



ISCO NEWSLETTER

The Newsletter of the International Spill Response Community

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News

INTERSPILL 2012 : UPDATED PRELIMINARY CONFERENCE PROGRAMME RELEASED

The Interspill 2012 Spill Conference & Exhibition will be held at the ExCel London International Exhibition Centre in London, United Kingdom, from 13 to 15 March 2012.



The Conference will open on Tuesday 13 March, with an opening plenary session on "What the world thinks about Oil Spills", introduced by BBC Science correspondent David Shukman, to launch the theme of Working Together in a networked world.

The event will feature innovations including lunch time debates on the exhibition floor, on water demonstrations, science and technology workshops, and a seminar devoted to the offshore spill risk. The traditional oil spill conference streams will be underpinned by the strength and breadth of the Organising Committee, which includes the European Spill industry trade organisations, the European Maritime Safety Agency, (EMSA), the International Petroleum Industry Environment & Conservation Association, (IPIECA), with support from the International Maritime Organization, (IMO), International Oil Pollution Convention Funds, (IOPC), the International Tanker Owners Federation (ITOPF) and France's Centre of Documentation, Research and Experimentation on Accidental Water Pollution (CEDRE).

Opening Plenary Session

- Introduced by **David Shukman**, Science Correspondent of the **BBC**, with keynote speaker, **Sir Alan Massey**, Chief Executive of the **UK Maritime & Coastguard Agency**

Main Conference Sessions

- Oil Spill response Policy** - Forty years of tanker oil spills, analysis by ITOPF. Global Spill Preparedness and Response standards, Practices and Capabilities, post Macondo, from BP. IOPC on current IOPC Fund issues, IMO on current IMO issues. The Bunker Convention, issue with limits, speaker tbc
- Dispersant: Developments in Regulation** - Compensation regimes, Definition of a ship from IOPC, the need for an Offshore compensation regime from IMO, the Bunker Convention
- Cold Climate Issues** - The Arctic Joint Industry Project, The Norwegian Coastal Administration on lessons learned from the Godafoss spill.

News (continued)

Dispersant Effectiveness, testing of crude oils weathered under various ice conditions, from Sintef

- **Regional Preparedness** – Developments in the Black Sea from OSPRI, GIRG 19, is Asia ready, by OSRL. The Atlantic Region's Coastal Response from ARCOPOL. Preparedness Planning in remote East Africa from Statoil
- **Modelling & Risk Analysis** – A Tanker industry view on Risk, from Intertanko. A Planning and Assessment tool, from ARPEL. Environmental Risk from shipping in the Norwegian coast, by DNV. Existing modelling for Trajectory & Fate in ice infested waters
- **Monitoring & Remote Sensing** – European Satellite based and Aerial Oil Spill Surveillance and vessel detection services, by EMSA. New developments in Aerial surveillance, from OSRL. The Environmental Monitoring and Impact of Marine Oil Spill Incidents – The Premium project, from CEFAS.
- **Impacts & Restoration** - What is a reasonable oiled wild life response, by Sea Alarm. Potentially polluting wrecks, by NOAA. Environmental Impact of oil spills, Impact of Pollution on tourism
- **Technology development** – Hosting the X Prize oil clean up challenge, by OHMSETT. Norwegian oil spill response technology development, by NOFO. Alternative Response Technologies, progressing learning into R&D Programmes, from BP. Designing a submerged oil recovery system, by USCG. Arctic Technology
- **HNS Response** – A Tool for Impact Assessment of Chemicals on Marine organisms, by CEDRE. Are MSDS relevant in case of chemical spills at sea, from EMSA. ARCOPOL on HNS. An HNS case study, by ITOFF
- **Response Operations** - Is spill response more about luck and timing than preparedness, by OSRL. In situ burning – coming of age, transition from Alternative technology to conventional option, from BP. Shoreline protection on sandy shorelines and tidal inlets, by OCC/Polaris/Boston University
- **Training** – NCP & IMO Workshops, from Polaris. Exercise Sula, by Petrofac. Maximising value from Training Exercises, by Alaskan Government. Monitoring Exercises, by Shell
- **Response Logistics** – International Offers of Assistance, a view from USCG. Response Logistics Case studies, GULSER ANA and mv OLIVA. Incorporating Green Alternatives into Emergency Response Waste Management Programs, by BP

For the full programme click on <http://www.interspill.org/preliminary-programme.php>

AUSTRALIA: MV TYCOON'S SINKING SPARKS AMSA ACTION



January 10 - The Australian Maritime Safety Authority has activated its national pollution plan in response to a worsening environmental threat posed by the sinking of the cargo ship MV Tycoon at its mooring at Christmas Island. Activation of the National Plan was announced by AMSA on its website at 2pm.

