ISCO NEWSLETTER

The Newsletter of the International Spill Response Community

Issue 287, 6 June 2011

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ISCO aims to raise worldwide preparedness and co-operation in response to oil and chemical spills, to promote technical development and professional competency, and to provide a focus for making the knowledge and experience of spill control professionals available to IMO, UNEP, EC and other organisations.

Application Form

Evaluating & Addressing Potential Underwater Threats
Washington DC – June 6-7, 2011

News

SOMALI PIRATES ATTACKING YEAR-ROUND – "THERE COULD BE A HUGE OIL SPILL"

Small boats being towed by a suspected pirate mothership are destroyed February 2, 2011 by weapons fire from the guided-missile destroyer USS Momsen after the Momsen disrupted an attack on a commercial oil tanker in the Arabian Sea.
Credit: Reuters/Chief Hull Maintenance Technician John Parkin-US Navy

Somali pirates are now able to attack ships in the Indian Ocean regardless of the weather, the head of the United Nations' maritime agency said, outlining four "nightmare scenarios" unless tougher action was taken.

Until now there had been a lull in attacks during the summer and winter monsoons -- which roughly run May to September and November to February -- as stormy weather made it difficult for attackers to operate their frail vessels.

"Now the pirates are not interrupted by the monsoon seasons," said Efthimios Mitropoulos, Secretary-General of the International Maritime Organization IMO.L.

"They can do the job 365 days a year," he told Reuters during an international shipping conference last week in Oslo.

Without a more robust international response to the piracy threat, crews could refuse to cross the Indian Ocean, crude oil shipments could be diverted, there could be a huge oil spill or a large cruise ship could be seized, he said.

Somali pirates are using oil tankers and other huge ships they have captured as 'mother ships' from which they launch attacks far further out to sea than before.

Read more

USA: SENATE PANEL OKS BAN ON GULF OIL SPILL DISPERSANTS

May 31 - A Senate committee has approved a Slidell lawmaker's proposal that would effectively ban the use of dispersants in responding to oil spills in Louisiana waters, which extend three miles into the Gulf of Mexico. Republican A.G. Crowe said Tuesday he proposed the ban because the federal government hasn't responded to his requests to switch the oil spill strategy to a less-toxic alternative.

"Why these technologies were not used but yet, in place of that, highly toxic chemicals were used is beyond me," said Crowe.

His bill, which heads to the Senate floor for debate, would prohibit the use of dispersants unless they are classified as "practically non-toxic" under the U.S. oil spill response plan and break down into carbon dioxide and water.

Dispersants break up oil into smaller particles. They are generally less toxic than oil. Use of the chemicals became a major concern for environmental groups after roughly 1.84 million gallons of the dispersant Corexit were applied in response to last year's Deepwater Horizon oil spill.

Kathy Wascom, a board member for the Louisiana Environmental Action Network, said environmental groups are concerned that there could be unknown consequences from mixing such a large quantity of the dispersant with the oil and other hydrocarbons released in the spill. "We are currently working with doctors to try to help the people in the communities," Wascom said.

She pointed to a letter sent by a coalition of Gulf Coast environmental and faith groups pressing the Obama administration to release more information about the environmental and health impacts of the oil spill response.

The letter was sent on May 24 to Lisa Jackson, administrator of the Environmental Protection Agency, and U.S. Health and Human Services Secretary Kathleen Sebelius. The groups ask for "documents containing lists of potential synergistic health effects of exposure to the combination of oil, dispersants, oil and dispersants combined, any natural and/or bioengineered bacteria, and any other chemical or 'natural' product used in response to the BP spill."

Despite these concerns, state and industry officials say the bill could prevent the state from using a necessary strategy.

State environmental official Sam Phillips said that the criteria laid out in the bill would prohibit all dispersants currently on the market. And a chemical industry representative expressed concern that the ban could keep the state from using dispersants in the event of a major oil spill closer to the shore. Read more

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.... AND A VERY DIFFERENT ASSESSMENT

“Dispersants are not very toxic.” Explains Dr. Robert Dickey, director of FDA’s Gulf Coast Seafood Laboratory. “They are detergents and solvents. And they become rapidly diluted. One square mile of sea water one foot deep is 200 million gallons. We added 1.8 million gallons in the whole Gulf.”

