bhatt, Manish LT
Subject: FW: Aerial Dispersant Request for June 26, 2010

-----Original Message-----
From: Loebl, Gordon CAPT
Sent: Saturday, June 26, 2010 3:03 PM
To: Turner, Lee LT; Nolan, John CDR
Subject: FW: Aerial Dispersant Request for June 26, 2010

Gordon Loebl
Captain, U.S. Coast Guard
Executive Assistant to RADM Jim Watson
Federal On Scene Coordinator
Deepwater Horizon Response
Cell: 202-507-3283
Desk: 504-525-2283

-----Original Message-----
From: Watson, James RADM
Sent: Saturday, June 26, 2010 2:19 PM
To: Allen, Thad W
Cc: Rooke, Connie; Neffenger, Peter RDML; Nash, Roy RDML; Zukunft, Paul RADM; Papp, Robert ADM; Lloyd, Anthony CAPT; Gautier, Peter CAPT; Perry, Raymond CAPT; Laferriere, Roger CAPT; Austin, Meredith CAPT; Loebl, Gordon CAPT; Parker, Robert VADM; Hanzalik, James CAPT
Subject: FW: Aerial Dispersant Request for June 26, 2010

NIC
Sir, dispersants continue to be a key tool in the toolbox, depending on wx and other factors. Today 43,000 gals were authorized iaw standing directive. See below emails.
The daily interagency dialog and review has been cumbersome, which is why we have asked RRT for guidance.
Vr
Jim

Sent with Good (www.good.com)

-----Original Message-----
From: Laferriere, Roger CAPT
Sent: Saturday, June 26, 2010 02:08 PM Eastern Standard Time
To: Nash, Roy RDML; Austin, Meredith CAPT; Charlie Henry-NOAA; Perry, Raymond CAPT; 'Sam Coleman'; 'Carroll.Craig@epamail.epa.gov'; Watson, James RADM
Cc: Loebl, Gordon CAPT; Hanzalik, James CAPT; Neffenger, Peter RDML; Zukunft, Paul RADM
Subject: RE: URGENT...JUST LEFT PHONE MESSAGE AT 214-665-2220, IS THERE ANOTHER NUMBER?- Aerial Dispersant Request for June 26, 2010

Unified Area Commander,

Sir, I can confirm that this is a day where Dispersants are our best and most viable tool. There are no burns today because of sea state. Skimming operations will be severely curtailed by these same sea states, skimming capacity will be reduced to minimum effectiveness.

Sir, you are correct that in the coming days, the forecast indicates we will not be able to burn and more problematic, we may have to totally secure skimming operations. Additionally, conditions are likely to deteriorate to the point even dispersants will be ineffective.

We now have oil in Chandeleur sound that threatens the marshes westward and the sensitive environments within. Despite our best defensive efforts, some oil will get past and coat the marshes and potentially smother wildlife. Your decision to allow us to disperse could potentially prevent 860,000 gallons of oil from impacting the shorelines of Louisiana. Another way to look at this is how many miles of shoreline area we are preventing from receiving impact. According to NOAAs Spill Tools program the 860K gals would cover 8,730 square acres or 13.6 square miles. Even if we derate this 50%, this is not an insignificant number. There is no way today that our skimming forces will be able to come close to this given the sea states we are now having.

We in IC Houma believe this is a tradeoff decision in the best interest of the environment. If you have any further questions, please do not hesitate to contact me.

Very respectfully,

Roger

-----Original Message-----
From: Nash, Roy RDML
Sent: Saturday, June 26, 2010 12:15 PM
To: Laferriere, Roger CAPT; Austin, Meredith CAPT; Charlie Henry-NOAA; Perry, Raymond CAPT; Sam Coleman; Carroll.Craig@epamail.epa.gov; Watson, James RADM
Cc: Loebl, Gordon CAPT; Hanzalik, James CAPT; Neffenger, Peter RDML; Zukunft, Paul RADM
Subject: RE: URGENT...JUST LEFT PHONE MESSAGE AT 214-665-2220, IS THERE ANOTHER NUMBER?- Aerial Dispersant Request for June 26, 2010