"Overnight, the vessel has sunk in shallow water adjacent to a rock wall and close to the wharf," AMSA said in a statement. "It is believed to have broken in half due to the pounding from the rough seas."

The AMSA pollution response team, the Emergency Management Committee and the local community are planning a shore-line clean-up today, AMSA said.

A marine pollution response expert, and a marine surveyor to provide expert advice and support to

the Harbour Master, arrived at Christmas Island yesterday. Meanwhile two pollution experts and one salvage expert were expected to arrive on the island today to assist. Most of vessel's oil and phosphate cargo has escaped after the ship shattered in two.

On Sunday the MV Tycoon broke its moorings and foundered on shoreline rocks in heavy weather while berthed in Flying Fish Cove. All 15 crew managed to escape from the Panamanian-flagged cargo ship which was carrying 102 tonnes of fuel oil, 11,000 litres of lubricant oil, 32 tonnes of diesel fuel and 260 tonnes of phosphate.

[Report in [The Australian](#)] Other news reports - [Sydney Morning Herald](#) [Herald Sun](#) [New Scientist](#)

USA: OHIO GASOLINE PIPELINE RUPTURE RELEASED ABOUT 116,760 GALLONS OF GAS

January 13 - An underground gasoline pipeline rupture released an estimated 116,760 gallons of gasoline near Ohio 58 Friday morning, forcing the evacuation of dozens of people from 30 homes in a nearby trailer park.

Wellington Fire Department firefighters, workers from the Sun Pipeline Co., a subsidiary of Sunoco, and the Ohio and U.S. Environmental Protection agencies were still at the scene Friday evening, vacuuming up pools of gasoline from a ditch along Maple Street. Officials are not sure when the clean-up will be completed.

Air monitoring is continuing.

The break occurred about 10:45 p.m. Thursday. Workers in a Sunoco pipeline control room noticed a deviation of the pressure and flow in the pipeline, and shut down valves upstream and downstream of the rupture were closed to minimize the release, spokeswoman Nora Jacobs said. [Report in *Cleveland.com*] [Read more](#)

NEW ZEALAND: RENA INCIDENT UPDATE

January 15 Update from Maritime New Zealand :

Improving weather conditions have enabled steady progress to continue at the wreck of the **Rena**, says Maritime New Zealand (MNZ). National On-Scene Commander Rob Service says the divers have been able to carry out preliminary sub-surface inspections around the **Rena**.

"This will enable the divers to prepare for a full underwater survey of the sunken rear section once the sea swells ease over the next couple of days," said Mr Service. "Once a detailed underwater survey is complete, the salvage contractors can plan their next steps to recover underwater containers."

"The crane barge **Smit Borneo** has also now connected to the sunken aft section of the **Rena** on its port (left-hand) side" he added. Mr Service said shoreline assessment teams were out on Matakana Island today and teams also checked on the protective oil booms at Maketū, Little Waihi and Waitahanui which will remain in place for now.

"Shoreline Clean-up Assessment Teams (SCAT) will be deployed to Motiti Island tomorrow, with the assistance of an environmental advisor" said Mr Service. Wildlife field teams today recovered two dead oiled little blue penguins from Papamoa. Today a lightly-oiled little blue penguin was transferred from Motiti Island to the Te Maunga wildlife recovery facility.

Braemar Howells container recovery team had five vessels along the Bay of Plenty coastline today. Rough seas hampered efforts for the Braemar Howells team to recover debris in the White Island area using the crane barge Subritzski and a fast response craft. Another vessel has been working to recover a container north of Waihi beach. [Read more](#)

Birds mistaking plastic beads from Rena as food

Debris from the Rena is posing a serious threat to hungry and undiscerning penguins.

One of the beached containers has spilled tiny beads of plastic which some birds have been mistaking for food.

Chrissy Jefferson has been looking after birds affected by the Rena and two days ago she noticed something different. "I fed them, they regurgitated the fish and there were just two little beads. I didn't think a lot of it."

Seventeen tonnes of these plastic beads were in a container that washed ashore at Matakana Island.