Point is: you add much higher concentration to your kitchen sink to make your dishes “safe” for your family.

After the spill, the FDA’s Gulf Coast Seafood Laboratory, the National Oceanic and Atmospheric Administration’s National Seafood Inspection Laboratory, the Louisiana Department of Wildlife and Fisheries, the Louisiana Dept. of Health and Hospitals along with similar agencies from neighboring Gulf coast states have methodically and repeatedly tested Gulf seafood for cancer-causing “polycyclic aromatic hydrocarbons.”

“Not a single sample [for oil *or* dispersant] has come anywhere close to levels of concern,” reported Olivia Watkins, executive media advisor for the Louisiana Department of Wildlife and Fisheries.

“All of the samples have been 100-fold or even 1,000-fold *below* all of these levels, “reports Bob Dickey, director of the FDA’s Gulf Coast Seafood Laboratory. “Nothing ever came close to these levels.” Read more

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JAPAN: OIL SPILL, SMALL BLAST HIT CRIPPLED NUCLEAR PLANT

May 31 - An oil spill and a small explosion have caused limited damage — but no further radiation leaks — at the crippled nuclear power plant in northeastern Japan, the plant operator said Tuesday.

Workers at Fukushima Dai-ichi plant found an oil spill in the sea near reactors five and six, which were in shutdown when the earthquake and tsunami struck March 11, Tokyo Electric Power Co. said. The spill was contained by an oil fence, TEPCO spokesman Taichi Okazaki said.

The explosion workers heard at reactor four was likely from a gas tank and did not cause any additional radiation leaks, Okazaki said. The cause was being investigated.

The main problems at Fukushima Dai-ichi are involve reactors one, two and three, where the fuel cores have melted. Scientists and government officials say the reactors are short of a full meltdown, in which the fuel breaks through the bottom of the container.

Read more Read the latest IAEA Update Report

JAPAN PENSIONERS VOLUNTEER TO TACKLE NUCLEAR CRISIS

A group of more than 200 Japanese pensioners are volunteering to tackle the nuclear crisis at the Fukushima power station.

The Skilled Veterans Corps, as they call themselves, is made up of retired engineers and other professionals, all over the age of 60. They say they should be facing the dangers of radiation, not the young.

It was while watching the television news that Yasuteru Yamada decided it was time for his generation to stand up. No longer could he be just an observer of the struggle to stabilise the Fukushima nuclear plant. The retired engineer is reporting back for duty at the age of 72, and he is organising a team of pensioners to go with him.

For weeks now Mr Yamada has been getting back in touch with old friends, sending out e-mails and even messages on Twitter. Volunteering to take the place of younger workers at the power station is not brave, Mr Yamada says, but logical. "I am 72 and on average I probably have 13 to 15 years left to live," he says.

"Even if I were exposed to radiation, cancer could take 20 or 30 years or longer to develop. Therefore us older ones have less chance of getting cancer." Read more

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AUSTRALIA AND PAPUA NEW GUINEA SIGN MARITIME COOPERATION AGREEMENTS

Australia and Papua New Guinea signed two agreements at the recent Maritime Labour Convention Regional Dialogue in Cairns.

The first agreement promotes mutual cooperation on marine pollution preparedness and response. In the event of a marine pollution incident, each maritime authority can request assistance from the other authority and take all reasonable efforts to provide vessel and aerial assets, equipment, materials and personnel to respond to a pollution incident. Each authority has also undertaken to consult on a range of matters pertinent to pollution of the marine environment by oil and hazardous and noxious substances.

Australian Maritime Safety Authority

CHINA: REQUIREMENT TO CONTRACT WITH AN APPROVED LOCAL CLEAN-UP CONTRACTOR

Regulations of the People's Republic of China on the Prevention and Control of Marine Pollution from Ships - The Regulations require the operators of any ship carrying polluting and hazardous cargoes in bulk or of any other vessel above 10,000 gt to conclude a pollution clean-up contract with an MSA-approved pollution response company before entering a PRC port. "Operators" is not defined in the Regulation but the IG will seek clarification and advice from the MSA in this respect. It is the IG's understanding that these clean-up contractors will bear responsibility for conducting clean-up operations in the event of an incident, under the MSA's supervision, and with the intervention of the MSA if the capabilities of the contractor are exceeded. It is understood that there will be more than one contractor in each of the Chinese ports. Read more

[Note from editor: The link provided above gives more information about the regulations. ISCO Executive Committee Member Li Guobin plans to give your editor more updated information on the implementation of the regulations and we hope to be able to publish this soon]

GHANA: AOMC INITIATE WORKPLACE SAFETY CAMPAIGN

May 21 - The Association of Oil Marketing Companies of Ghana (AOMC) on Saturday initiated an industrial campaign to review the status of safety awareness on the management of petroleum products to avert accidents.

