

**Dispersant Working Group**  
May 7, 2014  
(In conjunction with IOSC, Savannah, GA)

*Meeting Notes*

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**Attendees:**

Nancy Kinner, CRRC	Bill Lehr, NOAA ERD
Talib Al Alawi, ADNOC	Scott Lundgren, USCG (CG-MER)
Mohamed AIKaabi, ADMA-OPCO	Lori Medley, BSEE
Alexander Balsley, USCG RDC	Jacqui Michel, RPI
Adriana Bejarano, RPI	Nicole Mulanaphy, RPS
Michel Boufadel, NJIT	Haibo Niu, Dalhousie
Sarah Brace, Pacific/BC Oil Spill Task Force	James Payne, PECI
Victoria Broje, Shell	Debbie Payton, NOAA ERD
Steven Buschang, TGLO	W. Scott Pegau, OSRI
Robyn Conmy, USEPA	Yves Personna, NJIT
Tom Coolbaugh, ExxonMobil	Abigail Renegar, NSU OC
Erik DeMicco, ExxonMobil	Nicolle Rutherford, NOAA
Dagmar Etkin, Environmental Research	Gary Shigenaka, NOAA ERD
Debbie French McCay, RPI ASA	Paul Schuler, Oil Spill Response Ltd.
Xiaolong Geng, NJIT	Jagadish Torlapati, NJIT
Kurt Hansen, USCG R&D	Sergis (Alex) Villalobov, BP
Charlie Henry, NOAA	Bill Vocke, USCG
Linda Hooper-Bui, LSU	Ian Walsh, Sea Bird Scientific, WETLABS
Matt Horn, RPS	Greg Wilson, EPA
Bill Lehr, NOAA	Lin Zhao, NNJIT
Ken Lee, CSIRO	

This meeting was held to review and update the status of Funded Research Projects specifically on Dispersants. Nancy Kinner gave an overview of the Dispersant Working Group (DWG); review of notes from last meeting held at Clean Gulf and an overview of the Dispersant Forum held at Gulf of Mexico Oil Spill & Ecosystem Science Conference held in January 2014.

**Doug Helton, NOAA ORR ERD**

- Dispersant related initiative (40 proposals, funded 3 projects)
- Projects included: Social science (Ann Hayward Walker); Blue crab (Eric Schott, UMCES); DTox (Adriana Bejarano, RPI)
- All completed on time, within budget and final reports posted on CRRC website

**Adriana Bejarano, RPI**

- CRRC-funded project (DTOX) included in-depth literature review; develop QAQC screening for dispersant project data.
- Developed DTox database
- Future inclusion in NOAA's other online tools

**Kurt Hansen, USCG RDC**

- SMART protocols being revised

### **Alex Balsley, USCG RDC**

- Detection of oil in the water column. Just completing mitigation part of project. Three technology advancements evaluated through BFA, one part is through wet labs using backscattering. Testing two prototypes with backscattering and sonar.
- (Question from Jim Payne- what wavelengths were you using if you were using fluorometers? Answer: fluorometry did not get through phase. It is a light scattering technology. Wide angle scattering of normal light. Scattering differs based on what is being detected.
- There is a poster with data. Alex giving presentation as well.
- Is wide angle scattering commercially available? No, not yet. Saudi Aramco is working on testing.
- Kurt Hansen state ambient light, wide angle scattering, can differentiate bubbles from oil and particles; new LED technology.

### **Bill Lehr, NOAA ERD**

- Revising ADIOS oil weathering model. New algorithms.

### **GOMRI**

- GOMRI ongoing research on dispersants. Visit their booth.

### **Ken Lee, CSIRO**

- Toxicity of dispersants on species
- Helps AMSA. “Smarter SMART protocol”- particle counters- instrument package that can be towed behind a vessel
- Canadian DFO is also doing experiments
- Collaboration in China on a wave tank for dispersant testing.
- Potential conference in Perth, Australia
- Tom Coolbaugh asked a question about what dispersants are available in Australia because Corexit is not. Pushing to get Corexit and Tocon(?) as dispersants in Australia.