"They're very small pieces of plastic. They're used in the plastics industry for making plastic items for use at home," says Nick Bailey of Braemar Howells, an inland and sea spill response company. [3 News] [Read more](#)

JAPAN: AS FUKUSHIMA CLEANUP BEGINS, LONG-TERM IMPACTS ARE WEIGHED

January 9 – The Japanese government is launching a large-scale cleanup of the fields, forests, and villages contaminated by the Fukushima nuclear disaster. But some experts caution that an overly aggressive remediation program could create a host of other environmental problems.

Following the nuclear disaster at Chernobyl 25 years ago, the Soviet government chose long-term evacuation over extensive decontamination; as a result, the plants and animals near Chernobyl inhabit an environment that is both largely devoid of humans and severely contaminated by radioactive fallout.

News (continued)

The [meltdown last March of three nuclear reactors](#) at the Fukushima Daiichi nuclear power plant in Japan also contaminated large areas of farmland and forests, albeit not as severely or extensively as at Chernobyl. But lacking land for resettlement and facing public outrage over the accident, the Japanese government has chosen a very different path, embarking on a decontamination effort of unprecedented scale.

Beginning this month, at least 1,000 square kilometers of land — much of it forest and farms — will be cleaned up as workers power-spray buildings, scrape soil off fields, and remove fallen leaves and undergrowth from woods near houses. The goal is to make all of Fukushima livable again. But as scientists, engineers, and ordinary residents begin this massive task, they face the possibility that their efforts will create new environmental problems in direct proportion to their success in remediating the radioactive contamination.

"Decontamination can be really effective, [but] what you have is a tradeoff between dose reduction and environmental impact," says Kathryn Higley, a radioecologist at Oregon State University who has studied several decontamination sites in the United States. That's because the radioactive particles the Japanese are trying to get rid of can be quite "sticky." Removing them without removing large amounts of soil, leaves, and living plants is nearly impossible. The Ministry of Environment estimates that Fukushima [will have to dispose of 15 to 31 million cubic meters of contaminated soil and debris](#) by the time the decontamination projects end. Costs are [predicted to exceed a trillion yen](#). [Article in *Environment* 360] [Read more](#)

USA: GULF OF MEXICO REPORTS

How Microbes Teamed to Clean Gulf - Scientists Studied 52 Species of Bacteria and Water Currents to Explain Demise of Oil and Gas Plume



January 10 - A fortuitous combination of ravenous bacteria, ocean currents and local topography helped to rapidly purge the Gulf of Mexico of much of the oil and gas released in the Deepwater Horizon disaster of 2010, researchers reported on Monday.

WSJ's Gautam Naik has details of study showing that more than 50 species of microbes consumed much of the oil and gas plume in the Gulf of Mexico caused by the 210 Deepwater Horizon disaster. AP Photo/Eric Gay

After spewing oil and gas for nearly three months, the [BP](#) PLC well was finally capped in mid-July 2010. Some 200,000 tons of methane gas and about 4.4 million barrels of petroleum spilled into the ocean. Given the enormity of the spill, many scientists predicted that a significant amount of the resulting chemical pollutants would likely persist in the region's waterways for years.

According to a new federally funded study published Monday by the National Academy of Sciences, those scientists were wrong. By the end of September 2010, the vast underwater plume of methane, plus other gases, had all but disappeared. By the end of October, a significant amount of the underwater offshore oil—a complex substance made from thousands of compounds—had vanished as well.

"There was a lot of doomsday talk," said microbiologist David Valentine of the University of California, Santa Barbara, and co-author of the study, published in *Proceedings of the National Academy of Sciences*. But it turns out "the ocean harbors organisms that can handle a certain amount of input" in the form of oil and gas pollutants, he said. [Interesting Article in *The Wall Street Journal*] [Read more](#) Another related article – [National Science Foundation](#)

New NOAA study mirrors spill rate from BP well

January 10 - Federal scientists say a new chemistry-based analysis of the 2010 oil spill in the Gulf of Mexico closely matches official estimates released at the time of the spill.

The National Oceanic and Atmospheric Administration says a new study found that an average of 11,130 tons of gas and oil compounds per day were released from the BP PLC well that fouled the Gulf. The official leak rate officials used during the spill was about 11,350 tons of gas and oil per day.

The agency says the new study combined chemical measurements in the deep ocean, in the oil slick and in the air.