Incident Commander Houma,

At 1108, upon your third verbal request this morning, I granted permission to apply dispersant quantities as you requested. You indicated that these quantities might be more that EPA would concur with, and I do wish to confirm that this is one of the rare days where we have lots of oil targets present on the surface and are not able to use many of our removal tools. I made this decision based upon your current situation report and request for an increased amount of dispersant, given very significant targets of oil slicks observed this morning, and the lack of aerial dispersant application yesterday, immediately following a several hour emergency removal of the TOP HAT containment on 24 June allowing a considerable mass of oil to go uncontained; the poor forecast TODAY for effective insitu burning and challenging sea-state for effective mechanical skimming.

Further information considered today and should be considered over the next few days: Newly named Tropical Storm Alex was posted this date, and although it's track across the Yucatan Peninsula this weekend may weaken it, it is expected regain strength when it emerges, with models taking it towards Mexico/Texas border. It appears that TS ALEX will stay to the southwest of Deepwater Horizon area of operations (less than 2% chance of entering the DH AOR as of this morning's forecast)...yet the associated sea swells that may be expected early next week may be in the 8-10 foot, to 10-12 foot range, exceeding both mechanical and insitu burning operating parameters...to keep in mind.

,ain, I gave permission to apply additional aerial dispersants today, as modified by equest from the Incident Commander--Houma, up to 43,000 gallons.
v/r,
Roy Nash
Deputy, Federal On Scene Commander

-----Original Message-----
From: Nash, Roy RDML
Sent: Saturday, June 26, 2010 10:02 AM
To: 'Carroll.Craig@epamail.epa.gov'; Laferriere, Roger CAPT; Austin, Meredith CAPT; Charlie Henry-NOAA
Cc: Loebl, Gordon CAPT; Watson, James RADM; 'mike.utsler@uk.bp.com'; Perry, Raymond CAPT; 'Mason.Steve@epamail.epa.gov'; 'R6_DWH_REOC_RIC@epamail.epa.gov'; Watson, James RADM
Subject: URGENT...JUST LEFT PHONE MESSAGE AT 214-665-2220, IS THERE ANOTHER NUMBER?- Aerial Dispersant Request for June 26, 2010

CRAIG, I left a message at the above number...not sure if you are there...is there another cell? I can be reached at
504 648 0716 UAC, or

703 943 8865 cell or

202 412 0678 cell

-----Original Message-----
From: Nash, Roy RDML
Sent: Saturday, June 26, 2010 9:52 AM
To: 'Carroll.Craig@epamail.epa.gov'; Laferriere, Roger CAPT; Austin, Meredith CAPT
Cc: Charlie Henry-NOAA; Loebl, Gordon CAPT; Watson, James RADM; mike.utsler@uk.bp.com; Perry, Raymond CAPT; Mason.Steve@epamail.epa.gov; R6_DWH_REOC_RIC@epamail.epa.gov; Watson, James RADM
Subject: RE: FW: Houma Unified Command - Aerial Dispersant Request for June 26, 2010

Craig,
I spoke to IC Houma... the sea-state off shore is not conducive to mechanical skimming today, and the opportunity for insitu burn is marginal right now. No aerial dispersants were used/applied yesterday due to administrative delays in the approval process. Combined with the loss of TOP CAP for several hours two days ago, the current situation includes significant viable slicks/targets to apply dispersants to, which will not otherwise be mechanically removed due to ambient sea-state...information is very current per this morning's overflight.
In fact, a modified request just received this morning from ICP Houma is to apply 43,000 gals today to combat damaging slicks present, rather than 30,000 gals. Your urgent reply is requested. I will adjust the quantity in the letter request upon your concurrence/thoughts, Craig. We are battling oil making landfall/entry into Bays, our IC Commanders are urgently requesting more mechanical capacity. Thanks, Craig.
I can be reached at 504 648 0716 or 703 943 8865.
Thank you very much.
Roy Nash
Deputy FOSC