Mr Kwaku Agyemang Duah, AOMC Industrial Co-ordinator told the Ghana News Agency that the campaign seeks to consolidate laws relating to safety in the transportation, storage and utilisation of petroleum products. He said the AOMC safety campaign was opening a new working relationship with regulatory authorities including Environmental Protection Agency to ensure compliance. Read more [Thanks to Don Johnston of ISCO Associate Member, DG & Hazmat Group, for passing on this report]

People in the news

USA: COAST GUARD RESPONSE LEADER TO JOIN O'BRIANS'S RESPONSE MANAGEMENT

Captain Ed Stanton, United States Coast Guard, will join O'Brien's as Executive Vice President, Response Services on July 18, 2011, following his retirement from the Coast Guard.

Stanton comes to O'Brien's after 36 years on active duty in the Coast Guard. During his long career he specialized in emergency management, oil spills and hazardous materials releases and is one of the most experienced and qualified Incident Commanders in the Coast Guard. Stanton's most recent assignment was Sector Commander and Federal On-Scene Coordinator in New Orleans, where he also acted as the Incident Commander (IC) in Houma, LA for the BP Deepwater Horizon response. Stanton also served as Chief, Response Division, District 8, with responsibility as Co-Chair for Regional Response Teams 6, 7 and 8; Executive Officer, Atlantic Area Strike Team; Commanding Officer, Gulf Strike Team; and Chief of the Office of Response at Coast Guard headquarters, which included assignment as Vice Chair of the National Response Team. His other major response experience included IC (ESF 3, 10) for Hurricane Katrina; Deputy IC (ESF 10) for the Space Shuttle Columbia crash; Deputy IC during the anthrax release in Boca Raton, FL; Deputy IC and Ops Section Chief for the MORRIS J. BERMAN spill response in Puerto Rico; IC for the response to the Galapagos Island spill; and numerous other oil spills. Read more

Publications

EUROPE: INVENTORY OF EU MEMBER STATES POLICIES AND OPERATIONAL RESPONSE CAPACITIES FOR HNS MARINE POLLUTION 2010

In accordance with Regulation (EC) No 1891/2006 amending Regulation (EC) No 1406/2002, EMSA is given the task to “draw up on a regular basis a list of the private and state pollution response mechanisms and response capabilities in the various regions of the European Union”.

In order to fulfil this task of providing accurate and up to date information on the pollution preparedness and response mechanisms and capabilities of the EU and EFTA coastal States, EMSA contacts the competent authorities in each State and prepares specific inventories such as this Inventory of EU Member States Policies and Operational Response Capacities for HNS* Marine Pollution (HNS Inventory).

This update is based on information provided and verified by the competent national authorities in each Member State, reflecting changes which may have occurred since 2008. It replaces the 2008 HNS inventory and is meant to provide a general description of the status of preparedness and response capabilities to marine incidents involving HNS in coastal EU and EFTA States. It includes a description of the competent authorities, the policies, and the preparatory arrangements of each State. The 2010 update has been expanded and provides additional georeferenced information with regard to significant marine HNS incidents and specialized HNS response equipment in European waters. In addition to the inclusion of this information in the respective country profiles, GIS-based maps are provided.

Describing the status of the HNS response capability around Europe has proven to be rather difficult. The level of preparedness and availability of specialised resources varies significantly between countries, hence the concept of what can be considered “high” versus “low” capacity is somewhat subjective. This means that what is considered as a very important resource in one country might be almost completely disregarded by another country.