Thomas Ryerson, a NOAA research chemist and lead author of the study, said the new study did not rely on data used in the original estimates, which were based on looking at video of the leaking well, the diameter of the pipe and other calculations of the flowing fluids. [CBS News .com] [Read more](#)

News (continued)

Gulf oil-spill responders say they're still fighting for payments

January 11 - Companies that responded to the BP oil catastrophe say they are still fighting for payments due from the time the Deepwater Horizon oil well exploded in the Gulf of Mexico in April 2010.

Several contractors told the Sun Herald their businesses have suffered because of failure by O'Brien's Resources Management, BP's prime contractor, to pay for a percentage of their work. O'Brien's representatives declined to comment on the situation, while BP spokesman Ray Melick said the oil company's contractors, O'Brien's and United States Environmental Services in this case, are expected to honor their obligations.

George Malvaney, chief operating officer at USES, confirmed that tens of millions of dollars in payments are outstanding Gulfwide. He said representatives of BP, O'Brien's and USES will meet Thursday morning to discuss the payments. Melick said he understands that BP and USES will meet to discuss numerous issues. He declined to comment further.

Meanwhile, subcontractors have sent their contractors demand letters for payment, the last step before litigation. Subcontractors said they want to avoid lawsuits that could take years to resolve.

Tom Elmore, owner of Mississippi-based Eutaw Construction Co., said he has received demand letters from subcontractors and is preparing one for USES, the contractor his company worked under in partnership with T.L. Wallace Construction Inc., also a Mississippi company. Eutaw and Wallace have \$5 million to \$6 million in outstanding payments, he said.

Under the "pay when paid" contracts, contractors receive their payments before they pay subcontractors. [Source: Macon.com] [Read more](#)

CHINA: CNOOC PARENT SUED BY FISHERMEN FOR \$34 MILLION OVER OIL SPILLS

China National Offshore Oil Corp. said 29 fishermen had sued the country's biggest offshore energy explorer for 234 million yuan (\$34 million) for economic losses following oil leaks in Bohai Bay last year.

The state-controlled parent of Cnooc Ltd. has received notification from Tianjin Maritime Court that the fishermen are seeking compensation from the company and ConocoPhillips, owners of Penglai 19-3 field, China National Offshore said in a statement on its website today.

The leaks at China's largest offshore oilfield tainted about 870 square kilometers (336 square miles) of Bohai Bay, prompting the State Oceanic Administration to shut the field Sept. 2. The Tianjin court accepted a complaint from fishermen alleging the spilled oil killed their clams and sea cucumbers, the official Xinhua News Agency reported Dec. 30. [Topco News] [Read more](#)

USA: CUBA'S OFFSHORE OIL DRILLING PLATFORM GETS OK FROM COAST GUARD, BSEE

January 12 - U.S. Coast Guard and environmental safety officials have inspected and OK'd an offshore oil drilling platform headed to Cuba, under an unusual arrangement designed to allay concerns about a possible spill that could foul the U.S. coastline.

The inspection of the Scarabeo-9 platform was completed Monday off the coast of the Caribbean nation of Trinidad and Tobago by personnel from the U.S. Coast Guard and the Department of Interior's Bureau of Safety and Environmental Enforcement (BSEE).

"The review is consistent with U.S. efforts to minimize the possibility of a major oil spill, which would hurt U.S. economic and environmental interests," said a statement issued late Monday by the Interior Department.

Plans by the Spanish-based Repsol YPF oil company to use the platform to drill off Cuba's northwestern shores, about 70 miles from the Florida Keys, have sparked U.S. concerns about a spill as well as the U.S. embargo's impact on efforts to control any damages. [Report in Miami Herald] [Read more](#)

USA: LARGEST-EVER ANIMAL RESCUE SUBJECT OF FREE LECTURE SERIES

January 12 - In 2000, more than 12,500 volunteers converged in South Africa to rescue nearly 20,000 oil-soaked penguins and to move 20,000 more out of the path of an approaching oil slick.

Less dramatic, but nonetheless important, South Shore volunteers this year identified more than 30 species of seabirds in the Stellwagen Bank National Marine Sanctuary, in a project to protect them.

These stories of citizen scientists and seabirds will be told in the 2012 Water Watch Free Lecture Series, which runs for 10 weeks starting Wednesday in Norwell. The talks, each by a different author or expert, will make vivid the dramas of African oil spills,

News (continued)

earthquakes in New England, and rising sea levels off Chatham, as well as the details of how oysters grow and lobsters reproduce. There are inspirational stories of the resurgence of osprey and eagles on the South Shore and the discovery off Brazil of the wreckage of an Air France plane two years after it crashed. The 100th anniversary of the sinking of the Titanic is remembered, and the return of local black bears, fishers and beavers is explained.