-----Original Message-----
From: Carroll.Craig@epamail.epa.gov [mailto:Carroll.Craig@epamail.epa.gov]
Sent: Friday, June 25, 2010 8:06 PM
To: Watson, James RADM

...: Charlie Henry-NOAA; Loebl, Gordon CAPT; Watson, James RADM; mike.utsler@uk.bp.com; Perry, Raymond CAPT; Nash, Roy RDML; Mason.Steve@epamail.epa.gov; R6_DWH_REOC_RIC@epamail.epa.gov
Subject: Re: FW: Houma Unified Command - Aerial Dispersant Request for June 26, 2010

Admiral,

In order to make a more accurate review, the request needs to have more specific information as to why burning will not be operating tomorrow and how much skimming operations will impacted by weather. Thanks

Craig Carroll
Chief, Emergency Readiness Section
EPA Region 6
Ph: 214-665-2220
Fax: 214-665-9718

From: "Watson, James RADM" <James.A.Watson@uscg.mil>
To: "Charlie Henry-NOAA" <charlie.henry@noaa.gov>, "Perry, Raymond CAPT" <Raymond.J.Perry@uscg.mil>, Craig Carroll/R6/USEPA/US@EPA
Cc: "Nash, Roy RDML" <Roy.A.Nash@uscg.mil>, Steve Mason/R6/USEPA/US@EPA, "Loebl, Gordon CAPT" <Gordon.A.Loebl@uscg.mil>, <mike.utsler@uk.bp.com>
Date: 06/25/2010 06:51 PM
Subject: FW: Houma Unified Command - Aerial Dispersant Request for June 26, 2010

Please review and comment.
Thanks

-----Original Message-----
From: mike.utsler@uk.bp.com [mailto:mike.utsler@uk.bp.com <mailto:mike.utsler@uk.bp.com>]
Sent: Friday, June 25, 2010 6:07 PM
To: Watson, James RADM
Cc: Rainey, David I; Mutschler, Jackie C; Seilhan, Keith A; Easley, Max; Charlie Huber; Laferriere, Roger CAPT; Austin, Meredith CAPT; jzee@la.gov; coleman.sam@epa.gov; moore.gary@epa.gov
Subject: Houma Unified Command - Aerial Dispersant Request for June 26, 2010

Admiral,

Attached is the dispersant spray request for 30,600 gallons for 26 June 2010. In line with our normal routine, we will be sending up spotter aircraft at 0615 to re-assess the area and re-locate targets as weather allows. We also are requesting approval to spray 5,000 gallons in the morning and follow up with a later request based on more complete reconnaissance. It is expected there will be considerable slicks present tomorrow, since ISB will not be operating tomorrow and weather will make skimming difficult.

<<June_26_request_for_aerial_spray_operations_FINAL.doc>>

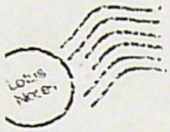
We will coordinate with Captain LaFerriere or Captain Austin to confirm the initial application amount of 5,000 g is approved by the FOSC and also followup that the final request amount is authorized.

Mike Utsler

Houma Unified Command

Captain Roger Laferriere

Jerome Zeringue



FOSC authorization of dispersant

Steve Mason to: Nash, Roy RDML, Perry, Raymond CAPT, Nolan, John CDR

06/26/2010 03:00 PM

I would ensure that this type of language and justification is in the approval letter today...

40 CFR 300.910

(d) The OSC may authorize the use of any dispersant, surface washing agent, surface collecting agent, other chemical agent, burning agent, bioremediation agent, or miscellaneous oil spill control agent, including products not listed on the NCP Product Schedule, without obtaining the concurrence of the EPA representative to the RRT and, as appropriate, the RRT representatives from the states with jurisdiction over the navigable waters threatened by the release or discharge, **when, in the judgment of the OSC, the use of the product is necessary to prevent or substantially reduce a hazard to human life.** Whenever the OSC authorizes the use of a product pursuant to this paragraph, the OSC is to inform the EPA RRT representative and, as appropriate, the RRT representatives from the affected states and, when practicable, the DOC/DOI natural resources trustees of the use of a product, including products not on the Schedule, as soon as possible. Once the threat to human life has subsided, the continued use of a product shall be in accordance with paragraphs (a), (b), and (c) of this section.