Furthermore, the type of equipment commonly used in marine incidents involving HNS is not as straightforward as in oil pollution response. There are a vast number of chemicals that could potentially be encountered in a marine HNS incident. Since each chemical may behave in a different way once released in the marine environment, a variety of monitoring and response equipment and tools may be needed. This equipment is not necessarily stored by any one agency or authority, but may, in case of a real incident, be made available through various sources. It can therefore be extremely difficult to know exactly what is available in advance, particularly in relation to private companies and the salvage industry. Download the inventory

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SOUTH & WEST AFRICA: REGIONAL CONTINGENCY PLAN

Regional oil spill contingency plan for Angola, Benin, Cameroon, Cap Verde, Congo, Côte d'Ivoire, Democratic Republic of Congo, Equatorial Guinea, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mauritania, Namibia, Nigeria, Sao Tome & Principe, Senegal, Sierra Leone, South Africa and Togo.

This plan was adopted by the Contracting Parties to the Abidjan Convention at the occasion of the 9th Conference of the Parties on April 1st, 2011, in Accra, Ghana.

http://www.unep.org/abidjanconvention/docs/COP9/REGIONAL%20CONTINGENCY%20PLAN.doc

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Publications (continued)

EUROPE: PERFORMANCE OF EUROPEAN CROSS-COUNTRY OIL PIPELINES - STATISTICAL SUMMARY OF REPORTED SPILLAGES IN 2009 AND SINCE 1971

CONCAWE has collected 39 years of spillage data on European cross-country oil pipelines. At about 35,000 km the inventory covered currently includes the vast majority of such pipelines in Europe, transporting around 870 million m3 per year of crude oil and oil products. This report covers the performance of these pipelines in 2009 and a full historical perspective since 1971. The performance over the whole 39 years is analysed in various ways including gross and net spillage volumes and spillage causes grouped into five main categories: mechanical failure, operational, corrosion, natural hazard and third party. The rate of inspections by in line tools (intelligence pigs) is also reported. 5 spillage incidents were reported in 2009, corresponding to 0.14 spillages per 1000 km of line, well below the 5-year average of 0.28 and the long-term running average of 0.53, which has been steadily decreasing over the years from a value of 1.2 in the mid 70s.

There were no fires, fatalities or injuries connected with these spills. 4 incidents were due to mechanical failure and 1 was connected to past third party activities. Over the long term, third party activities remain the main cause of spillage incidents although mechanical failures have increased in recent years, a trend that needs to be scrutinised in years to come.

Download this report

BALTIC SEA: HELCOM RELEASES A RISK ASSESSMENT OF OIL SPILLS IN THE BALTIC

May 18 - Catastrophic oil spills of 5,000- 150,000 tonnes in the Baltic Sea could occur once every 26 years, and large spills of 300-5,000 tonnes are expected to occur as frequently as once every 4 years, while the major risk area is the south-western Baltic and the Kattegat, according to a HELCOM analysis released today at a seminar in Sopot, Poland.

The main topic of the HELCOM seminar is environmental risks of maritime transportation and the need for sufficient resources to combat accidental oil spills at sea. It is arranged as a side-event to the annual European Maritime Day Conference taking place in Poland on 19-20 May 2011.

The findings are a result of a comprehensive risk assessment of shipping accidents and pollution in the whole Baltic Sea which has been produced by HELCOM's BRISK and BRISK-RU international projects on the sub-regional risk of spill of oil and hazardous substances in the Baltic Sea. This risk assessment is based on a common methodology and a model developed by COWI.

Read more

UK: GENERAL GUIDE TO THE PREVENTION OF POLLUTION: PPG1

These guidelines are an introduction to both pollution prevention and the guidance notes on this subject produced by the Environment Agency for England & Wales, the Scottish Environment Protection Agency and the Environment and Heritage Service in Northern Ireland.

Businesses and individuals are responsible for complying with environmental regulations and for preventing pollution of air, land and water. Many thousands of pollution incidents occur each year, originating from factories, farms, transport activities and even homes. Each incident is an offence and can result in prosecution as well as environmental damage. However, most cases are avoidable, given careful planning of operations, responsible waste management and suitable facilities to reduce the risk of spillage - along with simple precautions to deal with any spillages, in case they occur.

Responsible waste management can ensure that you comply with the relevant regulations, while minimising waste can reduce the amount of waste produced, which in turn cuts the risk of environmental damage and the costs of waste disposal.