"The series has developed a following because of the topics and the quality of the speakers," said Paula Christie, assistant director of the North and South River Watershed Association, a co-sponsor along with Massachusetts Audubon South Shore Regional Headquarters and South Shore Natural Science Center. "Sometimes, there's only standing room."

In the first lecture, "The Great Penguin Rescue," penguin rehabilitation expert and author Dyan deNapoli tells the story of the largest-ever animal rescue. Learning from a far less successful attempt following a 1994 oil spill, the organizers saved all but about 100 African penguins, an endangered species. Volunteers cleaned them, trained them to be fed by hand and transported them to unpolluted waters.

"The volunteer response to this crisis was profoundly moving and awe-inspiring to me," said deNapoli in an earlier lecture. DeNapoli was working with penguins at the New England Aquarium when she was recruited for the rescue effort. The Massachusetts Book Awards selected her 2010 book, "The Great Penguin Rescue: 40,000 Penguins, a Devastating Oil Spill, and the Inspiring Story of the World's Largest Animal Rescue," as a "must-read."

[From *Patriot Ledger.com*] [Read more](#)

USA: SPILL CONTROL ASSOCIATION OF AMERICA (SCAA) NEWS

Launch of new, improved website

January 10 - As part of SCAA's newest phase of improved, expanded member services, a new website has been launched at www.scaa-spill.org that will serve as an important tool to allow us to project a cutting-edge, professional first impression of the spill control industry. [SCAA News Blog] [Read more](#)

Relocation to Metro, Washington D.C.

Spill Control Association of America (SCAA), a professional association representing oil spill removal organizations (OSRO), spill managers/qualified individuals, consultants, equipment and material manufacturers, distributors, insurers, and educational and governmental organizations, announced today that it has relocated its headquarters to Old Town Alexandria, Virginia from Bel Air, Maryland.

"This move to the Washington, DC Metro area launches the next phase of SCAA's services and benefits to our expanding membership, and a greater recognition of our association as 'The Voice of Spill Response Professionals,'" said Andrew Altendorf, President. For the past several years, SCAA has held its Annual Meeting in the capital region and regularly meets with the U.S. Coast Guard as a member of the agency's Partnership Action Team. SCAA also interfaces with the U.S. Environmental Protection Agency, Bureau of Safety and Environmental Enforcement, and other federal agencies regionally and at Washington, DC headquarters, and as well as sister associations involved in oil and hazardous substance spill response, cleanup and site remediation and restoration professions.

People in the news

JOHN ALLEN APPOINTED AS NEW EXECUTIVE DIRECTOR OF SCAA



John Allen is the new Executive Director of SCAA. He brings more than 20 years of professional experience as a former Senior Vice President of one of our national OSRO members, and formerly as an independent environmental consultant and career Special Operations Naval Officer," said SCAA President Andrew Altendorf.

SCAA was founded in 1973 as an industry non-profit association to represent the collective interests, and professional experience and contributions of the spill response industry, keeping SCAA members current on regulations, technology advances and important national and international events.

[MarineLink.com] [Read more](#)

USING REMOTE SENSING TO DETERMINE OIL EMULSION'S PARAMETERS

An article published in the OHMSETT GAZETTE of Fall/Winter 2011 and reproduced here with acknowledgement to OHMSETT, Oil Spill Research and Renewable Energy Facility in Leonardo, New Jersey, USA.

Ocean Imaging (OI), a California based company specializing in airborne and satellite-based imaging systems, has developed a method to remotely detect oil on the water's surface using a portable aerial imager. The project was funded by the Bureau of Safety and Environmental Enforcement (BSEE) and first tested at Ohmsett in June 2008 to determine the presence and thickness of oil on the tank's surface. In February 2010, OI returned to investigate thermal imaging signatures of several refined and unrefined oil-on-water films under near-freezing or freezing water and air temperatures.

During their work at the Deepwater Horizon oil spill in the Gulf of Mexico, OI determined that an emulsion's oil/water content ratio, weathering state, and potential thickness have varying effects on whether dispersant application or in-situ burning of a slick are viable and should be considered during a response.