### **Debbie Payton, NOAA ORR ERD**

- NOAA is looking at new toxicity data via lab work. This new data will go into the DTox database

### **Tom Coolbaugh, ExxonMobil**

- API, etc., Joint Industry Programs (JIP) - subsea dispersant use by bench tests at SINTEF and CEDRE. Looking at particle size distribution in a lab.
- Science around dispersants, including the creation of fact sheets, available on API website (e.g., why you would use dispersants, what they are and what they do). Including some YouTube videos.
- Open house at OMSETT, this year in conjunction with BSEE (3rd week in July).
- R&D lit review panel with Oil and Gas producers looking at research data after DWH. There may be a discussion on this the same week as OMSETT display.
- Working with GOMRI consortia particularly CMEDS group on dispersant research.

### **Scott Pegau, OSRI**

- JIP looking at biodegradation rates in the Arctic.
- 5-year research plan due in the fall- dispersants has generated a lot of interest. Controversial topic in the Arctic.

### **Scott Lundgren, USCG**

- ICCOPR Research and technology plan to be released later this year.

#### **Coastal Response Research Center**

Gregg Hall, 35 Colovos Road, Durham, New Hampshire 03824-3534  
Tel: 603-862-0832 fax: 603-862-3957 <http://www.crrc.unh.edu>

### **Lori Medley, BSEE**

- Research and training by BSEE - all data is public.
- Highlighted several projects coming with final reports coming out in Sept after peer-review. Dispersant effectiveness. OMSETT tank. Internally led research (simulate arctic temps in the tank).
- VOC impacts with dispersants subsea and impacts on worker safety. Lit review of dispersants and database (akin to many others) and identified gaps.

### **Michel Boufadel, NJIT**

- Biodegradation of dispersed oil for PWSRAC. Compared naturally dispersed oil vs. chemically dispersed oil
- EPA funding to evaluate mixing energy in swirling flask test. Contract through Ken Lee.
- Examining hydrodynamics for tanks at DFO, help test dispersants and mineral fines. Design system for subsurface release in testing dispersants.

### **Robyn Conmy, EPA**

- Evaluate existing dispersants (with Michel Boufadel)
- With DFO and funded by BSEE study of dispersant effectiveness in subsea scenarios. Bottom of tank, pressurized release with small droplets. Will conduct at cold and warm water temperatures, variable flow rates, particle analyzer, fluorometers.
- Fluorescence library
- Biodegradation of chemically enhanced dispersed oil. Genome sequencing project- who is turning on what genes and degrading what oil?

### **Steve Buschang and Rob Hetland, TXGLO**

- Spill modeling for the Mississippi delta. RRT project to develop for Unified plan for RR6 for pre-authorization for dispersants in yellow zone.

### **Paul Schuler, Clean Caribbean and Abigail Renegar, Nova Southeastern**

- Research on dispersed oil effects on corals. Not a lot of toxicity effects for shallow water coral. Basic testing with single hydrocarbons and move to looking at multiple PAHs and eventually dispersants. (see their handout)

### **Sergis (Alex) Villalobov, BP**

- Gulf Coast Restoration Program (GCRO) - dispersant and dispersed oil research.
- Limited availability due to confidential NRDA related research

### **Debbie French McCay, ASA**

- Supporting NRDA=- modeling water column effects. Applications of dispersants on surface oil and rapid assessment and analysis of risk. SIMAP model.
- Nicole Mulanaphy will be giving a talk in session tomorrow on varied dispersants types and varied oil types

### **Ian Walsh, Sea Bird Scientific, WETLABS**

- Developing instrumentation. New LEDs and algorithms.
- Corexit 9500 tests. Don't know the technique to dispose of dispersant? Tom Coolbaugh said they know and will assist.

### **Dagmar Etkin, Environmental Consulting**

- Works on ADIOS 3 model.