The series of Pollution Prevention Guidance notes (known as PPGs), of which this is the first, provides practical advice that will help you to avoid causing pollution, minimise waste and comply with the requirements of the law. Often the necessary measures cost little, especially if you think about them early on, for example at the design stage, and can save you money, too. In contrast, the fines for failing to comply with the relevant regulations or the costs of cleaning up pollution (which are recovered from the polluter wherever possible) can be very high. Download the guide

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EGYPT: MANUAL GUIDELINES FOR PREVENTING POLLUTION FROM SHIPS AND OIL TANKERS

In the framework of enforcing provisions of Law No. 4 /1994, amended by Law No. 9 /2009 ,and international agreements Egypt acceded to ; Ministry of State for Environmental Affairs has finalized preparation of a manual guidelines for preventing pollution from ships and oil tankers, to insure integration of environmental dimension in management of maritime transport , actual improvement in performing daily and periodic maritime transport activities and avoid negative environmental impacts that may result from failure to observe environmental dimension in this field .

Publications (continued)

This guideline composed of two parts, first part contains legislative framework for application and penalties that will be imposed on offenders and the guidelines for preventing pollution of marine environment from: oil, hazard liquid unpacked substances and harmful substances carried by sea in containers; as well as sewage, garbage, ballast water of ships, sediments and waste of recreational ships. The second part contains examples of records and international certificates as stipulated under international agreements for oil, tankers of hazard liquid substances, ballast water, garbage and sewage. Read more

US EPA: TECH DIRECT – JUNE 1, 2011

TechDirect's purpose is to identify new technical, policy and guidance resources related to the assessment and remediation of contaminated soil, sediments and groundwater. Download the latest issue

Training

USA / JAPAN: HAZTRAIN TRAINS STATION PERSONNEL IN BASICS OF HAZMAT

MARINE CORPS AIR STATION IWAKUNI, Japan — Marines, sailors and local contractors participated in an Introduction to Hazardous Response Course hosted by the Station Environmental Division in Building 411 from May 16 - 27.

HazTrain, a business which provides its clients with environmental health and safety training courses, was brought in to lead the class. The course trained the participating personnel on the basics involved in responding to a local chemical disaster.

"This benefits the station because it now has a cadre of people that can be called upon to assist in any kind of hazmat operation," said Steven Wood, lead course instructor. The personnel who have received the training are now capable of working with dangerous chemicals because they have the basic knowledge and certification needed, he added.

Twenty-seven station personnel participated in the 40-hour course. The course involved nearly three days of classroom training, which educated the participating personnel on some of the hazards associated with dangerous chemicals. They also learned the compound structure of certain chemicals and how to identify the environments those chemicals might thrive in. Wood said although the course provided the participants with only a basic knowledge in hazardous material, they now have a solid foundation to build on with additional training. Read more

Events

UK: MARINE OIL SPILL SEMINAR

Tuesday 5 July 2011

0900 - Delegates board mv Ashleigh R at Ocean Village, Southampton Waterfront, and at 0930, depart for Shamrock Quay to visit the global base for OSR. Coffee on board en route to Shamrock Quay.

Arrive OSR base at 1000 - The highlight will be a briefing on the 2 Tophat containment systems, which OSR holds in readiness following the DWH spill. Followed by a tour of the base, UK equipment manufacturers will make short presentations, and be on hand to discuss latest developments

1130 depart OSR for Cowes, Isle of Wight to visit the new Vikoma factory
1130 A short presentation on board by OSPRAG about the offshore spill risk for the UK west of the Shetlands .

1200 A buffet lunch will be served en route down the Solent to Cowes

1300 Arrive at West Cowes, crossing the chain ferry, to be taken by bus to the Vikoma factory
1330 Tour of Vikoma factory
1430 return to mv Ashleigh R, depart West Cowes for Southampton

1530 ON WATER DEMONSTRATION - The afternoon will feature OSR and other marine vessels for a demonstration of counter pollution measures and activities in the Solent off Fawley Refinery.

The event will end at 1630hrs when the vessel returns to Ocean Village.