As a continuation of the BSEE-funded research, OI returned to Ohmsett in October 2011 to assess these parameters. The research was to image emulsions representing different oil/water contents and weathering characteristics with the various imaging sensors. The experiments were conducted in both daytime to image the conditions during solar heating and at nighttime where there is no solar input.



Photo above - A set of experiments involved the imaging of fresh and emulsified crude oil before and after it was mixed with a dispersant.

Photo on left - Oil targets with known quantities of oil were placed in the Ohmsett tank. The remote sensing cameras mounted on the Main Bridge crow's nest were passed over the targets.

Using similar techniques as their last test at Ohmsett, the remote sensing cameras were mounted 30 feet above the water's surface on the Main Bridge crow's nest. A dozen four foot square targets were assembled in groups of four and placed on the surface of the test tank, then tethered to the tank wall in a line beneath Main Bridge crow's nest.

Intermediate fuel oil (IFO) or refined oil products and oil emulsions created by the Ohmsett staff were placed into each target to create oil slicks of various thicknesses. As the Main Bridge passed over the targets, data was collected from the sensing equipment. In addition to imaging the emulsions themselves, the final set of experiments involved the imaging of fresh and emulsified crude oil before and after it was mixed with a dispersant. The purpose of this experiment was to determine if they could duplicate the apparent changes in surface oil thermal signatures before and after the applications of aerial dispersants similar to what was observed in the Gulf during the Deepwater Horizon spill. The initial results support the need for further testing with different oil types under more varied weather conditions, and under different sea states.

The data collected at Ohmsett will be used to develop a multispectral algorithm that will allow the aerial mapping of oil emulsion properties during actual oil spills.

For more information and the final report, visit <http://www.bsee.gov/Research-and-Training/Master-List-of-Oil-Spill-Response-Research.aspx>. [At time of writing the final report is not yet available on this website]
[Download and read the issue of the Ohmsett Gazette in which the above article appears](#)



In this issue of the ISCO Newsletter we are printing No. 59 in a series of articles contributed by Dr Douglas Cormack.

Dr Douglas Cormack is an Honorary Member of ISCO. As the former Chief Scientist at the British Government's Marine Pollution Control Unit and head of the UK's first government agency, the Warren Spring Laboratory, Douglas is a well known and highly respected figure in the spill response community. He is the Chairman and a founder member of the [International Spill Accreditation Association](#)

Cormack's Column (continued)

KNOWLEDGE OF DISPERSANT USE (CHAPTER 59)

Following the contracting of permanently equipped fixed-wing dispersant-spraying aircraft in 1982, the UK Marine Pollution Control Unit (MPCU) conducted a sea trial in collaboration with Warren Spring Laboratory (WSL) and Esso Petroleum (Exxon Corporation) to further evaluate the operational effectiveness of aerial dispersant treatment of oil slicks. This trial was based on three 20 tonne releases of Arabian Light crude oil, the first as an untreated control, the second and third for treatment with 2 tonnes of dispersant after 3 and 6 hours respective exposure on the sea surface, the intention having been to estimate dispersant effectiveness by direct observation and photographic recording, by infra red line scanning (c.f articles 63-68) and by subsequent analysis of the oil content of underlying water samples while sampling the slicks themselves for analysis as to layer thickness, evaporative loss and water-in-oil emulsion formation.

Of course, while some enthusiasts for dispersant treatment would have expected surface slicks to be removed to the water column 'before their eyes as if by magic', and while others opposed to such trials let alone operational dispersant use, would have expected ecological disaster in the associated body of water, yet others already knew that even such detailed monitoring of the dispersant process would give only an estimate of its enhancement of natural dispersion. Thus, this third group already knew that Phase II spreading thicknesses were within the order of magnitude of 0.1mm; that the natural and dispersant-induced oil droplets beneath dispersing slicks were either large enough to rise to re-coalescence with the slick and thus to amount to a variable but significant proportion of the sub-surface oil collectable for analysis while that present as droplets small enough to dilute by diffusion to greater depths in the water column would be less detectable by these means; that even the fastest naturally dispersing slicks take seven half-lives to reduce to ~1% of the original amount; that dispersants are intended to shorten natural half-lives to extents decreasing with increase in pollutant viscosity; and that all half-life periods whether natural or dispersant-induced are subject to the availability levels of wind-induced wave energy.