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## Tim Nedwed, ExxonMobil

- API is lead on subsea dispersant injection techniques.
- Biodegradation of subsurface oil
- Use of dispersants in the Arctic
- Fate and effects work. All aspects of subsea dispersant effectiveness- different techniques and optimization
- Toxicity of subsea dispersant injection (results this year).
- Monitoring tools/plan for subsea dispersant injection. API monitoring plan (available on website).
- Modeling (help from M. Boufadel) to develop data to validate models.
- Biodegradation in subsea- hire academics to create a prototype. They will decide whether to do subsea biodegradation or whether it is possible.
- Modeling component- Validation of data from- SINTEF and OMSETT- scaling is an issue, plan a set of tests. Diameter discharge pipe changes and need to ensure they can scale up. Set up water tunnels next at SINTEF water tanks- observe droplets in water tunnels.
- High pressure droplet formation – Southwest Research Institute. Recently repeated the scaled tests conducted at SINTEF. Droplet size distribution is consistent. Hope to have data by end of this year.
- Pressure tests- using same scale for apertures? 1.5 mm discharge pt. Only difference is pressure.
- Any plan for hydrates? One of the next phases is to go back to Southwest Research Institute. Phase 3 will be testing dead oil, live oil, and associated gases. Hydrates in live oil will be tested.
- Dead Oil- what comes out of oil well is live, it becomes dead when it becomes treated and gases are removed. What is spilled and on the surface is usually always dead. Alive oil has gasses still in it.
- OGP – Arctic oil spill response in general. Dispersant effort is led by Tim Nedwed. Rules of thumb for dispersant use in ice. SLRoss, SINTEF and CEDRE have good tanks. Ice concentration, oil type, weathering, waves, etc. all factors going into deciding about use of dispersants in ice. Develop numerical model that will better predict where dispersed oil plume will go under ice and how it will interact with/under ice. Need to collect turbulence data to develop and run this model.

Please check for project updates on the CRRC website. Let Kathy ([kathy.mandsager@unh.edu](mailto:kathy.mandsager@unh.edu)) know of edits, changes, completions and where to locate final reports.

<http://crrc.unh.edu/research-topics-effectiveness-dispersants>

Next meeting: Clean Gulf 2014, December 2-4, 2014 in San Antonio, TX

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**Quantifying Hydrocarbon Toxicity to Shallow-water Corals:  
Improving NEBA for Dispersant Decision-Making**

Coral reefs are iconic ecosystems of Florida, the Gulf of Mexico, the Caribbean Sea, and throughout the planet's tropical belt. They are valuable for their intrinsic beauty, economic value, as incubators for fisheries, and for the physical protection they provide the land against the oceans and seas. Coral reefs are also one of the world's most threatened ecological resources due to a variety of environmental stressors. While reef systems contain an immense diversity of flora and fauna, their fundamental sustainability and survival rests upon the various living coral species that build a reef and upon which all else depends. From the perspective of Oil Spill Preparedness and Response (OSPR), coral reefs represent one of the highest valued natural resources for protection in Net Environmental Benefit Analysis (NEBA) of response methods and environmental damage.

This project includes a suite of experiments investigating impacts of hydrocarbons on shallow water corals. Initially, we will focus on development of a toxicity testing protocol for corals through range-finding and constant exposure assays with a single hydrocarbon. The results of this work will guide further experimentation utilizing additional hydrocarbons, spiked exposures, and chemically enhanced water accommodated fractions of (CEWAF) of one oil-dispersant combination. This will allow determination of thresholds of acceptable/unacceptable impact, and prediction of impact severity and choice of treatment based on expected impact. The sum of experimental results, when integrated into existing/emerging response support tools, will provide input to managers for the visualization, prediction, and understanding of oil impacts on key organisms and specific habitats. This applied science approach to a practical issue allows improvement in decision-frameworks for reaction and mitigation.

Clean Caribbean & Americas has formed an Oversight Committee (including representatives from Exxon-Mobil, Shell, and NOAA) to guide the proposed research. Paul Schuler, President and CEO of Clean Caribbean & Americas will serve as project advisor and consultant. The study will be conducted at the new, state of the art, \$50M NSUOC National Coral Reef Institute (NCRI) Center of Excellence for Coral Reef Ecosystems Research in Fort Lauderdale, Florida. Experimental work at the NSUOC National Coral Reef Institute (NCRI) in Fort Lauderdale will be headed by Abigail Renegar and Bernhard Riegl. The study will be conducted under the oversight of Dr. Richard Dodge, Director of the National Coral Reef Institute, Dean of NSUOC, and an authority on coral reefs. Chemical analysis will be led by Dr. Tony Knap of the Geochemical and Environmental Research group at Texas A&M University.