More information and booking

Events (continued)

IRELAND: ISAA ALL-IRELAND ACCREDITATION SCHEME STEERING GROUP MEETING IN DUBLIN

This meeting will take place at 10.30 a.m. on Tuesday 21 June at the Coast Guard HQ in Leeson Lane, Dublin. The Notice of Meeting and Agenda has been sent out to all stakeholders. If you didn't receive it, please contact the ISCO Secretary.

Cormack's Column

In this issue of the ISCO Newsletter we are printing No. 29 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

KNOWLEDGE OF WATER-IMMISCIBLE SYSTEMS (CHAPTER 29)

Having reviewed knowledge on the formation and stability of dispersions and emulsions, I now review knowledge of its relevance to the dispersion of floating oil and emulsions into underlying water through agitation by waves.

As we have seen, energy is required to produce droplets from a continuous liquid phase because work W has to overcome the surface tension force per unit area $\aleph$ to increase the surface area of the bulk phase to that of the total surface area of the droplets according to the equation $W = \aleph A$. However, the diameter d of the ensuing droplets is related to viscosity η by the equation $d = k\eta^n$ where k is a constant related to the mechanism of shear application while n has a value close to 0.5, and the initial droplets formed from a continuous phase may subsequently break into smaller droplets though this requires further deformation under further shear application which in turn requires work dependent on surface tension, $\aleph$, and viscosity, η. Thus, the inter-surface tension of two liquids A and B is related to their separate surface tensions by the equation $\aleph_{AB} = \aleph_A + \aleph_B - 2(\aleph_A\aleph_B)^{½}$.

The surfactants naturally present in oil or those of added dispersants reduce the inter-surface tension of the immiscible oil-water system so that the available wave energy increases the dispersion rate by dissolving in the oil and diffusing to the oil droplet-water interface, one end of the surfactant molecule being oleophilic (lyophilic) and the other hydrophilic. Thus, surfactant molecules have or can be designed to have lyophilic/hydrophilic balances (LHB) with values ranging between 0 and 20. However, those occurring naturally locate at the water-oil interface of the water droplets within water-in-oil emulsions and are thus trapped within the droplets within the emulsions and not lost to the sea, while those of dispersants locate external to oil or emulsion droplets and are thus likely to be lost to the sea, though such loss is without consequence when these droplets subsequently disperse far enough from the remaining slick and from each other to avoid re-coalescence. Thus, it is essential that dispersants are applied to slicks and not to the seawater on which they float and that applied dispersants remain with the slick long enough to promote droplet formation and dispersed separation before being lost to the sea.

However, further investigation has shown that at equilibrium/near-equilibrium, surfactant concentration at droplet surfaces, Γ, and concentration in the surrounding water, c, is related to reduction in surface tension according to equation $\Gamma = 1/RT\ d\aleph/d\ln c$; that the diffusion rate to the droplet interface at the start of the dispersion process keeps pace with interface creation during deformation of the bulk phase; that this may not be sustained after droplet formation; that consequently the concentration at the droplet-surface is usually below the equilibrium value; and that the continuous bulk phase intended for dispersion becomes increasingly depleted of surfactant as the process continues to possible cessation.

Again, the mechanism of droplet formation involves interfacial rheology in that the viscosity of the continuous phase resists the shear stress in the plane of its surface which would otherwise sustain the deformation necessary to initiate droplet formation, this deformation being opposed by the pressure difference across the interface Δp which is related to the principal radii of induced curvature R_1 and R_2 of the interface boundary by the Laplace equation $\Delta p = \aleph(1/R_1 + 1/R_2)$ so long as shear stress $T = \mu dv/dt$ in the droplet-forming region does not exceed Δp.

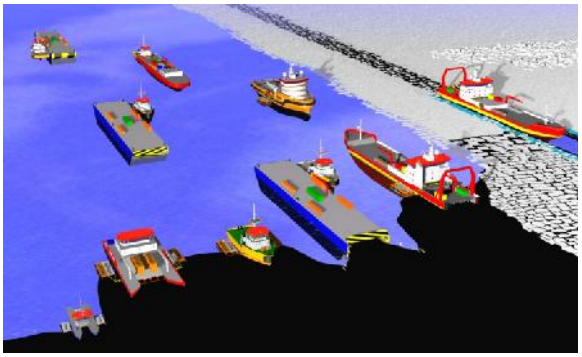
Thus, we see that the greater the difference between the viscosity of water and the viscosities of oils and their emulsions the greater their resistance to dispersion as droplets; and that while dispersants may facilitate droplet formation and hence the dispersion of oils and water-in-oil emulsions, this facilitation diminishes with viscosity increase as does the ease of pumping in recovery of either oil or emulsion.