However, having decided to proceed with this trial despite the very calm conditions then prevailing, it had to be concluded that knowledge had not been taken much further than the above, though it did suggest that such small releases might be so thin in places as to permit dispersant droplets to pass through the pollutant layer without enhancing dispersion rate. Thus, one consequence of this trial was a decision to design a higher delivery rate system more appropriate for the higher layer thicknesses of larger releases closer to source, though such never reached operational implementation, while the second was to investigate the viscosity-based limitations on dispersant effectiveness under otherwise optimised conditions.

Thus, it was decided to pre-mix oil and dispersants prior to release at sea to establish an optimised reference against which to evaluate the comparative effectiveness of different operational means of dispersant application. To this end it was decided to modify the early method (articles 47-48) of discharging oil from *RV Seaspring* at known rates and known ship speeds to form a carpet of oil of known thickness in order to pre-mix dispersant with the oil in different ratios, to use oils of different viscosities, and to vary emulsion water-contents. In addition, it was decided to avoid the evaporative loss from crude oils, by using fuel oil blends to achieved differing viscosity values across the spectrum of interest, WSL having already used such fuel oil blends to evaluate dispersant effectiveness in a wave-generating tank and to compare a flow-through with a closed fluorimeter for optimal replacement of grab sampling and subsequent analysis, with the intention of towing the chosen instrument at predetermined depths beneath and behind the dispersing carpet in subsequent investigations at sea.

However, after comparative evaluation had shown a short wavelength pump-through Fluorimeter connected to an onboard chart-recorder or data-logger to be optimally suitable for the above purposes, it was found that even soluble rhodamine dye, diluting from the sea surface, produced a spatially variable output; and that calibration with analytically known oil-contents (in the form of droplets) gave results no better than to within a factor of two. Nonetheless, such an arrangement was expected to differentiate the results for premixed oil and dispersant from those of post-release addition, and to indicate the proportion of oil in the smallest droplet size range by exhibiting greater uniformity of results with increasing depths below the dispersing carpet.

1 The *Rational Trinity: Imagination, Belief and Knowledge*, D.Cormack, Bright Pen 2010 available at www.authorsonline.co.uk

2 *Response to Oil and Chemical Marine Pollution*, D. Cormack, Applied Science Publishers, 1983.

3 *Response to Marine Oil Pollution - Review and Assessment*, Douglas Cormack, Kluwer Academic Publishers, 1999.

OIL SPILL REMOTE SENSING: CHAPTER 1



Introducing a short series of articles on Oil Spill Remote Sensing contributed by Dr Merv Fingas of Spill Science, Edmonton, Alberta, Canada T6W 1J6 fingasmerv@shaw.ca

Merv Fingas MSc PhD worked for more than 35 years in the field of oil spill technology at Environment Canada's Environmental Technology Center in Ottawa, Ontario. As head of the Emergencies Science Division at the Centre, conducts and manages research and development projects. Dr Fingas is Member of ISCO Council for Canada.

Summary of the Series

This is the first of a series of articles which will go into the remote sensing of oil spills. This series will cover oil spill remote sensing step by step and will present the latest in knowledge on the topic.

Remote-sensing for oil spills is covered in this series. The technical aspects of sensors are reviewed and the benefits and limitations of each sensor are given. The use of visible techniques is ubiquitous, however cameras give only the same results as visible monitoring. Oil has no particular spectral features that would allow for identification among the many possible background interferences. Identification of specific oil types is not possible. Cameras are only useful to provide documentation.

Infrared offers some potential as an oil spill sensor. In daytime oil absorbs light and emits this as thermal energy at temperatures 3 to 8 K above ambient. IR cameras are economical, however they suffer from problems such as the inability to discriminate oil on beaches, among weeds, debris or sediment, and under certain lighting conditions. Furthermore, water-in-oil emulsions are often not detected in the infrared.

The laser fluorosensor is a useful instrument because of its unique capability to identify oil on backgrounds that include water, soil, weeds, ice and snow. It is the only sensor that can positively discriminate oil on most backgrounds. The laser fluorosensor also allows for positive identification and discrimination between oil types.

Radar detects oil on water only in that oil will dampen water-surface capillary waves under low to moderate wave/wind conditions. Radar offers the only potential for large area searches, day/night and foul weather remote sensing. Radar is costly, requires a dedicated aircraft, and is prone to many interferences. False targets can be as high as 95%. Satellite-borne radar sensors are useful however their frequency of overpass and lesser spatial resolution, render them useful for mapping large spills or assisting in major ship and platform discharge monitoring.