Also, make sure you notify state, DOI and NOAA of the decision to authorize...

Faithfully yours
Steve

"Frequently, my thoughts get bored and walk
down to my mouth. Often, this is a bad thing."

Steve Mason, EPA Region 6 (6SF-PE)
1445 Ross Avenue, Dallas, TX 75202
214-665-2276 / 214-665-2278 fax

Analysis of Eight Oil Spill Dispersants Using *In Vitro* Tests for Endocrine and Other Biological Activity

June 30, 2010

U.S. Environmental Protection Agency
Office of Research and Development

Executive Summary

The U.S. Environmental Protection Agency's Office of Research and Development was asked to evaluate the cytotoxicity and potential for interaction with the androgen and estrogen receptors (AR, ER) of eight oil spill dispersants being used, or could be considered for use, in the Gulf of Mexico. These are Corexit 9500 (the current product being used), DISPERSIT SPC 1000, JD 2000, Nokomis 3-F4, Nokomis 3-AA, SAF-RON GOLD, Sea Brat #4, and ZI-400. To address this request, ORD staff and outside collaborators carried out a number of separate studies that were run using *in vitro* (cell-based) assays. A total of 8 cytotoxicity assays, 3 AR agonist assays, 1 AR antagonist assay and 4 ER agonist assays were run on the 8 dispersants, plus reference compounds. Tests were run across a wide range of dispersant concentrations (0.001 to 10,000 parts per million, or ppm). Two dispersants showed a weak signal in one of the four ER assays, but integrating over all of the ER and AR results these data do not indicate that any of the eight dispersants display biologically significant endocrine activity via the androgen or estrogen signaling pathways. All of the dispersants showed cytotoxicity in at least one cell type at concentrations between 10 and 1000 ppm. Both JD 2000 and SAF-RON GOLD tend to be less cytotoxic than the other dispersants. Likewise, DISPERSIT SPC 1000 tends to be more cytotoxic than the other dispersants in the cell-based assays.

This document has been reviewed in accordance with U.S. Environmental Protection Agency policy and approved for publication. Mention of trade names or commercial products does not constitute endorsement or recommendation for use.

Analysis of Eight Oil Spill Dispersants Using *In Vitro* Tests for Endocrine and Other Biological Activity

June 30, 2010

U.S. Environmental Protection Agency
Office of Research and Development

Executive Summary

The U.S. Environmental Protection Agency's Office of Research and Development was asked to evaluate the cytotoxicity and potential for interaction with the androgen and estrogen receptors (AR, ER) of eight oil spill dispersants being used, or could be considered for use, in the Gulf of Mexico. These are Corexit 9500 (the current product being used), DISPERSIT SPC 1000, JD 2000, Nokomis 3-F4, Nokomis 3-AA, SAF-RON GOLD, Sea Brat #4, and ZI-400. To address this request, ORD staff and outside collaborators carried out a number of separate studies that were run using *in vitro* (cell-based) assays. A total of 8 cytotoxicity assays, 3 AR agonist assays, 1 AR antagonist assay and 4 ER agonist assays were run on the 8 dispersants, plus reference compounds. Tests were run across a wide range of dispersant concentrations (0.001 to 10,000 parts per million, or ppm). Two dispersants showed a weak signal in one of the four ER assays, but integrating over all of the ER and AR results these data do not indicate that any of the eight dispersants display biologically significant endocrine activity via the androgen or estrogen signaling pathways. All of the dispersants showed cytotoxicity in at least one cell type at concentrations between 10 and 1000 ppm. Both JD 2000 and SAF-RON GOLD tend to be less cytotoxic than the other dispersants. Likewise, DISPERSIT SPC 1000 tends to be more cytotoxic than the other dispersants in the cell-based assays.