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.

WENDY SCHMIDT OIL CLEANUP X CHALLENGE FINALISTS

FEATURING THE FINALISTS IN THE COMPETITION

Oil Whale™



OilWhale is a new great method to recover oil from water. The starting shot for the innovation was an oil spill in the Gulf of Finland outside of Helsinki in the winter of 2003. Two sophisticated oil recovery vessels (OSRV Halli and OSRV Hylje) can collect only 4 m of oil in three days.

Mr. Markku Järvinen, innovator of OilWhale, came up with an idea to do the recovery process in another way. He presented his idea to a few specialists who encouraged him to continue with the development work. The first pool experiments were carried out with a miniature prototype in Parainen (SW Finland) in the autumn of 2005. In the operation tests he used - among other materials - low viscosity low weight vegetable oil and high viscose heavy weight machinery grease. The test results were encouraging and he was awarded more funding from different sources to continue with the work.

The first full-sized prototype vessel designed to operate in shallow waters was test driven for the first time in October 2007. Additional experiments took place in ice conditions in November 2007 and at the Naantali refinery of Neste Oil Ltd. in March 2008. All the experiments carried out with the prototype vessel proved that the procedure functions well and as planned. Recent development work with our partners has made it possible to also recover debris and blue-green algae.

The basic idea of OilWhale is to move oil from the water in to the vessel on a water layer, so water is used as a carrier for the oil. The oil is stored without any external devices and the remaining water is removed during the recovery process. OilWhale process does not require mechanical contact with oil during the recovery process at any time.

Basic OilWhale construction includes one collection space – Collector. A more sophisticatedOilWhale construction has two different types of spaces: Collector, and a restoring space, Restorer. Both spaces are filled with water when the recovery process starts. The vessel or module is lowered to a recovery draft. The recovered material then floats into Collector through a gate which is opened and lowered below the water surface or the layer of the material that is being recovered. The recovered material enters Collector in exactly the same form as it is already in the water. The risk of mixing the materials and producing dispersion or emulsion during the recovery work can thus be minimized, and the material flow can bekept as laminar as possible during the whole recovery process. Nominal thickness of the recovered layer is usually 2–20 cm in calm weather, and 1–2 m in waves. The maximum recovery draft naturally depends on the size of the recovery vessel or the module being used.

The recovered material can be transferred from Collector to Restorer(s) without any externatransfer method, like pumps or skimmers. Traditional methods using booms, brushes orskimmers mix water and oil. Thus, they increase the amount of water in oil, as well asdispersion and emulsion, which may require additional storage capacity or settling time onboard.

The remaining extra water is continuously removed from below of Collector and Restorer.The removing process of the water is a natural "through pass flow". , and no external pumps or similar methods are required during the operation. The movement of the vessel or thewater current act as a pump during the recovery process.

OilWhale procedure, which works well in all conditions from the tropics to the polar regions, can obtain a high recovery speed, capacity and efficiency. It can be applied to ships of varying size and type, such as small workboats, tugs, supply vessels and larger ships. An individual OilWhale module can be operated by any vessel. They may operate in harbours, at the coast, off-shore, in waves or waters covered with ice.

The capacity of OilWhale procedure is not dependent on mechanical transfer methods available. In principle the thicker the oil layer is the higher the capacity of OilWhale procedure. The collected material can be off-loaded either to another ship or to a barge while the main ship or module is still recovering oil.

Neither does the temperature, pump ability, stiffness nor the viscosity of the material decrease the performance of the procedure. OilWhale can even recover dispersed and emulsified materials, debris and blue-green algae and process them. Thus, the material recovered is expected to fulfil only one requirement - it must float.

To confirm the functionality of the procedure in larger ship installations, versatile theoretical CFD (Computational Fluid Dynamics) studies were carried out for OilWhale procedure by *Process Flow Oy Ltd*., Turku, Finland.