Equipment that measures relative slick thickness is not available at this time and is still under development. Passive microwave has been studied for several years, but many commercial instruments lack sufficient spatial resolution to be practical, operational instruments. A laser-acoustic instrument, which provides the only technology to measure absolute oil thickness, has been successfully tested but is not in production.

Editor – Chapter 2 in this series will appear in next week's ISCO Newsletter

Technology

NANOTECHNOLOGY REMOVES ORGANICS FROM PRODUCED WATER AT UP TO 200 GPM

After 15 years of development and with research help from Rice University, a Houston company is ready to offer its produced-water reclamation procedure to the oilfield for treating produced water.

Molecular Filtration Inc. president Felipe Lembcke said, "Our technology is going to be the first in the world to clean water -- I'm talking about removing all organic presence from the water," without the use of chemicals, ultraviolet light, electro-deposition or other processes that change the constitution of the water itself. Lembcke said they classify organics as crude oil and every "single element of organics including bacteria and viruses."

"Nobody can do what we can do in one single pass in removing all the organics and leaving brine water," he added. While the process does not remove salt, that is not an issue, Lembcke stated. "In fact, the heavier the water, the better for them because it floats the oil."

The proprietary system basically filters water at the molecular level, Lembcke explained, without the use of chemicals that would deionize the water. "We're producing the same water except without bacteria and organics," he said. By capturing the organics, particularly oil solids, these substances can be collected and sold, adding to the producer's revenue stream. The substances are not damaged by a chemical process.

Rice's Dr. Andrew Barron, at the school's Smalley Institute for Nanoscale Science and Technology, which contributed significantly to the research, compared the process to passing the water through a T shirt with large pores. "This would separate the organics from the water." He explained that the use of nanotechnology in those large pores would perform the separation as if they were the

Technology (continued)

tiny pores used in reverse osmosis, but would allow higher flow rates because the pores are much larger.

Lembcke noted the filter membranes are made out of a special oxide that use nanotechnology to reject any organic material that passes through them. He stated that the output water quality is the same regardless of the quality of the feed water.

The company currently has three standard units, with flow rates of 50, 100 and 200 gallons per minute. Lembcke said these rates translate to approximately one, two and four barrels per minute. The units can be parked on a well site.

By requiring only one pass for the water through the units, Lembcke said the process is more cost-effective than disposal. "Our costs are shockingly low," he said. He feels this would eliminate the need for transporting water to disposal sites, which would reduce dust and wear on oilfield roads. Plus, by collecting the organic matter, the process would not only cost less, it would create a new revenue stream for producers.

Reflecting on the culmination of 15 years of research and development, Lembcke said, "It was a very long trip. It started when I was at Washington University in 1998" working on a degree in chemical engineering. "Finally, we were able to achieve our goal. Our goal - the science of Molecular Filtration Inc. -- is the science of the small particles and the large molecules. For years, we worked to achieve one specific goal."

While educated in the United States, Lembcke was born in Peru, the offspring of a German father and a Peruvian mother.

The company is planning a well site demonstration later this month in the Eagle Ford Shale near San Antonio. "We want to show the world what we have accomplished," he said. [Midland Reporter Telegram] [Read more](#)

Events

FRANCE: CEDRE INFORMATION DAY

Tuesday 20 March at INHESJ on the theme of "Spill and Illegal Discharge Detection. [Programme and registration](#)

CHINA SOURCING SUMMIT ON PETROLEUM EQUIPMENT (CSSOPE 2012)

April 16-18, 2012 - At the second China Sourcing Summit On Petroleum Equipment (CSSOPE 2012) audience will learn how to remove technical and cultural hurdles to smooth out their way to China's oil and gas equipment markets. Government regulators, international purchasers and vendors as well as their overseas competitors will share the policy trends and their and business plans for the year ahead. [More info](#)

UK: SEMINAR ON CHLORINATED SOLVENT CONTAMINATION UNDERSTANDING AND DESIGNING IN SITU REMEDIATION USING ENHANCED REDUCTIVE DECHLORINATION

Practical Considerations and Background Theory of the Application of Enhanced Reductive Dechlorination using injectable substrates for in situ Remediation of Chlorinated Solvents in Groundwater – Technology Fundamentals and Expert Road-Map for Contemporary Environmental Professionals. 28th February 2012 at PERA, Nottingham Road, Melton Mowbray, Leicestershire, LE13 0PB More info: Gareth Leonard (01833 630 411 / gleonard@regenesiis.com)

ISCO ANNOUNCEMENTS

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