The first catamaran design OilWhale vessel was manufactured by *RS-Planering Ltd*., Parainen, Finland, and it is 13 m * 4 m * 1 m in dimensions. The vessel is operated today by the fire brigade of STX Finland Oy Ltd. Turku Shipyard.

The project has been funded by *The Foundation of Finnish Innovations The Centre of Expertise Programme* and *The Finnish Funding Agency for Technology and Innovation*.

The main features of OilWhale procedure are patented. More info: www.oilwhale.com and www.oilwhale.com/press/

Products and services

USA: TERSUS ANNOUNCES A NEW FAMILY OF PRODUCTS FOR ENHANCED IN SITU BIOREMEDIATION

May 26 - To complement its Gas inFusion technologies, Tersus Environmental unveiled today a new family of products for enhanced in situ bioremediation. The new products are engineered to treat soil and groundwater contaminated with organic constituents amenable to anaerobic bioremediation processes, including chlorinated solvents, energetics and pesticides/herbicides. These amendments from Tersus can also control dissolved phase heavy metals by promoting their conversion to insoluble forms.

Tersus Environmental, a leading provider of technology for soil and groundwater remediation, unveiled today a new family of in situ remediation products. EDS-ER (electron donor solution – extended release) is a patent pending water-soluble oil formulated with >92% renewable crop-based oils.

EDS-ER is provided as a water mixable oil, not a water based oil, as is the current convention. There is no water within the formulation. Because of its low viscosity and longevity, EDS-ER is an ideal substrate for injection using direct-push technology for source area, plume and reactive barrier applications. The low viscosity allows a greater volume of EDS-ER to be applied in a shorter period and increases the substrate delivery radius per point. EDS-ER is a simple, safe, low-cost solution for enhanced bioremediation.

EDS products are used to treat soil and groundwater contaminated with organic constituents amenable to anaerobic bioremediation processes.

The treatment of contaminants with EDS products is further enhanced with the addition of hydrogen-enriched water, cometabolic gas enriched water, or carbon dioxide (CO2) supersaturated water using Gas inFusion technologies marketed by Tersus. The addition of hydrogen-enriched water may reduce the demand for the electron donor over the life of the cleanup by as much as 50 percent. The dissolved gas enriched water is added to EDS as a dilution fluid, used as chase water, used as recirculation water, or used a precondition waters for bioaugmentation culture. More info

ISCO Notices

APPEAL FOR YOUR HELP: ISCO'S COMMITMENT TO IMO – URGENT NEED FOR MORE INFORMATION ON EXPERIENCE GAINED AND TECHNIQUES USED IN RESPONSE TO MARINE HNS INCIDENTS AND FOR SUB-SEA OIL RECOVERY.

The twelfth session of the OPRC-HNS Technical Group meeting is fast approaching and we are disappointed to note that over the last few months there has been very little new information received from our members and other readers of the ISCO Newsletter. We would be grateful for your help.

ISCO joined with other delegations in agreeing to support the IMO Secretariat in pursuing possibilities of obtaining data on HNS incidents, including near misses, in order to address data gaps that exist and to submit that information to future meetings of the Technical Group.

The availability of data on experience and lessons learned in response to marine HNS incidents and sub-sea oil recovery needs to be improved and the ISCO delegation took the view that within the response community represented by ISCO at IMO there should be a significant source of additional information.

Information gathered will be shared with other OPRC-HNS Technical Group delegates and used in the preparation of new IMO Technical Guidelines on marine HNS response, and on sunken oil assessment and removal techniques.

What we are looking for is short case histories, with emphasis on information on the techniques used, problems encountered and lessons learned – the kinds of experience and knowledge that you won't find in the textbooks. We are also interested in special equipment that has been developed to deal with marine HNS incidents, and for the assessment and recovery of sunken oils.

To make things easy, ISCO has developed simple-to-use templates. These are available for download on the ISCO downloads page Just click on this link. Subsea Oil Recovery and Marine HNS Response are respectively the third and fourth of the listed documents.

Please don't worry about having to write a beautiful literary production – we'll be happy to edit the grammar and spelling. If for reasons of commercial confidentiality you need to exclude details of clients, that will be OK – but we would like to know who you are – all contributions will be acknowledged and this is a way for you to raise your profile – it's good to know who has the experience and knowledge in dealing with these matters.